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Advancing Inclusive Mentoring: An Effective Mentor Training Program Across Comprehensive and R2 Public Universities

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Positive and inclusive mentoring of undergraduate research students, particularly of students from historically underrepresented groups is critical. The Advancing Inclusive Mentoring (AIM) program was developed to share inclusive mentoring practices with mentors at undergraduate-focused campuses and was assessed across five minority-serving universities. Self-ratings of mentorship skill as very- and exceptionally developed increased by 58% after AIM completion, and 93% of participants indicated they were likely to change their mentoring following AIM. While 93% of mentors rated the AIM program as beneficial, and 88% found most or all six modules pertinent to their mentoring, campus variations existed in perceived benefit (87%-100%) and pertinence (80-97%). These results suggest that AIM is effective training for mentors of undergraduate researchers, including those from historically underrepresented groups.

Keywords: undergraduate research, underrepresented students, comprehensive public university, equity and inclusion.

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Introduction

High-quality mentoring of research students boosts multiple parameters of student success, including self-efficacy and satisfaction with experiential learning such as undergraduate research (Gannon & Maher, 2012; Kardash, 2000; Morales et al., 2019; Santos & Reigadas, 2002; Strayhorn & Terrell, 2007). Best practices in mentoring undergraduate research students are rarely taught; however, mentoring can be honed with training that strengthens mentor confidence and skill (Pfund et al., 2006; Young et al., 2022). Many mentor training programs focus primarily on faculty members who mentor graduate or post-graduate mentees (e.g., Pfund et al., 2014b), yet mentors at primarily undergraduate campuses, such as those in the California State University system, are critically important in engaging students in their chosen discipline (Santos & Reigadas, 2002). Additionally, while undergraduate research experiences are increasingly identified as beneficial for all students, especially for students in historically marginalized groups, most of the studies examining mentorship and mentor training have been conducted at historically white universities (Atkins et al., 2020; Haeger & Fresquez, 2016).

The Advancing Inclusive Mentoring (AIM) program was originally developed as part of the National Institutes of Health Building Infrastructure Leading to Diversity (BUILD) Initiative at California State University Long Beach (CSULB) for mentors of undergraduate and master's level students participating in behavioral and biomedical health-related research. The goals of AIM expand upon work by Pfund et al. (2014a) and incorporate tenets from the theoretical framework of mentoring proposed by Crisp & Cruz (2009), including viewing mentorship as providing 1) psychological and emotional support, 2) career path and goal setting assistance, 3) discipline specific training, and 4) role models for multiple aspects of professional life. AIM shares best practices for student-centered and inclusive mentoring of research students and consists of 6-hours of asynchronous online videos and 6-hours of a facilitated discussion where mentors reflect on each of the six modules: Communicating with your Mentees, Inclusive Mentoring, Mentee Growth and Development, Mentee Health and Wellbeing, Mentee-Centered Mentoring, and

Mentoring Toolbox (see Young et al., 2022 for names of the 35 episodes and additional program information). Overall, CSULB mentors trained in this hybrid program found AIM beneficial and were inspired to change their mentoring practices because of AIM training. Furthermore, the program increased CSULB participant knowledge and relevant mentoring skills for serving diverse and underrepresented students with its model of building a campus community of practice around mentoring.

While AIM proved to be an effective training experience for CSULB mentors the first year it was offered, these early cohorts were likely comprised of mentors who were eager to engage in mentor training. It was not known if AIM training would be viewed as beneficial and useful by 1) CSULB mentors beyond the first cohorts, and 2) research mentors at other diverse comprehensive/R2 campuses. To understand if the AIM program could continue to be perceived as a benefit at CSULB and successfully deployed outside of its home institution, survey and behavioral data were assessed from mentors across CSULB and four additional California State University (CSU) campuses who participated in AIM training between Summer 2022 and Fall 2023.

Methods

Participants & Data Collection

Mentors across five CSU campuses (n=251) participated in the AIM program between June 2022 and September 2023. While all campuses are part of the extensive CSU system and, therefore, share similar missions with a focus on undergraduate education including maximizing access and reducing barriers to higher education, the adopting campuses differed in size, student demographics, and research activity designation (Table 1; Appendix). As per our IRB protocol, informed consent was required to access AIM, with mentors made aware that viewing behaviors on the Canvas learning management system would be assessed. Following the final AIM discussion, participants were provided with a campus-specific link to an online anonymous Qualtrics survey. Data from close-ended questions were assigned either a categorical or numerical value for assessment. Open-ended responses were coded into categories identified by the first and last author based on previous work (Young et al., 2022) and initial review. Two naive research assistants coded the responses with 78% agreement; following independent review by two authors, the agreement rate was 98%; remaining discrepancies were resolved by consensus.

Campuses differed in their implementation style, including number of participants, structure of discussion, and compensation (Table 2; Appendix). Behavioral data from Canvas were collected from 251 participants, while 119 participants completed the post-AIM survey, a 47% response rate.

Adoption

Each campus facilitator completed the AIM program as a participant in an AIM train-the-facilitator session led by the CSULB AIM director. Each future facilitator received a leader's manual detailing program structure and discussion prompts. The proposed structure, recruitment, funding, and campus leadership of AIM were discussed with each facilitator during program adoption. Table 2 summarizes different implementation aspects across the campuses.

