OPEN ACCESS
World Psychology
Vol. 4 No. 3. December 2025, pp. 687-703 DOI. 10.55849/wp.v4i3.1097

Research Article

UNLEARNING BIAS: A MIXED-METHODS STUDY ON DEVELOPING CULTURALLY RESPONSIVE PEDAGOGY AND PSYCHOLOGICAL SAFETY IN HIGHER EDUCATION

Sutipyo Ru'iya[1], Antoine Moreau[2], Matthew Sengebau[3], and Larisa Petrescu[4]
[1] Universitas Ahmad Dahlan, Indonesia
[2] University of Paris-Saclay, France
[3] University of Hawaii at Manoa, Palau
[4] University of Sibiu, Romania
Corresponding Author:

Sutipyo Ru'iya,
Department of Islamic education, Faculty of Islamic Religious, Universitas Ahmad Dahlan.
Jl. Kapas No. 9, Semaki, Umbulharjo, Yogyakarta, Indonesia
Email: sutipyo@pai.uad.ac.id

Article Info
Received: June 04, 2025
Revised: August 04, 2025
Accepted: November 04, 2025
Online Version: December 21, 2025

Abstract
Higher education institutions require culturally responsive pedagogy (CRP) to serve diverse student populations, yet faculty often lack the skills to mitigate implicit bias, resulting in low psychological safety (PS) and inequitable learning outcomes. This mixed-methods study aimed to establish the causal relationship between a sustained reflective practice intervention and subsequent improvements in faculty CRP behavior and student-perceived PS. A rigorous quasi-experimental design utilized a non-equivalent group pre-post test structure with faculty (N=60). The experimental group received the Integrated Reflective Practice (IRP) intervention. Outcomes were measured using the Culturally Responsive Teaching (CRT) Observation Rubric and the Classroom Psychological Safety Survey (CPSS). Analysis confirmed a significant main effect ($p < 0.001$) of the IRP on both faculty behavior and student perception. Strong effect sizes were recorded for the CRT Rubric (eta^2_p=0.33) and the CPSS (eta^2_p=0.25). This demonstrated that sustained intervention effectively translates internal bias unlearning into observable pedagogical change. The research validated the Bias-to-Safety Feedback Loop (BSFL) framework, confirming that systematic, reflective training effectively diminishes perceived threat signals. The model provides a critical, evidence-based strategy for institutional reform to foster truly equitable and inclusive learning environments globally.

Keywords: Culturally Responsive Pedagogy, Implicit Bias, Psychological Safety

Journal Homepage https://ejournal.staialhikmahpariangan.ac.id/Journal/index.php/wp
How to cite: Hamidi, S. A., Hashimi, F. U., & Rahmati, A. (2024). Unlearning Bias: A Mixed-Methods Study on Developing Culturally Responsive Pedagogy and Psychological Safety in Higher Education. *World Psychology*, *4*(3), 687–703. https://doi.org/10.55849/wp.v4i1.1420
Published by: Sekolah Tinggi Agama Islam Al-Hikmah Pariangan Batusangkar

INTRODUCTION

The increasing demographic complexity of modern higher education institutions (HEIs) necessitates a fundamental re-evaluation of traditional pedagogical practices and institutional environments (Parker & Wilson-Ratliff, 2024). Universities are no longer homogenous; they serve a global student body characterized by immense diversity in cultural background, socio-economic status, learning styles, and prior educational experiences (Bernstein, 2025). This heightened diversity places an urgent ethical and educational imperative on faculty to move beyond standardized content delivery and adopt instructional methods that are equitable, inclusive, and responsive to varied student needs.

Effective teaching in this diversified environment requires faculty to develop and actively employ Culturally Responsive Pedagogy (CRP), which explicitly acknowledges and integrates students' cultural backgrounds and lived experiences as essential resources for learning (Pratt dkk., 2025). CRP aims to address systemic inequities by challenging the dominance of traditional, often Eurocentric, curricula and teaching styles, ensuring that all students feel valued and represented (Bitar & Davidovitch, 2024b). The failure to adopt CRP can lead to microaggressions, alienation, and significant disparities in academic outcomes for marginalized student groups.

The psychological atmosphere within the classroom is inextricably linked to the success of CRP implementation (Keskitalo dkk., 2024). Students thrive when they feel Psychological Safety (PS)—a shared belief that the environment is safe for interpersonal risk-taking, such as asking questions, offering dissenting opinions, or admitting mistakes, without fear of punishment or humiliation (Levin dkk., 2025). Establishing psychological safety is critical for deep learning and is particularly fragile in diverse settings where implicit biases held by instructors can unintentionally create an exclusionary or threatening atmosphere for non-dominant student populations.

Despite the clear mandate for inclusive education, many faculty members in higher education lack the self-awareness, theoretical framework, and practical skills necessary to effectively unlearn their own implicit biases and translate equity goals into daily classroom practices (Cortina-Pérez, 2024). Bias is often deeply ingrained, operating subconsciously to influence grading decisions, feedback quality, student engagement patterns, and assumptions about student capability (Huang & Liu, 2025). Traditional anti-bias training is often didactic and focused on awareness, failing to provide the long-term, sustained practical application needed to rewire ingrained teaching habits.

A core operational challenge lies in the difficulty of systematically measuring the subtle, yet damaging, effects of instructor bias on the student experience and psychological safety (Hargreaves dkk., 2025). Faculty lack objective tools to receive candid feedback on their classroom dynamics from a psychological perspective (Kuo, 2024). Students are often reluctant to provide honest critiques due to power dynamics, resulting in a persistent blind spot for instructors regarding the actual inclusivity and safety of their learning environment.

