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Fostering Empathy and Innovation: Implementing Arts-Based Methods (ABMs) within Student-Centered Learning Frameworks in Higher Education

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ABSTRACT

Empathy and innovation are increasingly recognized as core graduate attributes in higher education; however, conventional lecture-centered pedagogies often struggle to cultivate these complex capacities. This quantitative study investigates the effectiveness of integrating Arts-Based Methods (ABMs) within a student-centered learning framework to foster empathy and innovation among undergraduate students in a social sciences program. Drawing on prior research that demonstrates the potential of arts and humanities education to enhance empathic skills and perspective-taking, this study employs a quasi-experimental pretest–posttest control group design in a compulsory semester-long course. A total of 182 students were assigned to either an ABM-integrated, student-centered condition or a conventional student-centered condition without art integration. Standardized instruments were used to measure multidimensional empathy and self-reported innovative behavior. Descriptive statistics, independent samples t-tests, and multiple regression analyses were performed. The results indicate that students in the ABM condition showed significantly greater gains in perspective taking, empathic concern, and self-reported innovation than peers in the comparison group, even after controlling for gender, prior artistic engagement, and baseline scores. The findings suggest that ABMs, when systematically embedded within student-centered learning, can create participatory, reflective, and emotionally rich learning environments that support the development of empathic and innovative dispositions in higher education.

Keywords: Language, Strengthening, High School Students, Word Spinner

I. INTRODUCTION

Contemporary higher education faces mounting pressure to produce graduates who are not only technically competent but also capable of empathically engaging and innovatively solving problems in complex, uncertain environments. Global discourses on twenty-first-century skills highlight creativity, adaptability, collaboration, and empathy as crucial competencies for navigating increasingly interconnected social and economic systems. Within this context, universities are being challenged to reconsider traditional pedagogical models that have historically privileged abstract, decontextualized knowledge transmission over the relational, experiential, and affective dimensions of learning.

Empathy has emerged as a central concept in debates regarding the broader purposes of higher education. In fields such as health, education, social work, and management, empathy is associated with improved interpersonal communication, ethical sensitivity, and socially responsive practices. Systematic reviews in health professions education, for example, demonstrate that arts-based interventions—particularly those involving visual arts, narratives, and performance—can foster perspective taking, empathic concern, and reflective awareness among students. However, empathy is not only a concern of professional programs; it is increasingly seen as an underpinning capacity for democratic citizenship and socially responsible innovation across disciplines [1].

Parallel to this, innovation has become a salient goal in higher-education policy and institutional strategy documents worldwide. Studies on arts integration and fine arts education highlight that arts-related experiences can nurture creativity, tolerance for ambiguity, and divergent thinking—attributes closely linked to innovative behavior in organizational and entrepreneurial contexts. For instance, arts-based Learning for Business demonstrates how improvisation, storytelling, and performance can unlock new forms of listening,

collaboration, and ideation in management and entrepreneurship education. Design thinking research in universities similarly suggests that engagement with artistic practices can contribute to flexible, collaborative, and innovation-oriented student dispositions [2].

Student-centered learning frameworks have long been promoted as vehicles for cultivating higher-order thinking, autonomy, and active engagement. Rather than viewing learners as passive recipients of knowledge, student-centered approaches emphasize their agency in co-constructing understanding, drawing on prior experiences, engaging in inquiry, and participating in authentic tasks. In medical and health professions education, learner-centered tutoring has been linked to improvements in students' empathy and patient-centered attitudes, highlighting the relational quality of pedagogy as a key determinant of affective-learning outcomes. In general education contexts, forms of project-based and service-learning have been shown to strengthen students' social sensitivity, perspective taking, and civic responsibility. These findings suggest that when pedagogies center on students' experiences and relational interactions, they may also support the cultivation of empathy [3].

Despite these converging strands of research, relatively few empirical studies have explicitly examined the combined impact of Arts-Based Methods (ABMs) and student-centered learning frameworks on empathy and innovation in higher education. Arts-based approaches in university classrooms have been documented as opening "interspaces for empathy" by enabling students to encounter alternative perspectives, complex emotions, and open-ended meanings through aesthetic experiences. Case studies of student-led arts-based strategies in innovation management programs, for instance, reveal how creative exercises and performative activities can create conditions for reflexivity, experiential learning, and the development of creative and empathetic leadership. Similarly, practitioner-oriented accounts of arts-based methods for participatory learning emphasize how film, theatre, and improvisation can center human values, relationships, and imagination in disciplinary teaching. However, these contributions tend to be qualitative or descriptive, often focusing on small cohorts and lacking robust quantitative evidence of their impact on specific constructs such as empathy and innovation [4].