One of the five campuses, A4 recruited solely from STEM, whereas the other campuses offered AIM training across disciplines, although two of these campuses (A1 and A3) also recruited specifically from STEM Departments/Colleges. Solicitation to participate was sent via email invitations to prospective participants by local campus leaders. Support for AIM differed across campuses, with financial support coming from federal grants (A1 and A4) and internal college, center, or university funds (A1-3, A5), leading to differences in compensation for AIM participants (Table 2). Facilitators received financial compensation (A1, A2) or release from teaching (A4) on some campuses, while this duty was assumed by an administrator or grant PI at other campuses. Participants from several campuses also received nonmonetary "perks" for AIM completion.

The structure of the AIM sessions showed similarities across the campuses, with most discussion sessions being held remotely. In general, discussion sessions consisted of 7-14 participants per group, with one campus (A5) implementing large sessions with some breakout rooms due to a robust response. Some campuses employed multiple leaders while others ran the program with one or two leaders without rotation.

Instruments, Measurement, and Analysis

For all analyses, a p-value of 0.05 was set a priori to determine statistical significance.

Survey Items

Participants were invited to complete an optional online survey by e-mail after they completed the AIM program. The online survey included questions about participants' demographics along with ratings of effectiveness and pertinence of the modules, gains from completing the modules, assessment of mentoring skills, as well as other participation benefits.

The effectiveness of the module content was assessed by asking participants, "Please rate your agreement with…" (videos, discussions, and supplemental materials; see Table 3 in Appendix for questions) using a Likert-like scale of: Strongly Disagree (1); Disagree (2); Somewhat Disagree (3); Somewhat Agree (4); Agree (5); Strongly agree (6). Don't know/not applicable was also provided as an option; frequencies of these responses are

noted but excluded from the analyses. Participants were also asked, "To what degree did information in the AIM program pertain to you/your mentoring" by indicating: None of the modules had information pertinent to me (0), One or two of the modules had information pertinent to me (1.5), About three of the six modules has some pertinent information (3), Most of the six modules had pertinent information (4.5) or All of the six modules had information that was pertinent to me (6). Frequencies of the responses were computed. Ratings for both questions were submitted to one-way ANOVAs with Campus as the as the between-participant factor.

To assess module gains, participants were asked, "Please indicate how much you feel that you gained from completing each of the following modules" by indicating: No Gain (0); Little Gain (1); Moderate Gain (2); Good Gain (3); or Great Gain (4). Two-way, mixed ANOVAs were conducted on the ratings with Module as the within-participant factor and Campus as the as the between-participant factor. Additional one-sample t-tests were conducted to determine whether the sample mean was higher than 2.5 indicating more than moderate gain.

Participants were also asked, "How would you rate your overall mentoring skill set [before or after] the AIM Program", by indicating: Not at all developed (0); Somewhat developed (1); Moderately developed (2); Very developed (3); Exceptionally developed (4). Note that these were two separate questions, both asked after the training was complete, and the ratings were submitted to two-way, mixed ANOVA with Time (before vs. after) as the within-participant factor and Campus as the as the between-participant factor.

To assess overall program benefits, participants were asked, "Was participating in the AIM Program beneficial to your mentoring practice", and selected: Not beneficial (0), Slightly beneficial (1), Beneficial (2), Extremely beneficial (3) or Don't know/not applicable. Participants were also asked, "How likely are you to make changes in your mentoring as a result of AIM" and "How likely are you to recommend AIM to a colleague?" by indicating: Extremely Unlikely (1); Very Unlikely (2); Unlikely (3); Likely (4); Very Likely (5); Extremely Likely (6); Not Sure. Frequencies of Don't know/ not applicable and Not Sure responses were noted, but not included in the one-way ANOVAs on the ratings with Campus as the as the between-participant factor.

To assess workload, participants were asked, "What is your impression of the workload for the AIM Program" Responses were on a scale of 1 to 7, with the anchors of: 1= Light; 4= Reasonable; 7= Heavy. Ratings were submitted to a one-way ANOVA with Campus as the between-participant factor.

Finally, correlational analyses were performed to assess if pertinence was associated with gain and changes in mentoring practices.

Completion Rate and Video Watching Behavior. Video-watching behavior was assessed for all participants, who at a minimum started Module 1. The analytical sample was 236 (A1=58, A2=58, A3=20, A4=53, and A5=47). Log files detailing time spent on a page were used to extrapolate time watching videos. Video watching behavior was coded (0= did not watch, 1= watched less than half, 2= watched at least half to account for watching at faster playback speeds- this group was considered to have watched the entire video). The percentages of handouts accessed was also computed by module. The behavioral measures were analyzed using two-way, mixed ANOVAs with Campus as a between-participant factor and Module as a within-participant factor.

Campus Leader Interviews. AIM facilitators were interviewed (~30min) by CSULB's Center for Evaluation and Educational Effectiveness (CEEE; an external evlautation team) or a BUILD program member regarding their implementation of AIM and a summary report was generated with compiled responses.

Results

Survey Demographics

Over half (51%) of survey respondents identified their primary discipline as science or engineering. Primary fields of other respondents included: 14% in health or human services, 21% in liberal arts, humanities and social sciences, 5% in both agriculture and education, and 2% in business or administration. The majority (81%) of respondents indicated that research students were among their mentees, whereas 30%, 11% and 3% of participants included students conducting scholarly work (not research-related), creative activities, or teaching assistants among their mentees, respectively. While most participants indicated that their mentees included undergraduate and master's students at their home institution, some indicated that they mentored students outside of their home institution (Figure 1). Survey respondents averaged 9.5 years of mentoring experience, with an overall range of 0-30 years and different mean number of years of experience in participants across adopting campuses (standard error of mean): Adopting Campus (A1): 7.04(1.3) years; A2: 7.74(1.3) years; A3: 10.5(1.7) years, A4: 13.33(1.6) years; A5: 8.93(1.9) years. An average of 16% of respondents had completed prior mentor training, although this number ranged across the campuses A1: 24%; A2: 25%; A3: 13%; A4: 13%; A5: 27%.