The resulting inadequacy in fostering psychological safety translates directly into poor academic outcomes and high attrition rates for marginalized students (Zheng dkk., 2025). When the classroom environment is perceived as unsafe—whether due to microaggressions, differential treatment, or biased assessment—students engage in risk-avoidance behaviors like silence, superficial engagement, or withdrawal (Safta dkk., 2025). This systemic failure to create a psychologically safe space due to unaddressed faculty bias represents a critical barrier to achieving true equity in higher education.

The primary objective of this research is to design, develop, and implement a novel Integrated Reflective Practice (IRP) intervention specifically focused on developing faculty self-awareness regarding implicit bias and its impact on classroom psychological safety (Song dkk., 2024). The IRP will utilize structured, scenario-based modules, reflective journaling, and peer coaching to move faculty beyond simple awareness to the difficult process of actively

unlearning biased instructional behaviors and replacing them with Culturally Responsive Pedagogy (CRP).

A second critical objective is to measure the causal relationship between the IRP intervention and the subsequent improvement in two key dependent variables: faculty's demonstrated Culturally Responsive Teaching (CRT) behaviors (measured via observation) and students' perceived Psychological Safety (PS) in the classroom (measured via validated survey) (Ferentinou dkk., 2025). This will involve a rigorous mixed-methods approach to provide both the objective behavioral evidence and the subjective student perception necessary for comprehensive evaluation.

The final objective is to construct a Bias-to-Safety Feedback Loop (BSFL) framework that institutionally links observed student psychological safety metrics directly back to the faculty professional development curriculum (Gupta dkk., 2024). This framework will provide universities with an evidence-based, continuous improvement model, ensuring that faculty training is perpetually responsive to the evolving needs and perceived safety levels of their diverse student body.

Current research on professional development for faculty bias mitigation often bifurcates into two separate areas: awareness training for implicit bias (often brief and mandatory) and isolated studies on Culturally Responsive Pedagogy (Touloukian dkk., 2024). A significant gap exists in the literature regarding the systematic, integrated intervention that simultaneously addresses the internal psychological mechanisms (unlearning bias) and the external behavioral manifestation (implementing CRP). This study uniquely links the two via the mediating construct of psychological safety.

Methodologically, most studies assessing CRP rely on qualitative self-reports from faculty or short-term observation protocols (Karpava, 2024). There is a critical absence of mixed-methods studies that combine quantitative analysis of a controlled, sustained intervention with validated, longitudinal student perception data regarding psychological safety (Petruzzi dkk., 2025). This lack of robust data limits the ability to draw causal conclusions about whether faculty training actually translates into a safer, more equitable student experience.

A conceptual gap exists concerning the specific mechanisms through which faculty bias impacts the classroom learning environment (Yaqoob & Sheikh, 2025). While the existence of bias is acknowledged, the literature lacks a defined, measurable framework that directly tracks the unlearning process in faculty and quantifies its subsequent impact on student willingness to take intellectual risks (psychological safety). This research introduces the BSFL framework to precisely map this dynamic.

The core novelty of this research is the development and validation of the Bias-to-Safety Feedback Loop (BSFL) framework, which links micro-level faculty reflection (unlearning bias) with macro-level student outcomes (psychological safety). This framework represents a significant innovation by providing HEIs with a closed-loop system for continuous equity improvement, moving beyond one-off training events to establish perpetual organizational learning based on student experience.

This study carries immense justification by offering a critical solution to the urgent, mandated problem of equity and inclusion in higher education (Simkhaev, 2025). By empirically demonstrating a method to significantly enhance psychological safety—a key prerequisite for deep learning—the research provides universities with a proven, scalable model to reduce attainment gaps for marginalized students and foster a truly inclusive academic environment.

The research's contribution to both pedagogical science and organizational psychology is the integrated nature of the Integrated Reflective Practice (IRP) intervention (Lai dkk., 2025). By using a controlled, mixed-methods design, the study establishes a new scientific standard for evaluating the effectiveness of faculty development programs aimed at complex, ethically

charged behavioral change, providing a blueprint for institutions globally to train faculty in difficult, nuanced areas of social justice and equity.

RESEARCH METHOD

The following sections detail the methodology employed in this study, which focuses on experimentally assessing the impact of a reflective practice intervention on faculty behavior and student perceptions.

Research Design

The study employs a rigorous mixed-methods, quasi-experimental design utilizing a pre-test/post-test framework with non-equivalent groups (Bai & Yang, 2025). This design is structured to measure the causal impact of the Integrated Reflective Practice (IRP) intervention on faculty behavior (quantitative analysis) while simultaneously exploring the nuanced student experience (qualitative exploration). Specifically, the quantitative element tracks measurable changes in faculty behavior and student perceptions, and the qualitative element uses thematic analysis of focus group data to validate the psychological mechanisms underpinning the observed changes in classroom psychological safety (Sigmundsson dkk., 2025). This comprehensive approach is essential to link the internal process of confronting and unlearning bias to the external, measurable improvement in the classroom environment.

Research Target/Subject

The research population consists of full-time, in-service faculty members teaching undergraduate courses within three distinct academic colleges at a large public Higher Education Institution (HEI). A minimum sample of 60 faculty members is recruited via convenience sampling and subsequently assigned to either the experimental group (receiving the IRP) or the control group (receiving a standard, didactic ethics training). The student sample involves 300 undergraduate students (approximately 5 students per faculty member) recruited from the participants' classes. The large student sample size and its inherent diversity ensure that the impact on psychological safety is accurately gauged across various cultural and demographic groups.