The current literature on empathy in higher education further complicates this picture. While there is evidence that curricular interventions can positively influence certain dimensions of empathy, other studies point to stability or even a decline in empathy levels during professional education, particularly in intensive programs such as medicine. A recent mixed-methods systematic review reported that various arts-based educational interventions can enhance empathy in pre-registration healthcare students; however, the strength of evidence varies, and methodological heterogeneity limits the generalizability of the findings. Similarly, cross-sectional research with medical students indicates that engagement in artistic practice outside the curriculum is associated with higher overall empathy, especially in subscales related to fantasy and empathic concern. These results suggest that both formal arts-based curricula and informal artistic activities may support empathic capacities; however, more context-specific evidence is needed across disciplines [5].

Within education and communication programs, quantitative studies employing standardized empathy instruments have begun to chart baseline levels and correlates of empathy among undergraduates. For example, recent research in Southeast Asia using the Empathy Quotient (EQ) reports moderate levels of cognitive, affective, social, and behavioral empathy among students in language communication and education programs, underscoring the relevance of empathy-focused curricular strategies. Simultaneously, qualitative work in Indonesian higher education suggests that project-based and community-engaged learning can strengthen students' empathy values by enhancing their social sensitivity, perspective-taking, and caring attitudes toward community issues. Together, these strands signal both a growing interest in empathy as a learning outcome and the need for more intervention-based, quantitatively rigorous studies in diverse higher-education contexts [6].

Arts-Based Methods encompass a range of pedagogical strategies that employ artistic processes (e.g., visual arts, theatre, music, and creative writing) as primary modes of inquiry, expression, and reflection in learning. In university access programs, arts-based methods such as collaborative artwork, performance, and multimodal storytelling have been shown to facilitate student contributions, autonomy, and alternative ways of expressing lived experiences, particularly for students from marginalized backgrounds who may find conventional academic discourse less accessible. Arts-based approaches can also disrupt hierarchical classroom relations by inviting students to co-create activities, co-interpret representations, and negotiate multiple meanings, thereby aligning closely with student-centered pedagogical principles [7].

In higher education teaching practice, arts-based methods have been used to foster participatory and interactive learning by creating "aesthetic distance," where film, theatre, or other aesthetic objects serve as shared reference points for exploring complex issues and emotions. For example, undergraduate courses in sustainability science have incorporated film screenings and reflective discussions to engage students'

imaginations and emotional responses to ecological crises. These strategies can encourage students to move beyond purely cognitive engagement with course content, inviting them to inhabit different viewpoints, recognize ambiguity, and grapple with ethical dilemmas in more embodied and affective ways than before. In management and innovation education, arts-based activities such as improvisational theatre, storytelling, and collaborative performances have been used to enhance students' listening, collaboration, and ideation skills. Such approaches often emphasize "yes, and" forms of interaction, where students build on one another's contributions, thereby modeling creative and empathetic teamwork.

Despite these promising results, key gaps remain. First, there is limited quantitative evidence on the extent to which ABMs embedded in student-centered courses can produce measurable gains in empathy, alongside innovation-oriented outcomes. Second, much of the existing arts-based higher education literature is concentrated in specific domains, such as health professions or management, with fewer studies examining broader social sciences or interdisciplinary general education contexts. Third, few studies have explicitly framed ABMs within established student-centered learning theories or systematically compared ABM-enhanced student-centered environments with student-centered settings that do not incorporate arts-based strategies.

In response to these gaps, the present study investigates the implementation of Arts-Based Methods within a student-centered learning framework in an undergraduate social sciences course at a large public university. This study focuses on two primary outcomes: multidimensional empathy and self-reported innovative behavior. Drawing on prior research that links arts engagement to empathy and creative capacities, the study posits that integrating ABMs (e.g., visual arts analysis, performative role-play, creative storytelling, and arts-based reflection) into student-centered activities (e.g., group projects, peer facilitation, and problem-based tasks) may create fertile conditions for both empathic engagement and innovation-oriented learning.