Of survey respondents, most (80%) were tenured/tenure track professors; however, the ratios of job titles varied across campuses (Figure 2A). The majority (59%) of survey respondents self-identified as ciswomen (range 39-80% range across campuses), 35% identified as cismen (12-55%), and 5% preferred not to state (0-6%). Trans-man, trans-woman, or other identity options were

Figure 1
Most AIM Participants Mentored Undergraduates and Master's Students at Home Campus

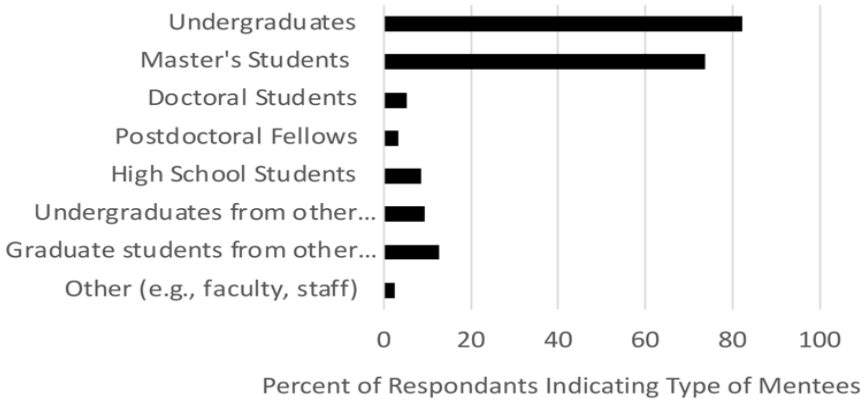
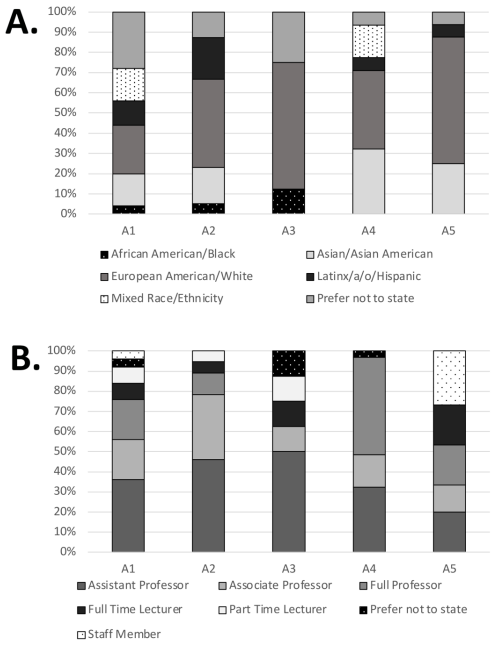


Figure 2
Campus Titles and Self- Reported Racial/Ethnic Backgrounds of AIM Participants



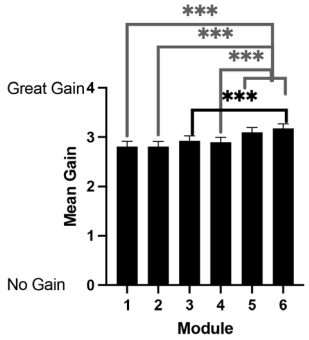
not selected. While self-reported racial ethnic background varied by campus, overall, 42% of survey respondents identified as White, 21% as Asian/Asian American, 12% as Latinx/Hispanic, 8% as mixed race/ethnicity, 3% as African American/ Black, with 14% preferring not to state (Figure 2B).

Survey Responses and Behavioral Analyses

Effectiveness of Videos, Discussions, and Supplemental Materials

The majority of respondents agreed/strongly agreed that: the videos were a useful (73%), effective (72%), and an engaging (63%) component of the program; that the discussion sessions were useful (90%), engaging (89%), allowed multiple viewpoints to emerge (92%), and expanded on important topics (84%), and that the supplemental materials were useful (76%). In contrast, only 43% of participants agreed/strongly agreed that they felt connected to the faculty members hosting the episodes. Regardless, the average ratings from all analyses were significantly higher than values indicative of "somewhat agree to agree" (4.5-5.0) and not significantly different than "agree to

Figure 3.
Participants Reported Gains from Completing Each Module



Note: ***= p<0.001. Module 1-Communication, 2-Inclusive Mentoring, 3-Mentee Development, 4-Mentee Health, 5-Mentee-Centered Mentoring, 6-Mentoring Toolbox.

strongly agree" (5.0-5.5). Table 3 shows the results from the ANOVAs conducted to determine whether there was an effect of Campus for each question. The effect of Campus was only significant for the statement, "The supplemental materials contain resources that I will use now or in the future," with a significant increase of ratings from A2 as compared to A1 mentors.

Pertinence

Across all survey respondents, 88% indicated that most or all the modules had pertinent information, with an additional 6% indicating pertinence of half of the modules. The ANOVA showed no significant effect campus, F(4,113)= 1.18, p= 0.325.

