Bridging Theory and Practice: Cognitive Dissonance as a Pedagogical Tool for Cultivating Inclusive Educators

Roberta Diamanti[1], María Laura Angelini[2], Isabel Torrijos[3]

Universidad Católica de Valencia 'San Vicente Mártir', Spain[1, 2, 3]

Abstract

Simulation-based learning is increasingly recognised as a transformative approach in teacher education, particularly for preparing educators to address the complexities and systemic inequities present in multicultural classrooms. This study investigates how the intentional incorporation of cognitive dissonance, psychological discomfort arising from confronting conflicting beliefs or values, within virtual simulations can serve as a powerful pedagogical tool. Using the "School of Valtance" simulation platform, pre-service teachers engaged in immersive, practice-oriented scenarios that mirrored real-world educational dilemmas, such as ethical decision-making, bias identification, and collaborative problem-solving in diverse classroom contexts. Traditional teacher education often struggles to bridge the gap between theoretical understanding and the realities of diverse educational environments. By exposing participants to challenging and sometimes conflicting perspectives within the simulation, the study aimed to cultivate critical consciousness, adaptive expertise, and a strong commitment to equity and inclusion. The research employed a sequential explanatory mixed-methods design, combining quantitative data from validated Likert-scale questionnaires with qualitative insights from reflective reports, direct observations, and debriefing sessions. The sample included 79 pre-service teachers from nine faculties of education across Europe, North America, Africa, and South America, ensuring a diverse and multicultural participant pool. Key findings highlight that structured cognitive dissonance in simulations significantly increased participants' awareness of implicit biases and structural barriers affecting marginalised students. Confronting dissonant perspectives prompted critical self-reflection and a willingness to challenge prior beliefs. Iterative engagement with complex scenarios strengthened participants' adaptive expertise, including skills in dynamic differentiation, trauma-informed instruction, and culturally responsive pedagogy. The study also introduced the "Reflection-Action Cycle" model, mapping how simulated dissonance translates into real-world equity praxis. Overall, the research demonstrates that simulation-based learning, when grounded in cognitive dissonance theory and transformative learning, can bridge theory and practice in teacher education. It equips future educators with the critical skills, dispositions, and advocacy capacity necessary for leading inclusive and socially just classrooms, offering a scalable and impactful strategy for equity-centered teacher preparation.

Keywords: *cognitive dissonance pedagogy; immersive learning; culturally sustaining practices; simulation-based teacher training; transformative learning; virtual exchange.*

1. Introduction

The contemporary landscape of teacher education is shaped by the growing recognition that educators must be prepared not only as subject-matter experts but also as agents of equity and inclusion in increasingly diverse classrooms. Traditional teacher preparation programmes often struggle to bridge the persistent gap between theoretical knowledge and the practical demands of real-world educational settings, especially when it comes to dealing with complex social and cultural dynamics (Abdal-Haqq, 1998; Fosnot, 2013).

Simulation-based pedagogies have emerged as transformative tools in this context, offering immersive, authentic environments where pre-service teachers can engage with challenging scenarios, confront their own assumptions, and develop essential professional competencies (Bogost, 2007; Crookall, 2010; Jones, 2013). The "School of Valtance" simulation, for example, was designed to address the urgent need for teacher training approaches that foreground equity and inclusion by

placing participants in multifaceted, ethically charged situations that require negotiation, collaboration, and critical decision-making.

A central feature of this approach is the deliberate use of cognitive dissonance—the psychological discomfort that arises when individuals are exposed to conflicting beliefs, values, or perspectives (Festinger, 1957; Harmon-Jones & Mills, 2019). When carefully calibrated, cognitive dissonance within simulation environments acts as a catalyst for metacognitive development, prompting pre-service teachers to reflect deeply, question their assumptions, and construct new, more inclusive understandings of teaching and learning (Cooper & Fazio, 1984; Kriz, 2010).