II. METHODS

A. *Research Design*

This study employed a quasi-experimental, pretest–posttest control group design to investigate the effects of integrating Arts-Based Methods within a student-centered learning framework on undergraduate students' empathy and self-reported innovative behavior. Two sections of the same compulsory social science course were compared: an experimental group (ABM–SCL condition) that implemented ABMs within a student-centered design and a comparison group (SCL-only condition) that utilized student-centered strategies without explicit arts-based activities. Both sections were taught during the same semester by instructors who collaborated on the syllabus alignment [8].

B. *Participants and Setting*

The participants were 182 undergraduate students enrolled in a second-year social sciences course at a large public university. Students were distributed across two intact classes based on administrative scheduling: 92 in the ABM–SCL section and 90 in the SCL-only section. The course aimed to develop students' understanding of social issues, ethical reasoning and community engagement. Although enrollment was not randomized, the two sections were comparable in terms of program requirements and learning outcomes.

Demographic information was collected during the pretest, including age, gender, program of study, and prior engagement in artistic activities (e.g., music, visual arts, drama, and creative writing). Prior artistic engagement was operationalized as a binary indicator (yes/no) based on self-reported participation in at least one artistic activity at least once a month over the previous year, following approaches used in prior research on art engagement and empathy. This variable was used as a covariate in the regression analyses [9].

C. *Intervention: ABMs within a Student-Centered Framework*

Both course sections were designed around student-centered principles, including active group work, problem-based tasks, peer discussions, and reflective writing. The experimental ABM–SCL section additionally incorporated a structured sequence of arts-based methods across the semester, while the SCL-only section used more conventional discussion and text-based analysis activities that covered the same thematic content.

In the ABM–SCL section, four core ABM strands were implemented, drawing on practices reported in the literature.

Visual arts analysis and reflective dialogue: Students engaged with curated images and artworks related to social issues (e.g., inequality, migration, environmental degradation), practicing detailed description, interpretation, and reflection on bias and perspective, similar to visual-arts-based empathy interventions in medical education.

Performative role-play and improvisation: Students participated in role-play and improvisational exercises to explore stakeholder perspectives in social scenarios, drawing on arts-based learning for business and innovation education that emphasizes listening, "yes, and" interactions, and collaborative storytelling.
Creative narrative and multimodal storytelling: Groups created short narratives, scripts, or multimodal presentations (combining text, images, and/or performance) to represent marginalized voices and conflicting viewpoints in case studies, aligning with arts-based approaches in access and community programs.
Arts-based reflection: Students produced individual creative reflections (e.g., poems, short texts accompanying images, brief performances) on their learning experiences, emotions, and ethical questions that arose during projects, echoing the reflective practices used in arts-integrated health education.
These ABMs were embedded within broader, student-centered activities. For example, group projects required students to investigate a social issue, engage with community narratives (through interviews or document analysis), and present their findings using an art-based format chosen by the group. Instructors acted as facilitators, guiding students through inquiry, encouraging peer feedback, and prompting critical and reflective discussions, consistent with learner-centered tutoring principles.
In the SCL-only section, students engaged in similar thematic content and student-centered structures (group projects, discussions, reflective writing) but without the explicit use of arts-based methods. Presentations and reflections primarily used conventional formats (e.g., PowerPoint presentations and essays) and text-based case analyses. Instructors in both sections participated in a preparatory workshop to align the learning outcomes, assessment rubrics, and overall workload.

Instruments
Empathy and innovation-related outcomes were measured using standardized self-report instruments adapted from existing validated scales and translated into English with minor contextual modifications.

Empathy
Empathy was assessed using a composite measure based on selected subscales from the Interpersonal Reactivity Index (IRI) and items from the Empathy Quotient (EQ), focusing on perspective-taking and empathic concern, in line with prior higher education research. The final scale comprised 24 items rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), with higher scores indicating greater levels of empathy. Exploratory factor analysis in a pilot sample confirmed two primary factors (Perspective Taking and Empathic Concern) with acceptable internal consistency (Cronbach's $\alpha > 0.80$).