Gain from Completing Modules. To understand if all modules provided learning gains, and if this perception was consistent across campuses, learning gain per module was assessed. Overall, participants indicated Good Gain (M= 2.95, SEM= 0.09), with 67% (1-Communication), 69% (2-Inclusive Mentoring), 74% (3-Mentee Development), 72% (4-Mentee Health), 82% (5-Mentee-Centered Mentoring), or 81% (6-Toolbox) indicating a good or great gain from modules 1-6, respectively. There was a significant main effect of Module, F(5,560)=8.78, MSE=0.226, p<0.001, with the highest gains for Modules 5 and 6 when compared with Modules 1, 2, and 4 (ps <0.014), and a higher gain Module 6 compared to Module 3 (p = 0.012; Figure 3). No other pairwise Bonferroni comparisons were significant. All modules were rated significantly higher than a test value of 2.5 (more than moderate gain; toward good gain), ts(117)>4.07, ps<0.001. Modules 5 and 6 were rated significantly higher than a test value of 3.0 (more than good gain), ts(116)= 1.74 and 2.46, ps = 0.042 and 0.008, respectively. The main effect of Campus was not significant, F(4,112)< 1.0, p>0.68, and the interaction of Campus and Module number was not significant, F(20,560)= 1.04, p> 0.41.

Mentoring Skills. The post AIM survey asked mentors to consider their skills both before and after AIM training. Overall, mentors rated their skills between moderately developed and very developed (M=2.54, SEM=0.07). There was a significant main effect of Time, F(1,112)= 16.46, MSE= 0.222, p< 0.001 (Figure 4), with mentors rating skills almost 1 point higher after (M= 2.93, SEM=0.07) compared to before AIM completion (M=2.15, SEM=0.09). Mentoring skills before AIM were rated as moderately developed, being significantly lower than a test value of 2.5, t(116)=-5.22, p<0.001, and not significantly higher than a test-value of 2.0, t(116)=-1.21, p>0.11. In contrast, after completing the AIM program, self-rating of mentoring skills was significantly higher than 2.5, t(116)=7.19, p<0.001, indicating self-ratings greater than moderately developed and closer to very developed. While ratings for after as compared to before AIM training increased at every campus, the main effect of Campus was not significant, F(4,112)=2.27, p=0.07, indicating similar gains in self-ratings of mentoring skills regardless of campus (Figure 4).

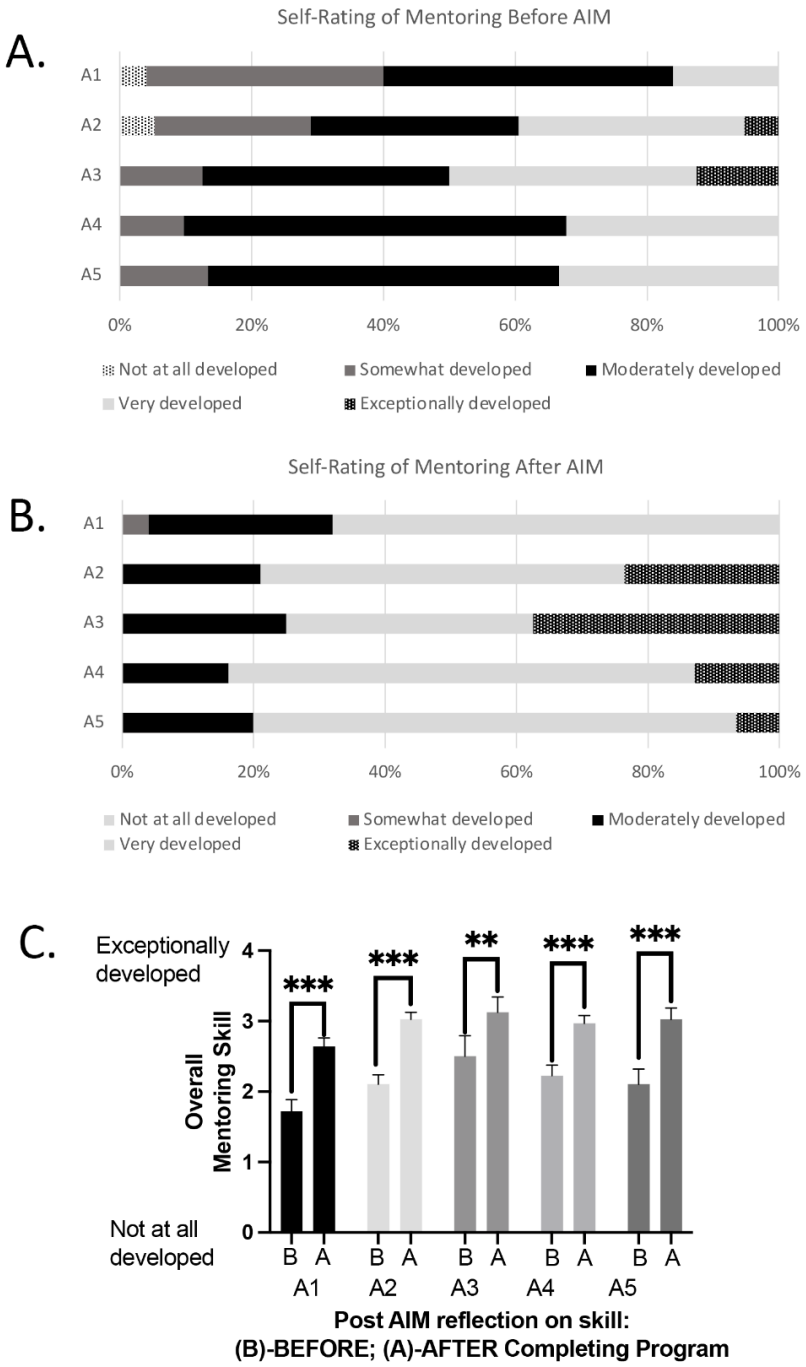
Participation Benefit

Across all campuses, 98% of survey respondents indicated that AIM was beneficial/extremely beneficial, and none selected "Don't know". While the one-way ANOVA showed a non-significant effect of Campus F(4,113)=1.55, p=0.19, the mean rating (0-3) was 2.45 SEM=0.06, which is significantly higher than a test value of 2.0 (Beneficial), t(117)= 7.68, p<0.001, indicating an overall perceived benefit of AIM regardless of campus.