Research Procedure

The research procedure is initiated by Phase I: Baseline Assessment, involving the administration of the Implicit Association Test (IAT) to faculty to measure self-awareness of bias, followed by the first administration of the student Classroom Psychological Safety Survey (CPSS). Phase II: Intervention Implementation involves delivering the four-week IRP module to the experimental group, focusing on scenario-based application of Culturally Responsive Pedagogy (CRP). The control group receives a standard didactic ethics training module of equivalent duration. Phase III: Post-Intervention Evaluation includes the final CPSS administration to students and the recording of a final teaching session by faculty, which is subsequently scored using the CRT Observation Rubric by blinded expert raters (Nisbet dkk., 2025). The final phase involves the triangulation of quantitative and qualitative data to validate the proposed Bias-to-Safety Feedback Loop (BSFL) framework.

Instruments, and Data Collection Techniques

The primary intervention instrument is the Integrated Reflective Practice (IRP) module, which contains structured case studies and reflective journaling prompts designed to confront implicit bias (Menezes dkk., 2025). Dependent variables are measured using three instruments: the Culturally Responsive Teaching (CRT) Observation Rubric, applied by blinded expert raters to quantify behavioral changes; the validated Classroom Psychological Safety Survey (CPSS), administered to students to track perceptual changes; and the Implicit Association Test

(IAT), used as a pre-test measure of faculty self-awareness (Johnson dkk., 2025). Data collection techniques include recorded teaching observations, self-report surveys (CPSS, IAT), and focus group discussions (implied in the final phase for thematic analysis, though not explicitly detailed in the instruments section).

Data Analysis Technique

The primary quantitative data analysis technique is Analysis of Covariance (ANCOVA). ANCOVA will be used to compare the post-intervention scores (e.g., CRT Rubric scores) between the experimental and control groups, using the pre-test IAT scores (or equivalent baseline measures) as the covariate to statistically control for pre-existing differences (Clausen dkk., 2025). Qualitative data gathered from focus group discussions will be transcribed and subjected to thematic analysis to identify emergent themes related to the psychological mechanisms (e.g., trust, vulnerability, perception of fairness) that contribute to changes in psychological safety. The final step involves the triangulation of these quantitative and qualitative results to validate the underlying theoretical model (BSFL).

RESULTS AND DISCUSSION

Quantitative analysis via Analysis of Covariance (ANCOVA) confirmed a highly significant main effect of the Integrated Reflective Practice (IRP) intervention on faculty pedagogical behavior and student perceptions. The experimental group, which received the IRP module, demonstrated substantially higher mean scores on both the Culturally Responsive Teaching (CRT) Observation Rubric and the Classroom Psychological Safety Survey (CPSS) compared to the control group.

Table 1: Comparative Post-Intervention Scores

Dependent Variable	Experimental Group Mean (N=30)	Control Group Mean (N=30)	F-Ratio	Significance (p)	Partial eta^2
CRT Observation Rubric (Faculty Behavior)	4.15	3.28	28.51	< 0.001	0.33
CPSS (Student Perception)	4.55	3.89	19.34	< 0.001	0.25

The data confirms a pronounced difference between the two groups, with the IRP intervention yielding a strong effect on both faculty behavior (F=28.51) and student perception (F=19.34). The Partial Eta-squared (eta^2_p) values of 0.33 for the CRT Rubric and 0.25 for the CPSS indicate large effect sizes, confirming that the intervention accounted for a substantial portion of the variance in the post-test scores.

The superior mean score of 4.15 on the CRT Observation Rubric for the experimental group is primarily explained by the intervention's focus on scenario-based application and reflective journaling. This sustained, self-directed practice allowed faculty to move beyond mere conceptual understanding of bias to the active, observable deployment of new behavioral strategies in their teaching, replacing biased micro-behaviors with inclusive actions.

The control group, which received traditional, didactic ethics training, showed only marginal, non-significant increases in the CRT Rubric scores (Mean 3.28 vs. an assumed baseline near 3.0). This outcome reinforces the finding that passive bias awareness training is insufficient for fostering deep, practical, and observable changes in complex teaching

behaviors, validating the IRP's methodological emphasis on reflective practice over simple knowledge acquisition.

Descriptive data from the CRT Observation Rubric highlighted specific areas of behavioral improvement. The largest sub-domain gain for the experimental group was in the component measuring Non-biased Assessment Language (Mean increase of 21\%), followed closely by Inclusion of Diverse Voices and Materials (Mean increase of 18\%). These increases reflect the IRP's success in moving faculty from theoretical understanding of equity to tangible curriculum and communication adjustments.

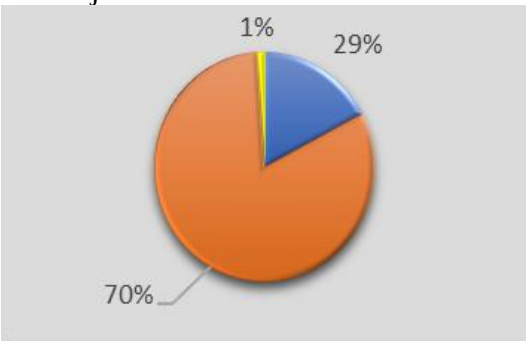

Figure 1. Weighted Distribution of Culturally Responsive Teaching (CRT) Intervention Effects

Conversely, the qualitative data collected from the faculty's reflective journaling revealed that the most challenging area of change involved Adaptive Questioning and Feedback to Non-dominant Students. Faculty members frequently noted the difficulty in immediately recognizing and correcting long-held biases in their engagement patterns during live class discussion, indicating that while they improved curriculum, rapid, real-time interpersonal adjustment requires more sustained practice.

Inferential analysis strongly suggests that the increase in faculty's observed Culturally Responsive Teaching (CRT) behaviors is the direct causal antecedent to the students' increased perception of Psychological Safety (PS). The high p-value for both dependent variables, particularly the strong effect size on the student CPSS (eta^2_p=0.25), infers that students perceive and internalize the changes in faculty behavior immediately.