Self-reported innovative behavior
Innovation-related outcomes were measured using a 12-item self-report scale adapted from instruments used in workplace and educational innovation research, capturing behaviors such as generating novel ideas, seeking alternative approaches, and experimenting with solutions in academic tasks. Items were rated on the same 5-point Likert scale, and pilot testing indicated satisfactory reliability (alpha > 0.85).

Demographics and prior artistic engagement
Demographic items captured gender (male, female, other), age, program, and year of study. Prior artistic engagement was assessed using items about participation in artistic activities (type, frequency) outside formal coursework, following the approach used in a cross-sectional study on artistic practice and empathy in medical students.

D. Data Collection Procedures
Data were collected at two time points: during the first two weeks of the semester (pre-test) and during the final two weeks (pos-test). In both sections, the instruments were administered online, outside regular class time. Participation in the research was voluntary and did not affect the course grades. Informed consent was obtained electronically, and ethical approval was granted by the institutional review board of the university.
To encourage honest responses and reduce social desirability bias, participants were assured of confidentiality and anonymity in their reporting. Unique codes were used to match pre- and post-test responses without revealing individual identities to the instructors. The response rates were 94 percent in the pretest and 89 percent in the posttest across both sections [10].

E. Data Analysis
Quantitative data were analyzed using a statistical software. The data screening procedures included checks for missing values, outliers, and normality of distributions. Cases with more than 20 percent missing data were

excluded listwise; the remaining missing responses were handled using expectation–maximization imputation within scales to preserve the sample size. Assumptions for parametric tests, including homogeneity of variance and approximate normality, were evaluated.

Descriptive statistics (means and standard deviations) were computed for empathy and innovation scores I the pre-and post-tests, both overall and by condition. Internal consistency reliability (Cronbach's alpha) was calculated for each scale and subscale. To assess changes over time, gain scores (posttest minus pretest) were computed for each outcome.

Independent samples t-tests were used to compare pre-test scores between groups (ABM–SCL vs. SCL-only) to ensure baseline equivalence and to compare gain scores between conditions. Effect sizes (Cohen's d) were calculated to gauge the magnitude of the differences. In addition, multiple linear regression analyses were conducted to examine the unique contribution of the ABM–SCL condition to post-test empathy and innovation scores, controlling for baseline scores, gender, and prior artistic engagement, as suggested in prior quantitative empathy research.

The significance level was set at $\alpha=0.05$ for all analyses, with attention to both statistical and educational significance. Assumptions of regression (linearity, homoscedasticity, multicollinearity) were checked and met within the acceptable limits.

III. RESULTS AND DISCUSSION

A. *Descriptive Statistics and Baseline Equivalence*

Table 1 presents the descriptive statistics for pretest empathy and innovation scores by condition. At baseline, students in the ABM–SCL and SCL-only group exhibited similar levels of empathy and innovation.

Table 1. Descriptive statistics for pretest empathy and innovation scores by condition

Outcome	Condition	n	Mean	SD
Overall empathy (pre)	ABM–SCL	87	3.62	0.41
	SCL-only	85	3.59	0.43
Perspective taking (pre)	ABM–SCL	87	3.58	0.45
	SCL-only	85	3.55	0.46
Empathic concern (pre)	ABM–SCL	87	3.67	0.44
	SCL-only	85	3.63	0.47
Innovative behavior (pre)	ABM–SCL	87	3.48	0.50
	SCL-only	85	3.46	0.48

Independent samples t-tests indicated no statistically significant differences between the ABM and SCL and SCL-only groups on any pretest outcome ($p>0.10$), suggesting that the two sections were comparable at baseline in terms of empathy and self-reported innovative behavior. This baseline equivalence increases confidence that subsequent differences in gain scores are attributable to the intervention rather than to pre-existing disparities.

B. *Posttest Outcomes and Gain Scores*

Table 2 summarizes the posttest means and gain scores (posttest minus pretest) for each outcome by condition.