Likelihood to Make Changes in Mentoring and Recommend to Colleagues

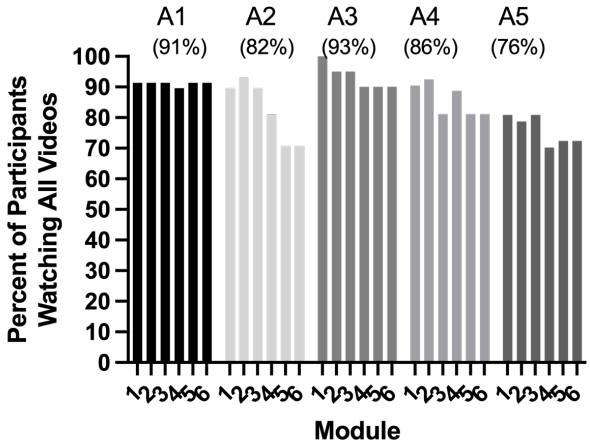
Across all campuses, survey respondents indicated that they were likely, very likely, or extremely likely to recommend AIM to a colleague

Figure 4
Reflective Ratings of Overall Mentoring Skills Increased After Completing the AIM Program



Note Mentors were asked to rate both pre-and post-AIM after completion of AIM training.
***p<0.001; **p>0.01.

Figure 5
AIM Video Watching Behavior Differed Across Modules and Campuses



Note: Module 1-Communication, 2-Inclusive Mentoring, 3-Mentee Development, 4-Mentee Health, 5-Mentee-Centered Mentoring, 6-Mentoring Toolbox.

(88%) and change their mentoring practices due to AIM training (93%), with one "not sure" response.

The effect of Campus was not significant for either likelihood of change F(4,111)=1.51, p=0.20, or recommendation, F(4,109)< 1.0, p>0.77. For the likelihood of making changes based on AIM training, the mean rating was 5.18 (SEM=0.10), which was significantly above a test value of 5.0 (Extremely Likely), t(115)= 1.80, p=0.038. For the likelihood to recommend AIM to a colleague, the mean rating was 5.06 (SEM=0.12), significantly higher than a test value of 4.5 (greater than Very Likely), t(113)=4.67, p<0.001, but not significantly higher than a test value of 5.0 (Extremely Likely), p=0.31.

Workload

Participants rated the workload reasonable (80%) with 94% rating the workload as light to reasonable and fewer respondents rating it as substantial (3%) or heavy (3%). The effect of Campus was not significant, F(4,111)<1.0, p>0.56. Participants' mean rating was 4.09 (SEM=0.07), which was significantly higher than a test value of 3.5, t(115)=7.68, p<0.001, but not significantly higher than 4.0 (Reasonable).

Correlational Analyses

The correlation between pertinence and perceived gain (mean gain across all modules) was significant, r=0.379, p<0.001, as was the correlation between pertinence and likelihood to make changes to mentoring practices, r=0.372, p<0.001.

Completion Rate and Video Watching Behavior

Overall completion rates for the online portion of AIM completion averaged 89% overall, with a range across campuses of 93%, 90%, 95%, 95% and 73% for Adoptions 1-5, respectively. We also assessed video-watching behavior among those mentors who at a minimum started Module 1, yielding completion rates ranging from 76% at A5 to 93% at A3. The analytical sample was 236 (58 from A1, 58 from A2, 20 from A3, 53 from A4, and 47 from A5). Log files detailing time spent on a page were used to extrapolate time watching videos. There was a main effect of Campus, $F(4, 231)= 3.37$, $MSE= 0.893$, $p= 0.011$, where Bonferroni pairwise comparisons showed that completion for A5 was less than that for A1 at the time of analysis. No other pairwise comparisons were significant (Figure 5).

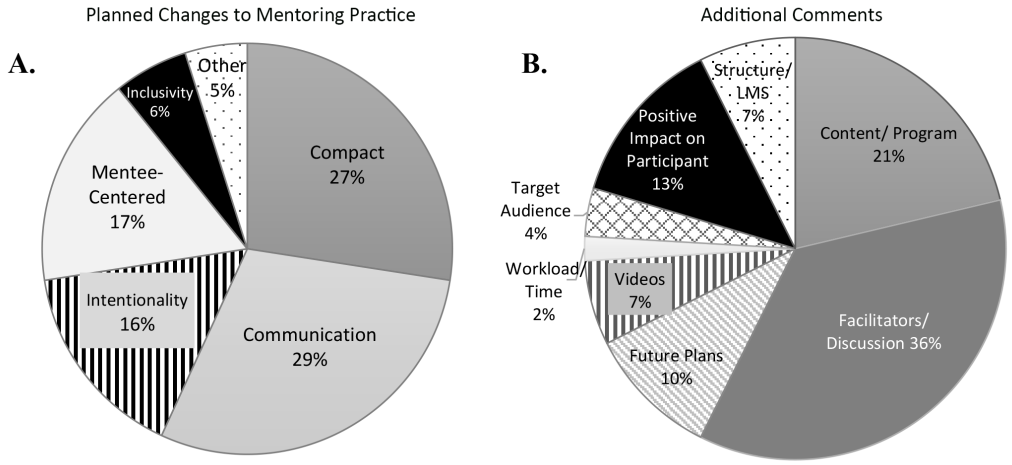
Accessing Supplemental Handouts

An average of 32% of participants accessed the 35 summary sheet handouts, and overall, participants accessed about 27% (SEM = 2.55) of the supplemental materials provided by the AIM program. There were no significant main effects or interactions.