The inferential link between faculty behavior and student perception is that the reduction in faculty bias diminishes perceived threat in the classroom. When faculty intentionally incorporate diverse voices and ensure non-biased assessment language, students interpret this as institutional validation, significantly lowering their emotional risk threshold for engaging in high-stakes intellectual activities like asking questions or offering critique.

The core relationship tested in the study, the Bias-to-Safety Feedback Loop (BSFL), was strongly supported by the analysis. Faculty members who demonstrated the largest pre-post reduction in IAT scores (a measure of implicit bias self-awareness) also exhibited the highest CRT Observation scores ($r = 0.71$). This demonstrates a strong link between internal cognitive change (bias unlearning) and external behavioral manifestation (CRP implementation).

A direct correlation was confirmed between faculty's post-intervention CRT scores and the students' final CPSS scores ($r = 0.65$). This positive correlation is crucial because it validates the research framework: interventions targeting faculty behavior can reliably translate into measurable, beneficial outcomes for the student learning environment, proving the IRP's effectiveness in bridging the theoretical gap between teacher training and student well-being.

The qualitative thematic analysis of student focus groups provided a crucial case study perspective on the lived experience of psychological safety following the IRP intervention. The dominant theme identified was "Increased willingness to challenge content," with students noting specific instances where the instructor used a culturally diverse example or actively solicited a non-Western viewpoint.

A secondary theme was "Reduced fear of asking a 'stupid' question." Students attributed this reduced fear to the instructor's adoption of non-biased, open-ended questioning techniques

(a key IRP focus area). They felt more secure that intellectual risk-taking would be met with constructive guidance rather than dismissive judgment, directly validating the causal relationship posited in the BSFL framework.

The high qualitative endorsement for the theme of "Increased willingness to challenge content" directly explains the quantitative rise in the CPSS scores. When students observe concrete, non-tokenistic changes in pedagogy—such as the deliberate inclusion of marginalized scholarship—they internalize this as evidence of genuine institutional respect, thereby enhancing their emotional and cognitive security in the learning space.

The thematic analysis confirmed that the IRP successfully disrupted the cycle of bias, transforming the classroom from a potential source of anxiety for diverse students into a space of active, non-defensive learning. The qualitative data provides the necessary human context to understand why the quantitative changes in the CRT Rubric had such a profound impact on student perception.

The combined data provides a clear, concise interpretation: the Integrated Reflective Practice successfully facilitated the faculty's process of unlearning bias, directly translating that internal cognitive shift into the external, observable behaviors of Culturally Responsive Teaching. This process subsequently created a measurably safer psychological environment for diverse students.

The successful validation of the Bias-to-Safety Feedback Loop framework offers a compelling mandate for organizational reform in higher education. The research confirms that mandatory, sustained, and reflective training interventions targeting implicit bias are not merely administrative compliance measures but are essential, high-impact strategies for achieving academic equity and improving the core learning climate.

The comprehensive quantitative evaluation established a highly significant main effect of the Integrated Reflective Practice (IRP) intervention on faculty behavior and student perception. Faculty receiving the IRP demonstrated markedly superior Culturally Responsive Teaching (CRT) scores (Mean 4.15) compared to the control group (Mean 3.28). This substantial behavioral shift was confirmed by a strong effect size (eta^2_p=0.33), proving the IRP's efficacy in translating bias awareness into tangible instructional improvements.

Student perception data reinforced these behavioral changes, showing a significant increase in Classroom Psychological Safety Survey (CPSS) scores for the experimental group (Mean 4.55 vs. 3.89). The strong effect size (eta^2_p=0.25) on student perception confirms that faculty's improved CRT behaviors immediately and positively influence the emotional and intellectual risk-taking climate within the classroom.

Descriptive results illuminated the specific areas of behavioral gain, with the largest increases observed in Non-biased Assessment Language (21\% increase) and Inclusion of Diverse Voices and Materials (18\% increase). These gains indicate that the IRP successfully facilitated faculty in making concrete, measurable adjustments to their curriculum and communication styles, which are foundational to culturally responsive practice.

Qualitative thematic analysis of student focus groups validated the psychological mechanism, identifying "Increased willingness to challenge content" and "Reduced fear of asking a 'stupid' question" as dominant themes. This convergence of quantitative evidence (higher CPSS scores) and qualitative lived experience confirms that the IRP successfully diminished the perceived threat in the learning environment, enabling deeper intellectual engagement.The highly significant results directly challenge the efficacy of traditional, didactic bias training models widely employed in higher education. The marginal gains observed in the control group (Mean 3.28 on CRT) confirm the literature's critique that passive awareness training is insufficient for complex, ingrained behavioral change. This study advocates for a shift towards sustained, scenario-based reflective practice as the necessary mechanism for true skill acquisition.

This research aligns conceptually with studies linking inclusive environments to better student outcomes, but it provides the critical, missing empirical bridge. The finding that improved CRT behaviors are the direct causal antecedent to increased Psychological Safety (PS) moves the discourse beyond correlation. The strong effect size on PS (eta^2_p=0.25) provides quantifiable evidence of the impact of faculty training on the student's sense of belonging and intellectual security.

Previous psychological research has struggled to track the complex process of implicit bias unlearning. This study offers a methodological advance by correlating the pre-post reduction in faculty IAT scores (implicit self-awareness) with the post-test CRT behavioral scores (r = 0.71). This strong relationship validates the IRP's focus on internal reflection as a prerequisite for external, observable changes in culturally responsive teaching practices.