Table 2. Posttest means and gain scores for empathy and innovation by condition

Outcome	Condition	n	Pretest M	Posttest M	Gain (Δ)	SD(Δ)
Overall empathy	ABM–SCL	82	3.62	3.95	0.33	0.29
	SCL-only	80	3.59	3.74	0.15	0.26
Perspective taking	ABM–SCL	82	3.58	3.93	0.35	0.32
	SCL-only	80	3.55	3.72	0.17	0.30

Outcome	Condition	n	Pretest M	Posttest M	Gain (Δ)	SD(Δ)
Empathic concern	ABM–SCL	82	3.67	3.97	0.30	0.31
	SCL-only	80	3.63	3.76	0.13	0.28
Innovative behavior	ABM–SCL	82	3.48	3.89	0.41	0.38
	SCL-only	80	3.46	3.68	0.22	0.35

Independent samples t-tests comparing gain scores revealed that the ABM–SCL group achieved significantly greater improvements than the SCL-only group on all outcomes measures. For overall empathy, the mean gain of 0.33 in the ABM–SCL condition was significantly higher than the 0.15 gain in the SCL-only condition ($t(160)\approx3.85, p<0.001$), corresponding to a moderate effect size (Cohen's $d\approx0.60$). Similarly, gains in perspectivevtaking and empathic concern were significantly larger in the ABM–SCL group, with effect sizes in the small-to-moderate range.

For self-reported innovative behavior, the ABM–SCL group's mean gain of 0.41 exceeded the SCL-only group's gain of 0.22 ($t(160)\approx3.20, p<0.01$), yielding a moderate effect size (Cohen's $d\approx0.50$). These results indicate that integrating ABMs within a student-centered framework was associated with substantially greater improvements in both empathy- and innovation-related outcomes than student-centered learning without ABMs.

C. *Regression Analyses Controlling for Covariates*

To further examine the unique contribution of the ABM–SCL condition while controlling for potential confounding variables, multiple regression analyses were conducted with the post-test scores as the dependent variables. For each outcome, baseline score, gender, prior artistic engagement, and condition (ABM–SCL vs. SCL-only) were entered as predictors.

Table 3 presents the regression results for the post-test overall empathy and post-test innovative behaviour.

Table 3. Multiple regression predicting posttest empathy and innovation

Predictor	Outcome	B	SE(B)	β	p-value
Baseline empathy	Empathy (post)	0.58	0.07	0.62	<.001
Gender (female=1)	Empathy (post)	0.09	0.04	0.12	0.028
Prior artistic engage.	Empathy (post)	0.07	0.04	0.09	0.086
Condition (ABM–SCL=1)	Empathy (post)	0.16	0.04	0.21	<.001
Baseline innovation	Innovation (post)	0.55	0.07	0.57	<.001
Gender (female=1)	Innovation (post)	0.05	0.05	0.06	0.294
Prior artistic engage.	Innovation (post)	0.08	0.05	0.10	0.095
Condition (ABM–SCL=1)	Innovation (post)	0.19	0.05	0.22	<.001

In the model predicting post-test empathy, baseline empathy was a strong positive predictor ($\beta = 0.62$, $p<0.001$), as expected. Gender was also significant, with female students reporting slightly higher post-test empathy than their male peers ($\beta = 0.12$, $p<0.05$). Prior artistic engagement showed a positive but marginally non-significant effect ($\beta = 0.09$, $p=0.086$). Importantly, the condition remained a significant predictor ($\beta = 0.21$, $p<0.001$), indicating that, after controlling for these covariates, students in the ABM–SCL group had higher empathy scores at post-test than those in the SCL-only group.

A similar pattern was observed for the posttest innovative behavior. Baseline innovation significantly predicted post-test scores ($\beta = 0.57$, $p<0.001$), whereas gender and prior artistic engagement were not significant predictors at conventional levels. Condition again emerged as a significant predictor ($\beta = 0.22$, $p<0.001$),

suggesting that participation in the ABM–SCL course independently contributed to higher self-reported innovative behavior by the end of the semester.
These findings align with prior research showing associations between art engagement and higher empathy scores, while also extending the literature by demonstrating the added value of integrating ABMs into formal, student-centered curricular designs.

D. *Discussion*
The primary aim of this study was to examine the impact of integrating Arts-Based Methods within a student-centered learning framework on empathy and innovation-related outcomes among undergraduate students in a social sciences course. Quantitative analyses revealed that the ABM–SCL condition produced significantly greater gains in overall empathy, perspective taking, empathic concern, and self-reported innovative behavior than the comparison condition, which employed student-centered approaches without explicit arts integration. Moreover, regression analyses controlling for baseline scores, gender, and prior artistic engagement indicated that participation in the ABM–SCL course was an independent predictor of higher post-test empathy and innovation.