Open Answers

For the question, "Please list any changes in your mentoring practices that you have made, or plan to make, as a result of this training", 193 comments were categorized from 90 of the 119 respondents (Figure 6A). Mentors stated that they planned to change multiple aspects of their mentoring, including communication (30%),

Figure 6:
Categorized Responses
Changes Planned by Mentors Post-AIM and Cments on the Program



implementing a mentor/mentee compact (28%), and making mentoring more mentee-focused (17%) or intentional (16%). These comments were largely (98%) positive, with 2% constructive and 0.5% negative. Participants noted:

> "Overall, being aware of everything learned and the change/reminder to be intentional with each mentoring relationships as they will all be different since each mentee will have a different skill level and need."

> "I have already been adapting the ways in which I communicate expectations with various students, adjusting and tailoring my approach to each individual student. I further am much more conscious of small patterns of behavior which can send unintended messages to mentees. The training has been a wonderful exercise in becoming more mindful about the entire mentoring process."

For the question, "Is there anything else about the AIM experience that you'd like to share," 109 comments were obtained from 54 of the 119 respondents (Figure 6B). Participant comments were 61% positive, 28% constructive, and 15% negative about various aspects of the program. Additional comments mostly focused on gratitude for the discussion sessions/leaders and community formed in discussion groups (36%), AIM content (21%), positive impact on the participant (12%), or ideas for future plans (10%). Participants noted: "Aside from providing very useful materials, and opportunities for discussions with other faculty, this experience has given me more confidence in my ability to be an effective mentor" and "I hope I will be able access the module in the future. It is quite useful. I also hope I can re/connect with other mentors."

The most common negative/constructive comments were focused on the structure (too large of a group, session held over too short of a period), the intended audience (should be expanded to include visible and non-visible variations of ableism, should be targeted to different student groups), or the content (common sense and already knew material).

Facilitator Interviews

The CEEE Evaluation Team and BUILD program personnel interviewed the lead individual at each campus outside of CSULB. The motivation to adopt the program varied; however, most leaders mentioned that the AIM training fulfilled a need on campus, including interest in programming involving principles of inclusion and equity, fulfilling current funding requirements, or facilitating procurement of future funding. Others mentioned that the focus of the training was unique since most faculty development programming focused on pedagogy or proposal writing. Overall AIM provided "good community building" with reports of an increased sense of community and camaraderie among AIM participants, pragmatic benefits for faculty submitting grant proposals, and benefits for students through providing "proficient, confident, and prepared mentors." Finally, one interviewee noted, "I've done lots of things for the University, and no one's ever thanked me as much as they did for this." While the response was overall positive and leaders expressed appreciation from AIM program leadership, challenges implementing AIM were noted, primarily the issue of scheduling discussion sessions. Scheduling multiple sessions, having sessions scheduled for future semesters or summers, and having multiple leaders who could

fill in when needed were viable solutions. Obtaining funding to encourage/reward participation at campuses that did not have internal or external funds earmarked for inclusive mentor training was another issue, as were recruiting and minor technical issues participants had with Canvas. All campus leaders plan to continue AIM, with firm plans in place for all but one campus, where the leader has since relocated.

Discussion

The AIM program is an effective training program for mentors of undergraduate and master's level students conducting independent work, such as research with faculty members. Reflective self-assessment of mentoring skills increased with the completion of the program. The 35 episodes of the AIM program cover multiple aspects of mentoring research students, touching upon all domains in the theoretical framework of mentoring proposed by Crisp & Cruz (2009), with good or great gains noted across all of AIM's modules with no differences between campuses, suggesting that this broad content resonated with participants. Gains were particularly strong in Modules 5 and 6 which may have been perceived as containing more novel content. Overall, participants found AIM beneficial and worthy of recommendation to colleagues, with positive correlations between perceived pertinence to participants' mentoring practices and both learning gain experienced and likelihood to make changes in mentoring. Importantly, even with an average of 9.5 years of mentoring experience and 43% associate and full professors participating, most participants indicated that they were likely to modify their mentoring practices following AIM completion, suggesting benefits even for experienced mentors. These results echo previous data suggesting that established mentors can grow (Pfund et al., 2006), mirror data obtained from the first year of implementation at CSULB (Young et al., 2022), and reflect a key aspect of the program, which was to encourage established mentors to learn, share, and incorporate evidence-based inclusive practices.