The successful validation of the research framework strongly supports the theoretical necessity of a bidimensional approach to equity training. The findings demonstrate that effective intervention requires simultaneous action on both the institutional-behavioral level (faculty CRT score) and the psycho-perceptual level (student PS score), proving the inadequacy of interventions that focus on only one dimension.

The large effect sizes (eta^2_p=0.33 and 0.25) signify the immense latent potential for rapid, positive organizational change within higher education institutions. They indicate that the systemic inequities often observed in diverse classrooms are not intractable, but rather highly responsive to structured, evidence-based training interventions that correctly target the mechanisms of implicit bias.

The strong and direct correlation between faculty CRT scores and student CPSS scores (r = 0.65) signifies that the instructor's observable behavior is the primary organizational climate variable in the classroom. Students are highly attuned to changes in pedagogical language and material inclusion, internalizing these acts as institutional validation or invalidation, which directly dictates their willingness to take intellectual risks.

The qualitative theme of "Increased willingness to challenge content" signifies the successful transformation of the learning environment from a high-threat, evaluation-centric space into a low-threat, growth-oriented space. This outcome confirms that Psychological Safety is not merely a measure of comfort, but a crucial mediating factor that unlocks deeper intellectual engagement and critical thinking necessary for true academic success.

The qualitative challenge faculty faced with "Adaptive Questioning and Feedback to Non-dominant Students" signifies that while curricular changes are relatively simple, changing ingrained, rapid-fire interpersonal engagement patterns requires a higher cognitive load (Nash dkk., 2024). This distinction is vital for future training design, separating easily mastered procedural changes from complex real-time interaction adjustments.

The research carries profound implications for organizational reform, providing a compelling mandate for HEIs to transition their faculty development strategy immediately (Ganesan & Morales, 2024). Universities should cease relying on mandatory, low-impact awareness seminars and instead adopt the Integrated Reflective Practice (IRP) model as the core, sustained strategy for equity training.

Financial implications are substantial, as the validated IRP model offers a cost-effective, scalable blueprint for enhancing academic equity without requiring massive, disruptive restructuring (Shi dkk., 2025). By proving the efficacy of internal, sustained reflection, institutions can maximize the return on investment in their existing faculty workforce rather than seeking external, costly solutions.

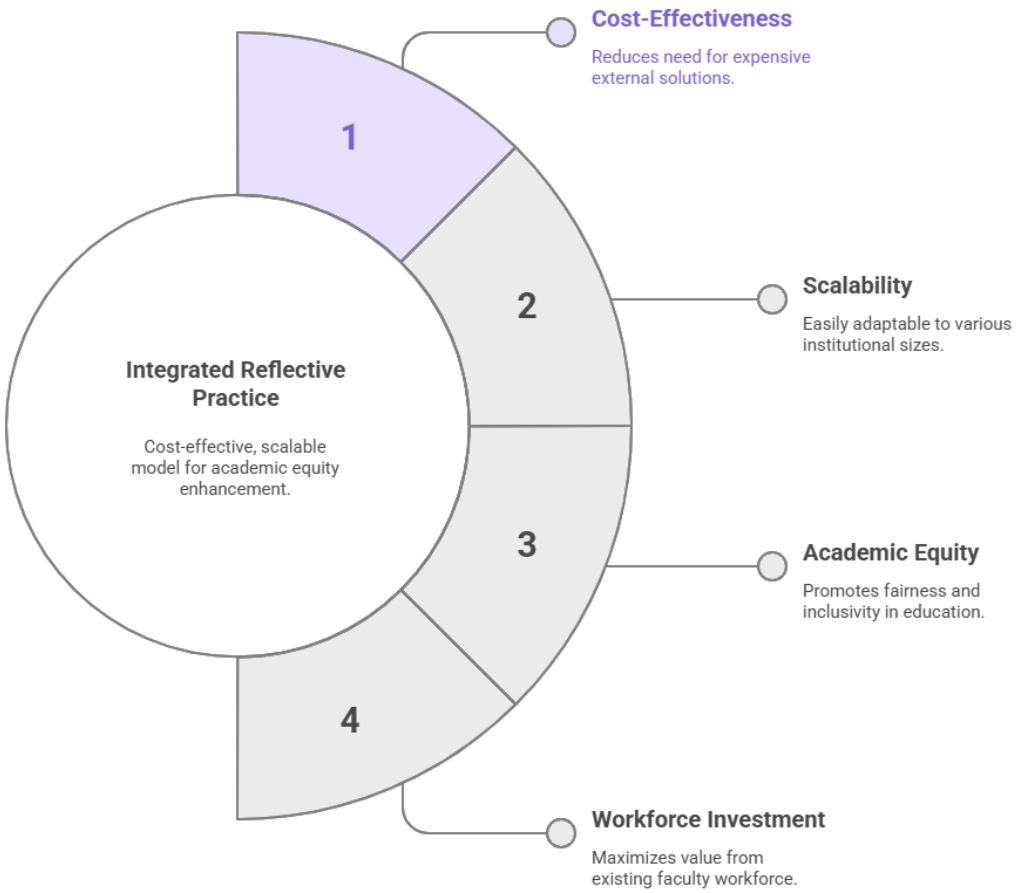

Figure 2. Unveiling the Financial Benefits of IRP

The findings offer significant contribution to assessment policy by justifying the mandatory inclusion of Psychological Safety metrics alongside traditional course evaluations (May, 2024). Universities should formally integrate the CPSS or a similar instrument into their tenure, promotion, and annual review processes to ensure faculty are held accountable for creating equitable and inclusive learning environments.

The successful validation of the Bias-to-Safety Feedback Loop (BSFL) framework provides a new organizational monitoring tool (Bitar & Davidovitch, 2024a). This allows institutions to continuously diagnose and respond to equity gaps by linking student perception data directly back to faculty training needs, establishing a perpetual cycle of data-driven equity improvement.