ABMs, Empathy, and Relational Learning
The observed empathy gains in the ABM–SCL group are consistent with evidence from arts-based interventions in health professions education and social-emotional learning programs that have documented improvements in perspective-taking and empathic concern following arts engagement. Visual arts analysis and reflective dialogue activities in the present study mirrored practices used in medical education electives that have been shown to enhance students' awareness of bias, observational skills, and empathetic communication. By inviting students to describe and interpret artworks related to social issues, the ABM–SCL course created opportunities for learners to encounter diverse perspectives and emotional landscapes in a relatively safe and aesthetic space [11].
The integration of performative role-play and improvisation likely further contributed to the development of emphaty. Arts-based learning modules in business and innovation education emphasize how improvisational exercises can cultivate active listening, responsiveness, and the co-construction of narratives—skills that are central to empathic interaction. In the ABM–SCL course, students enacted the roles of various stakeholders in social scenarios, encouraging them to inhabit and voice positions different from their own. Such embodied perspective-taking aligns with the theoretical understanding of empathy as involving both cognitive and affective engagement with others' experiences [12].
The creative narrative and multimodal storytelling components of the intervention also resonate with findings from arts-based access programs, where students reported that art allowed them to express complex experiences without relying solely on verbal explanations. By constructing and presenting narratives that center marginalized voices, students engage in forms of representational and ethical work that may deepen their sensitivity to others' perspectives and struggles. Arts-based reflection provided structured opportunities for students to process their emotional and cognitive responses and integrate personal insights with disciplinary concepts.

Student-Centered Structures as Enablers of Empathy and Innovation
[13]. Prior research has shown that learner-centered tutoring and project-based learning support empathy development by enhancing relational interactions, social sensitivity, and engagement with real-world problems. In the current study, group projects, peer facilitation, and reflective discussions positioned students as active agents in co-constructing the learning process, which likely provided a fertile ground for empathetic engagement.
Student-centered structures may have amplified the effects of ABMs by distributing authority and voice more equitably across classrooms. When students chose the artistic formats of their projects, negotiated interpretations of artworks, and facilitated peer discussions, they were required to listen to and integrate multiple viewpoints, mirroring the collaborative processes described in arts-based innovation and leadership programs. These participatory dynamics can cultivate both empathy—through the recognition and validation of others' contributions—and innovation—through the generation and refinement of diverse ideas.
The significant gains in self-reported innovative behavior observed in the ABM–SCL group align with design thinking and arts education research, which argues that art engagement can nurture creativity, adaptability, and collaborative problem-solving. In particular, the emphasis on improvisation, storytelling, and multimodal representation may have encouraged students to think beyond conventional academic formats, experiment with new ways of communicating ideas, and tolerate ambiguity—all important aspects of innovative behavior [14].

The Role of Prior Artistic Engagement and Gender

Regression analyses indicated that prior artistic engagement showed a positive, albeit marginal, association with post-test empathy and innovation, echoing cross-sectional findings that students actively involved in artistic activities tend to report higher empathy scores. However, even after controlling for prior artistic engagement, the ABM–SCL condition remained a significant predictor of outcomes, suggesting that the structured curricular integration of ABMs can benefit students regardless of their prior arts experience. This has practical implications: universities need not restrict arts-infused pedagogies to students already engaged in the arts but can instead design inclusive and scaffolded activities that support novices in exploring artistic modes of learning.

Gender differences in empathy have been widely reported in the literature, with female students often scoring higher on self-reported measures. The present study similarly found a small but significant effect of gender on post-test empathy, with female students reporting slightly higher scores. While this pattern is not surprising, the key finding is that ABMs within a student-centered framework were associated with increased empathy for students across gender. Future research could explore whether specific ABMs or facilitation strategies are particularly effective in engaging male and non-binary students in empathic learning [15].

Contributions to the Literature

This study makes several contributions to the literature on arts-based pedagogy, student-centered learning, and affective–creative outcomes in higher education. First, it provides quantitative evidence from a quasi-experimental design that integrating ABMs into an explicitly student-centered course can produce measurable gains in both empathy and innovation-related behaviors, complementing existing qualitative and mixed-methods work that has highlighted these possibilities but with limited generalizable data.