Another AIM program priority is fostering the community around inclusive mentoring at each campus, allowing reflection on mentoring given and received as needs of current students are discussed. Comments from participants and AIM leaders reflect the positive interactions and sense of community in the discussion sessions, and the successful adoption of AIM at campuses outside of CSULB aligns with the idea that campus-specific sessions can yield positive results. While training for research mentors has been largely studied at research-intensive institutions that have had predominantly white student populations, student populations across the campuses in the current study are generally more diverse with an average of 51% historically underrepresented, 41% Pell Eligible, and 61% first generation in college, with all the campuses designated as HSI and/or AANAPISI. Campuses ranged in size from 15,000-38,000 students, although all primarily focused on undergraduate education, with campus student populations averaging 89% undergraduate student enrollment (range of 86-96%). Despite campus differences across these five implementations, few significant differences in participant behavior or feedback were noted in this study, and no differences represented a major finding about program effectiveness. Thus, this study confirms our prior work suggesting that AIM can benefit mentors at diverse, predominantly undergraduate institutions, and expands it to a greater range of campus sizes and composition.

While self-reports are useful (Tourangeau, et al., 2000), self-reporting skill gains limits the interpretation of our data, therefore a critical next step for AIM includes assessing the student response to mentor training. Assessing the additional benefit of AIM training is also limited without the use of a comparison group. In addition, our survey data, though inclusive of a variety of disciplines, academic positions, and background across the five campuses, have a 53% non-response bias. While this response rate is within-range of other emailed surveys with minimal follow up (i.e., Yun & Trumbo, 2000), data should be interpreted accordingly.

AIM developers intentionally created a program that could be adopted and tailored by different universities to support specific campus needs. These differences in implementation, coupled with the feedback provided by both leaders and participants, have resulted in several key takeaways that are important for the AIM program and may also be considerations for any mentor training program.

- Facilitators Matter: The AIM facilitator should gauge the level of inclusive mentoring experience and tailor the discussions to meet the needs of each group. Train-the-facilitator sessions and the leader's manual, complete with discussion topics for each of the six sessions, stress that each facilitator can shape the discussion to meet participants where they are regarding mentoring expertise and awareness of inclusive mentoring principles. This was reflected in participant comments that noted that the facilitator could really "make or break the experience" of this program, and why AIM adoption required that facilitators complete the program as participants prior to leading a session. Based on feedback, several cohorts were comprised of participants with extensive knowledge of inclusive teaching and mentoring principles, with the actions of the AIM facilitator impacting how participants viewed the discussion. For example, one facilitator was praised for moving the discussions to "deeper" levels, whereas other participants noted that the discussion remained too basic for their groups' level

of expertise. Like facilitators of any learning community, AIM facilitators who ensured that all voices were heard enhanced the experience. One participant noted "3 or 4 participants who pretty much monopolized the discussions at different points. This discouraged me from talking." The AIM train-the-facilitator sessions now explicitly cover equitable participation. Finally, because peer mentorship flattens hierarchies (Prasad et al., 2019), the choice of most adopting campuses to have a research-active faculty colleague lead AIM may have positively impacted perceived benefit and sense of community.

- Group Size Matters: To build community and allow all voices to contribute to a rich discussion, the ideal AIM discussion group likely ranges from 7-11 people. Campuses also differed in program response, support, and resources, and therefore, group size was not consistent across implementations. These differences were considered when forming discussion groups. While pedagogical research suggests that smaller groups enhance interaction and social presence (e.g., Akcaoglu & Lee, 2016), resource constraints can result in faculty learning communities ballooning in size. The first year of AIM implementation at CSULB experimented with group size (3 to 17 members) and campus groups in the current study ranged from 7 to 30, with an upper range average of 11 for A1-A4. Feedback from participants and facilitators suggest that larger groups may not have promoted community, and may have, along with a campus-specific workload issue, contributed to a lower completion rate for the first implementation at A5. One A5 participant noted "...I really liked the videos/modules more than I would have expected, but I found the discussion sessions slightly less helpful than expected - mostly because there were a lot of people in each breakout group so we couldn't really discuss." Indeed, when A5 ran additional sessions with smaller group sizes, the related factors of lower completion rate and video viewing resolved and were similar to other campuses. Importantly, there were no differences in gains across any module, or self-rated increases in skill across campuses (Figures 3,4), suggesting that while group size impacted how some participants viewed the discussion community, it did not impact learning.

- Timing Matters: AIM runs ideally over 3-6 weeks, allowing time for reflection. The AIM program includes 6-hours of online asynchronous learning complemented by 6-hours of synchronous discussion. While previous work noted no difference when the sessions were held remotely or in person (Young et al., 2021), the timing of the discussion sessions is important. While most campuses used the once-per-week for six weeks, one campus (A2) initially held the program over a two-day period. Participants in this group noted that this was a rushed timeline and "a lot to cover in two days. The homework load was heavy" which contrasts with the general rating of 'reasonable' for the AIM program workload observed across campuses. Notably, A2 shifted AIM to the once-per-week model, resolving this feedback. Part of the AIM program relies on participants reflecting and putting into practice new/strengthened techniques, and therefore the timing of once- or twice-per-week, which was used by most of the campuses, may be ideal for mentor training.

- Group Composition: Both discipline-specific and cross-campus groups have benefits. While we did not evaluate group characteristics directly, overall ratings of program benefit and increase in skillset did not differ across campuses, regardless of different group composition. Some campuses ran AIM sessions composed of the same discipline participants (A1, A4), whereas others offered sessions to the campus-at-large and comprised of mixed discipline groups (A1, A2, A3, A5). Interestingly, some campuses also held sessions with research active tenure track faculty members only (A1, A4), whereas others held sessions with a mix of job classifications (A1, A2, A3, A5; Figure 2B). AIM benefited participants from these different groups, in agreement with the sentiment that mentor training can benefit most faculty (Cramer & Prentice-Dunn, 2007), regardless of academic rank. While the pan-campus approach works, some adopting campuses preferred to form AIM discussion groups based on discipline commonalities, particularly because the definition and role of mentoring can vary (Allen & Poteet, 1999, Goodman-Wilson, 2021). In the current study, some groups were composed solely of STEM or humanities-based related researchers, or lecturer faculty only, which likely personalized discussion in those groups. While individual mentors can now access AIM as part of the National Research Mentoring Network's course catalogue, program benefits are enhanced through the group facilitated discussion; each adopting campus will want to consider the ideal composition of AIM mentoring communities to benefit university specific needs.