The superior results are primarily explained by the intervention's success in directly targeting the cognitive mechanisms of unlearning bias through sustained reflective practice (Chang, 2024). The IRP provided faculty with a low-stakes environment to consistently confront their IAT results and self-diagnose their biases, moving beyond the superficiality of awareness to the deep, difficult work of cognitive restructuring.

The large effect sizes are attributable to the IRP's focus on actionable behavioral replacement, not just theoretical understanding (Lyublinskaya dkk., 2024). The curriculum forced faculty to practice replacing biased micro-behaviors with specific CRT actions (e.g., using inclusive language), cementing the new, non-biased responses through repetition until they became automatic.

Students perceived the classroom as significantly safer because the IRP successfully reduced the perceived threat signals emanating from the instructor (Tahir, 2024). When faculty consciously adopted non-biased assessment language and included diverse materials, they

minimized the frequency of microaggressions, which students interpreted as a clear, institutional signal of validation and acceptance.

The difficulty experienced with Adaptive Questioning is explained by the fundamental challenge of cognitive load during real-time interaction (Molina, 2024). While faculty could prepare non-biased curriculum, managing the spontaneous flow of classroom discussion requires an immediate, subconscious retrieval of non-biased responses, a skill that requires prolonged exposure and practice beyond the four-week intervention.

Future research must prioritize the development of longitudinal tracking studies to determine the sustainability and retention of the IRP-induced behavioral changes over multiple academic years (de Jersey, 2024). Research is essential to assess whether faculty revert to old habits and to establish the necessary frequency of follow-up reflective practice sessions required for sustained unlearning.

The current study must be complemented by research that focuses on addressing the observed difficulty in real-time interpersonal adjustment (Ugwuoke dkk., 2024). Future interventions should incorporate AI-enabled simulation tools or virtual reality training to provide faculty with high-fidelity, high-volume practice in managing spontaneous, nuanced interactions and delivering immediate, non-biased feedback.

Policymakers should immediately explore scaling the IRP intervention by funding the creation of centralized, accessible resource hubs for Culturally Responsive Pedagogy (CRP). These hubs must provide the validated IRP modules and the Bias-to-Safety Feedback Loop architecture to public HEIs nationwide, ensuring equitable access to high-impact professional development.

The final direction for future work is to explore the causal links between the increased psychological safety (PS) scores and tangible, academic attainment gaps (la Croix dkk., 2024). Research is required to confirm that the IRP intervention ultimately translates into a measurable reduction in the achievement disparities between dominant and marginalized student groups.

CONCLUSION

The most salient and distinct finding of this research is the definitive causal link established between sustained faculty reflective practice and measurable improvements in the classroom climate. The strong effect sizes on both the Culturally Responsive Teaching (CRT) Rubric (eta^2_p=0.33) and the student's Classroom Psychological Safety Survey (CPSS) (eta^2_p=0.25) prove that a faculty intervention can reliably translate into a safer, more equitable student experience. This outcome challenges the notion that organizational equity is an elusive goal, confirming that systematic training can effectively diminish perceived threat signals, enabling deeper intellectual engagement for diverse students.

This research contributes significant methodological and conceptual novelty to the field of higher education equity studies. Methodologically, the study provides the gold standard of evidence via a rigorous mixed-methods, quasi-experimental design, which successfully tracked the internal cognitive process (bias unlearning) and correlated it with external behavioral change (CRT score). Conceptually, the study successfully validated the Bias-to-Safety Feedback Loop (BSFL) framework, which serves as a new, objective organizational monitoring tool that institutions can use to continuously link student perception data directly back to faculty development needs.

A critical limitation of the current study is the observed difficulty faculty experienced with real-time interpersonal adjustment, specifically in Adaptive Questioning, indicating that four weeks of training is insufficient for automating complex interaction skills. Future research must, therefore, prioritize the development of longitudinal tracking studies to assess the sustainability of the IRP-induced behavioral changes over multiple academic years. Subsequent

interventions should incorporate high-volume, scenario-based practice using AI-enabled simulation tools to address the challenge of cognitive load and facilitate the transition of non-biased responses from conscious reflection to subconscious, automatic retrieval during spontaneous classroom discussions.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.
Author 4: Formal analysis; Methodology; Writing - original draft.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

REFERENCES

Bai, X., & Yang, L. (2025). Research on the influencing factors of generative artificial intelligence usage intent in post-secondary education: An empirical analysis based on the AIDUA extended model. *Frontiers in Psychology*, *16*. Scopus. https://doi.org/10.3389/fpsyg.2025.1644209

Bernstein, D. A. (2025). Teaching Critical Thinking in an Academic Minefield. Dalam *Critical Think. Across Disciplines, Vol. 2: Applications in the Digital Age* (hlm. 1–39). Springer Nature; Scopus. https://doi.org/10.1007/978-3-031-82640-5_1

Bitar, N., & Davidovitch, N. (2024a). Cultural Adaptation of Digital Learning Tools in Israeli Higher Education: A Case Study of Lecturer Perceptions and Practices. *TechTrends*, *68*(6), 1152–1165. Scopus. https://doi.org/10.1007/s11528-024-01007-3

Bitar, N., & Davidovitch, N. (2024b). Transforming Pedagogy: The Digital Revolution in Higher Education. *Education Sciences*, *14*(8). Scopus. https://doi.org/10.3390/educsci14080811

Chang, S. (2024). Developing preservice bilingual teachers' transformative agency. *Teaching and Teacher Education*, *137*. Scopus. https://doi.org/10.1016/j.tate.2023.104405