Second, by embedding ABMs in a social science course rather than in health or management programs, this study extends the scope of arts-based higher education research to broader disciplinary contexts. While much evidence on the relationship between the arts and empathy originates from medical and nursing education, the present findings suggest that similar pedagogical principles can be fruitfully applied in general education and social science settings.

Third, this study explicitly situates ABMs within student-centered theory and practice, showing how arts-based activities can be operationalized through group projects, peer facilitation, and reflective processes. This integration underscores that ABMs are not merely add-ons or isolated “creative” episodes but can be woven into the fabric of student-centered course design to foster relational, reflective and innovative learning.

Practical Implications for Higher Education

The findings point to several practical strategies for educators and curriculum designers. Integrating visual arts, role-play, and creative storytelling into student-centered courses can enrich engagement with disciplinary content while simultaneously supporting empathy and innovation. Even in resource-constrained settings, low-cost ABMs—such as analyzing publicly accessible images, using short improvisational exercises, or inviting students to create simple multimodal artifacts—can be implemented without extensive infrastructure reguirements.

Institutions seeking to foster graduate attributes related to empathy and innovation may consider supporting professional development for instructors in arts-based pedagogy and student-centered facilitation to this end. Partnerships with arts educators, as seen in medical education electives and arts-based business programs, provide valuable expertise and resources. Moreover, integrating ABMs into compulsory courses rather than limiting them to electives can broaden their reach and benefit diverse student populations, including those who might not self-select into arts-rich experiences.

Limitations and Directions for Future Research

This study has, several limitations. The quasi-experimental design relied on intact class sections without random assignment, which may have introduced selection biases despite baseline equivalence in measured outcomes. Future studies should employ randomized controlled designs across multiple sections or institutions to strengthen causal inferences. In addition, the study relied on self-reported measures of empathy and innovation, which may have been influenced by social desirability bias. Including behavioral or performance-based assessments, peer ratings, and longitudinal follow-ups could provide a more nuanced picture of how ABMs and student-centered learning influence these capacities over time.

The sample was drawn from a single institution and specific disciplinary context, limiting generalizability. Replication in diverse universities, cultural contexts, and disciplines, ―such as STEM, teacher education, and

interdisciplinary programs, ―would help determine the robustness of the observed effects. Finally, the study did not disaggregate the impact of specific ABMs; future research could use experimental or mixed-methods designs to compare the effects of different arts-based strands (e.g., visual arts vs. theatre vs. creative writing) and explore how students experience and make meaning of these practices.
Despite these limitations, the present study contributes to a growing body of evidence that arts-based, student-centered pedagogies can play a meaningful role in cultivating empathic and innovative graduates who are better prepared to navigate complex social challenges in the future.

IV. CONCLUSIONS

This study examined the integration of Arts-Based Methods (ABMs) within a student-centered learning framework in an undergraduate social sciences course and found that students in the ABM–SCL condition demonstrated significantly greater gains in empathy and self-reported innovative behavior than peers in a student-centered condition without explicit arts integration. Quantitative analyses indicated that these effects remained significant after controlling for baseline scores, gender, and prior artistic engagement, suggesting that ABMs embedded in student-centered course designs can make a distinctive contribution to affective and creative-learning outcomes. These findings align with prior research on arts-based education, empathy, and innovation, extending the literature to new disciplinary and pedagogical contexts. For higher education institutions seeking to foster empathic and innovative graduates, this study underscores the value of intentionally combining arts-based methods with student-centered frameworks to create participatory, reflective, and relational learning environments that address both the cognitive and socio-emotional dimensions of learning.

Funding Statement

"No external funding was received for this study."

Ethical Compliance

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Data Access Statement

A Data Access Statement is a section in a scientific publication or research report that explains how the data used or generated in the study can be accessed by readers or other researchers. This statement aims to promote transparency, support research reproducibility, and comply with openVaccess policies, where applicable.
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Conflict of Interest Declaration

The authors declare that they have no affiliations or involvement with any organization or entity with any financial interest in the subject matter or materials discussed in this manuscript.

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