Conclusion

In conclusion, our data suggest that the Advancing Inclusive Mentoring program can be an effective, beneficial, and flexible tool to share and discuss best practices in mentoring using a

structure that responds to campus-specific needs. As with any faculty professional development program, effective and nimble facilitators are essential; however, because the program focuses on participants discussing inclusive practices through the lens of their own mentoring experience, AIM can positively impact mentors across academic ranks. Intentional and inclusive mentoring is critical for student success (Pfund et al., 2006), and while these skills are essential for new faculty (Johnson & Huwe 2002), our results suggest that faculty mentors across a range of diverse and predominantly undergraduate campuses can benefit from a mentoring community.

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Appendix

Table 1
Demographics and Structure of CSU Campuses Adopting AIM

	A1	A2	A3	A4	A5
Total Number of Students	38,273	23,929	15,530	25,046	21,778
Total Number (%) of UG Students	32,710 (86%)	21,929 (89%)	13,816 (89%)	21,868 (87%)	20,963 (96%)
Reserach Designation/# of Doctoral Degrees Offered	R2 / 4 total (joint PhD, DNP, EdD, DPT)	R2 / 3 total (EdD, DNP, DPT)	Comprehensive / 1 total (DOT)	R2 / 3 total (joint PhD, EdD, joint DPT)	Comprehensive / 0 total
Binomial Students Sex Ratios*	41% men: 59% women	40% men: 60% women	38% men: 62% women	43% men: 57% women	51% men: 49% women
Percent Traditionally Underserved Students	52%	62%	80%	40%	22%
Percent First-Generation	63%	72%	81%	62%	25%
Percent Pell-Elligibility	44%	53%	57%	36%	17%
Hispanic or Asian American, Native American, Pacific Islander Serving Institution Status	HSI AANAPISI	HSI AANAPISI	HSI	HSI AANAPISI	Emerging HSI AANAPISI

Table 2
Campus-Specific Aspects of AIM Programs Adoptions

	A1	A2	A3	A4	A5
Participant Session Description	College specific (STEM, humanities) and cross-campus mix	Cross-campus mix	Cross-campus mix	STEM-specific sessions	Cross-campus mix
Participant Compensation	$600 honorarium (college-specific) or no compensation (campus mix)	$600 in professional development funds	No financial compensation	$1,000 honorarium	$300 honorarium or professional development funds
Nonmonetary rewards (outside of Badge)	Door decal, VIP status for internal funding	Completion letter	Completion letter	Completion letter, door decal, campus recognition	Completion letter
Number of AIM sessions completed	31 (ten leaders)	5 (five leaders)	3 (one leader)	9 (five leaders)	3 (three co-leaders)
Number of participants per session	8-12	10-14	7	8	7-30
Discussions in person, remote, or combination	Combination	Combination	Remote (Zoom)	Remote (Zoom)	Remote (Zoom)

Table 3
Mean Ratings for the Effectiveness of Videos, Discussions, and Supplemental Materials

Question	Effect of Campus	Overall Mean (SEM)	Significantly higher than "Somewhat Agree-Agree"	Not significant from "Agree-Strongly-Agree"	"Don't Know" /NA Frequency
The videos were effective at highlighting important mentoring practices.	Not Significant F(4,110)= 2.24, p= 0.69	4.96 (0.11)	4.5 t(114)= 4.20, p< 0.001	5.0	0
The videos were engaging to watch.	Not Significant F(4,110)= 1.83, p= 0.13	4.75 (0.11)	4.5 t(114)= 2.19, p< 0.015	5.0	0
The videos were a useful component of this program.	Not Significant F(4,109)= 1.93, p= 0.111	5.07 (0.11)	4.5 t(113)= 5.06, p< 0.001	5.0	1
I felt connected to the CSU hosts, even though they weren't from {insert campus}. Not asked at CSULB.	Not Significant F(4,102)= 2.44, p= 0.052	4.96 (0.12)	4.5 t(106)= 3.72, p< 0.001	5.0	8
The facilitated discussion sessions allowed me to expand upon topics I found important or interesting.	Not Significant F(4,109) = 1.24, p= 0.30	5.36 (0.08)	5.0 t(113)= 4.16, p< 0.001	5.5	1
The facilitated discussions were engaging.	Not Significant F(4,108)= 0.82, p= 0.52	5.47 (0.08)	5.0 t(112)= 5.89, p< 0.001	5.5	2
The facilitated discussions allowed me to hear different perspectives.	Not Significant F(4,108)= 0.81, p= 0.52	5.57 (0.08)	5.0 t(112)= 7.05, p< 0.001	5.5	2

The facilitated discussions were a useful component of this program.	Not Significant F(4,108)= 1.72, p= 0.15	5.54 (0.07)	5.0 t(112)= 7.06, p< 0.001	5.5	2
The supplemental materials contain resources that I will use now/in the future.	Significant F(4,106)= 3.77, p= 0.007	4.99 (0.11)	4.5 t(110)= 2.20, p< 0.015	5.0	4

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