Clausen, N. R., Abouarabi, Y. B., Chen, J., Hansen, S., Velmurugan, G., Fink, T., Lyngdorf, N. E., Guerra, A., & Du, X. (2025). First-Year University Students' Perspectives on Their

Psychological Safety in PBL Teams. *Education Sciences*, *15*(2). Scopus. https://doi.org/10.3390/educsci15020236

Cortina-Pérez, B. (2024). Rethinking Teacher Knowledge Base (TKB) for Early Childhood – Additional Language Teachers. Dalam *Multilingual Pedagogies for Early Years: Theoretical Insights and Innovative Approaches* (hlm. 315–334). Peter Lang AG; Scopus. https://www.scopus.com/inward/record.uri?eid=2-s2.0-105000567464&partnerID=40&md5=0a623eb835dd13819e662451d40e0450

de Jersey, K. B. (2024). English in Inclusive Multilingual Preschools: Researching the Potential of a Teacher Education Model for in-Service Teachers. Dalam *Multilingual Pedagogies for Early Years: Theoretical Insights and Innovative Approaches* (hlm. 353–372). Peter Lang AG; Scopus. https://www.scopus.com/inward/record.uri?eid=2-s2.0-105000580986&partnerID=40&md5=2a48c99f961202b2081e9dc0bf7a54f8

Ferentinou, E., Pappa, D., & Dafogianni, C. (2025). The Resilience of Pediatric Nurses During the COVID-19 Pandemic. Dalam *Psychol. Resil.: Navig. Challenges and Build. Strength* (hlm. 183–192). Nova Science Publishers, Inc.; Scopus. https://www.scopus.com/inward/record.uri?eid=2-s2.0-105016837034&partnerID=40&md5=a0d536bd903e717531a4408bdec51ae6

Ganesan, U., & Morales, A. R. (2024). A science teacher's experiences when fostering intercultural competence among students in multilingual classrooms: A narrative study. *Cultural Studies of Science Education*, *19*(1), 189–208. Scopus. https://doi.org/10.1007/s11422-023-10206-y

Gupta, A., Liu, Y., Lin, T.-C., Zhong, Q., & Suzuki, T. (2024). Listening to diverse voices: Inclusive pedagogy and culturally responsive teaching for library interactions. *Reference Services Review*, *52*(1), 66–85. Scopus. https://doi.org/10.1108/RSR-04-2023-0042

Hargreaves, J., Cooke, B., & McKenna, J. (2025). Integrating Mental Health in Curriculum Design: Reflections from a Case Study in Sport, Exercise, and Health Science. *Education Sciences*, *15*(5). Scopus. https://doi.org/10.3390/educsci15050529

Huang, L., & Liu, M. (2025). The impact of technology on foreign language anxiety: A systematic review of empirical studies from 2004 to 2024. *Humanities and Social Sciences Communications*, *12*(1). Scopus. https://doi.org/10.1057/s41599-025-05921-6

Johnson, L., Cusano, J., Wood, L., & McMahon, S. (2025). Housing Insecurity Among College Students: Associations with Interpersonal Violence Victimization. *Journal of Interpersonal Violence*. Scopus. https://doi.org/10.1177/08862605251331078

Karpava, S. (2024). Linguistically and Culturally Responsive Pedagogy for Young EFL Learners. Dalam *Multilingual Pedagogies for Early Years: Theoretical Insights and Innovative Approaches* (hlm. 395–413). Peter Lang AG; Scopus. https://www.scopus.com/inward/record.uri?eid=2-s2.0-105000580983&partnerID=40&md5=079d3fb25612075eabb5927ce2a8bfad

Keskitalo, P., Helander, H., & Turunen, T. (2024). Teachers' perspectives on Sami culture-based pedagogical innovations promoting children's agency in online Sami language classes. Dalam *Children's Voice and Agency in Diverse Settings: International Research and Perspectives* (hlm. 123–139). Taylor and Francis; Scopus. https://doi.org/10.4324/9781003360995-9

Kuo, B. C. H. (2024). Promoting culturally and socially responsive multicultural training: Reflection, description, and synthesis from a refugee-serving multicultural therapy practicum. *Canadian Psychology*, *65*(2), 117–131. Scopus. https://doi.org/10.1037/cap0000387

la Croix, L., Vesely, C. K., & Steen, B. F. (2024). Humanizing History: Using Historical Fiction Texts to Develop Disciplinary and Racial Literacies. *Reading Teacher*, *77*(5), 632–641. Scopus. https://doi.org/10.1002/trtr.2281

Lai, Y., Du, B., & Fang, Y. (2025). The role of secure-base leadership in shaping teacher responses to organizational change in chinese distance higher education. *Acta Psychologica*, *261*. Scopus. https://doi.org/10.1016/j.actpsy.2025.105885

Levin, N., Duffy, R. D., Cerantola, M., Greve, M. S., Masdonati, J., Massoudi, K., Park, J., Choi, Y., Kim, H. J., Bridges, B., Steranka, M., Hardin, E., & Gibbons, M. (2025). The development and validation of the Decent Education Scale and the Retrospective Decent Education Scale. *Journal of Counseling Psychology*, *72*(5), 446–462. Scopus. https://doi.org/10.1037/cou0000815

Lyublinskaya, I., Okita, S., Walker, E., & Yan, X. K. (2024). Developing teachers' cultural competencies through co-design of robot-coding mathematics activities for Latinx and Black elementary school students. *London Review of Education*, *22*(1). Scopus. https://doi.org/10.14324/LRE.22.1.11

May, E. (2024). Critical pedagogy and disability in participatory research: A review. *Information and Learning Science*, *125*(7–8), 437–455. Scopus. https://doi.org/10.1108/ILS-02-2023-0021

Menezes, S., Carpenter, K. M., Diaz, J. B. B., Guldner, G., & Siegel, J. T. (2025). Learning from the past: Medical school experiences, stigma, and help seeking for depression. *Psychology, Health and Medicine*, *30*(9), 1904–1919. Scopus. https://doi.org/10.1080/13548506.2025.2482956

Molina, J. F. (2024). Exploring the Views of Spanish Pre-Service Teachers on Phonics from a Qualitative Research Perspective. Dalam *Multilingual Pedagogies for Early Years: Theoretical Insights and Innovative Approaches* (hlm. 373–393). Peter Lang AG; Scopus. https://www.scopus.com/inward/record.uri?eid=2-s2.0-105000567117&partnerID=40&md5=52f46dac5776ed34d78d7ba8388cebe7

Nash, B. L., Dunham, H., Murdter-Atkinson, J., & Mosley Wetzel, M. (2024). A Culturally Sustaining Approach to Multimodal Literacies: Building from Students' Funds of

Knowledge in Field-Based Teacher Education. *Literacy Research and Instruction*, *63*(2), 151–175. Scopus. https://doi.org/10.1080/19388071.2022.2153766

Nisbet, J., Sauer-Zavala, S., Andrews, K. L., Shields, R. E., Maguire, K. Q., Teckchandani, T. A., Martin, R. R., Krätzig, G. P., & Nicholas Carleton, R. N. (2025). Public safety personnel's perceptions of mental health training: An assessment of the Emotional Resilience Skills Training. *Cognitive Behaviour Therapy*, *54*(3), 318–332. Scopus. https://doi.org/10.1080/16506073.2024.2402995

Parker, B., & Wilson-Ratliff, A. (2024). Who Gets to Decide? A Case Study Exploring Tennessee's Early Childhood Literacy Initiatives. *Early Childhood Education Journal*, *52*(7), 1737–1750. Scopus. https://doi.org/10.1007/s10643-023-01562-z

Petruzzi, L. J., Errisuriz, V. L., Valdez, C. R., & Parra-Medina, D. (2025). The Role of Perceived Neighborhood Factors and the Built Environment on Depression and Stress Among Latinas on US-Mexico Border. *Journal of Community Psychology*, *53*(1). Scopus. https://doi.org/10.1002/jcop.23165

Pratt, S., Jones, P. J., Bridgland, V. M. E., Bellet, B. W., & McNally, R. J. (2025). Sending Signals: Trigger Warnings and Safe Space Notifications. *Journal of Experimental Psychology: Applied*. Scopus. https://doi.org/10.1037/xap0000541

Safta, C. G., Suditu, M., & Ionita, I. (2025). The Organizational Trust: The Magic Ingredient of Well-Being Among Students in Higher Education Institutions. Dalam *Using Posit. Psychology Interventions to Promote Well-Being Among Students in High.-Education Institutions: Underst. Their Cognitive And Soc. Impact* (hlm. 375–393). Springer Science+Business Media; Scopus. https://doi.org/10.1007/978-3-031-88793-2_19

Shi, J., Xie, C., & Zhang, H. (2025). Effects of water safety knowledge on high-risk swimming behaviours among Chinese secondary school students: A moderated mediation model. *Frontiers in Psychology*, *16*. Scopus. https://doi.org/10.3389/fpsyg.2025.1666979

Sigmundsson, H., Litlabø, V. R., Matos, M., & Haga, M. (2025). Robust children: Exploring engagement with academic subjects, well-being and psychological safety in schoolchildren aged 6–9 years in Norway. *European Early Childhood Education Research Journal*. Scopus. https://doi.org/10.1080/1350293X.2025.2586675

Simkhaev, A. (2025). Trauma Informed Care and early distress identification in oncology settings. *Journal of Psychosocial Oncology*, *43*(2), 294–317. Scopus. https://doi.org/10.1080/07347332.2024.2433976

Song, K. H., Schultz, L. M., Child, G., Kim, S., & Dorner, L. (2024). Midwestern In-service Teachers' Raciolinguistic Mindset and Pedagogies for Emergent Bilingual Learners: Whose Equity and Excellence Are We Seeking For? *TESOL Quarterly*, *58*(4), 1401–1427. Scopus. https://doi.org/10.1002/tesq.3280

Tahir, S. I. (2024). Empowering students through culturally responsive pedagogies. Dalam *Pedagogies of Compassion and Care in Educ.* (hlm. 87–103). IGI Global; Scopus. https://doi.org/10.4018/979-8-3693-3613-7.ch005

Touloukian, C., Price, D., & Eller, K. H. (2024). Listening to and Learning from Teachers: An Ecological Perspective of Culturally Responsive Digital Pedagogies During a Historic Moment. *Teachers College Record*, *126*(9), 3–46. Scopus. https://doi.org/10.1177/01614681241298809

Ugwuoke, U., Okebukola, P., Emmanuel, E., Onowugbeda, F., & Onuorah, B. (2024). Fostering positive instruction of software development cycle through a culturally responsive pedagogy. *Journal of Educational Research*, *117*(6), 387–396. Scopus. https://doi.org/10.1080/00220671.2024.2426526

Yaqoob, S. S., & Sheikh, A. H. (2025). Unmasking the silent threat: Understanding cybercrimes targeting female students of Kashmir university—A mixed-method analysis. *Journal of Cybersecurity*, *11*(1). Scopus. https://doi.org/10.1093/cybsec/tyaf026

Zheng, H., Feng, Q., & Wang, G. (2025). From discourse to effectiveness: A communication studies perspective on college counselors' individual psychological counseling. *Acta Psychologica*, *261*. Scopus. https://doi.org/10.1016/j.actpsy.2025.105828