Despite the promise of simulation-based learning, there remains a need for more research on how structured experiences of cognitive dissonance in these environments specifically impact pre-service teachers' growth in equity, inclusion, and intercultural communication competencies (Dieker et al., 2014; Ledger et al., 2022). This study addresses this gap by investigating the mechanisms through which simulation-based interventions, grounded in cognitive dissonance theory and transformative learning, prepare future educators to lead socially just and inclusive classrooms-

2. Theoretical Framework

This study is anchored in an integrative theoretical framework that draws from constructivism, cognitive dissonance theory, social cognitive theory, and transformative learning theory to explain how simulation-based teacher training can foster metacognitive growth and advance equity and inclusion in education.

At its core, constructivism posits that learners actively build knowledge through engagement with meaningful experiences, especially those that challenge their existing beliefs and understandings (Abdal-Haqq, 1998; Fosnot, 2013; Piaget, 1977; Vygotsky, 1978). In the context of simulation-based teacher education, such as the "School of Valtance," participants are immersed in complex, authentic scenarios that mirror the multifaceted realities of contemporary classrooms. These scenarios compel pre-service teachers to negotiate, collaborate, and reflect on their actions and assumptions, fostering deeper insights into the social, cultural, and ethical dimensions of educational practice (Jones, 2013; Crookall, 2010).

A central mechanism driving learning in these simulations is cognitive dissonance—the psychological discomfort experienced when individuals are confronted with conflicting beliefs, values, or perspectives (Festinger, 1957; Harmon-Jones & Mills, 2019). When pre-service teachers encounter controversial scenarios or opposing viewpoints within the simulation, they are prompted to critically examine and, if necessary, revise their prior assumptions about equity, inclusion, and social justice (Cooper & Fazio, 1984). The literature suggests that the effectiveness of cognitive dissonance as a catalyst for learning depends on its intensity: moderate levels of dissonance are optimal, as they encourage metacognitive reflection and adaptive expertise without overwhelming or alienating learners (Stone & Cooper, 2001; Harmon-Jones, 2019). Conversely, insufficient dissonance may result in superficial learning, while excessive dissonance can provoke defensiveness or disengagement.

Social cognitive theory further enriches this framework by emphasizing the role of self-efficacy and agency in teacher development (Granziera & Perera, 2019). Simulation-based environments offer opportunities for pre-service teachers to practice handling ambiguity, ethical dilemmas, and intercultural communication, thereby enhancing their confidence and capacity to act as agents of change in diverse educational settings.

Finally, transformative learning theory underscores the importance of structured reflection and dialogue in supporting the shift from surface-level understanding to deep, actionable change (Mezirow, 1991). Within the simulation, guided debriefings, peer discussions, and reflective journaling help participants process their dissonant experiences, explore alternative perspectives, and translate new insights into professional praxis (Álvarez, 2023; Kriz, 2010; Crookall, 2010).

For cognitive dissonance to serve as a productive force in teacher education, several conditions must be met: the learning environment must be psychologically safe, scenarios must be perceived as relevant and authentic, and opportunities for scaffolded reflection must be embedded throughout the experience (Carrera et al., 2016; Ledger et al., 2022). When these conditions are present, simulation-based interventions can drive metacognitive development, foster critical awareness, and empower future educators to lead inclusive and socially just classrooms.

3. Methodology

The methodology employed a sequential explanatory mixed-methods design to comprehensively investigate the impact of simulation-based learning on pre-service teachers.

3.1 Quantitative Study

Quantitative data were collected through validated a Likert-scale questionnaire to measure participants' self-reported growth in key areas, including equity, inclusion, and intercultural communication competencies. The instrument was constructed to assess two primary domains: equity and inclusion, and intercultural communication. Questionnaire items were systematically developed following an extensive review of scholarly literature pertaining to equity, inclusion, intercultural communication, and simulation-based learning, ensuring alignment with the study's research questions and theoretical framework. To enhance content validity, a panel of experts in teacher education, simulation design, and assessment evaluated the questionnaire for clarity, relevance, and comprehensiveness, providing critical feedback for refinement.
Construct validity was examined using factor analysis, which confirmed a two-factor structure corresponding to the intended domains. All items demonstrated strong loadings on their respective factors. Internal consistency reliability was evaluated using Cronbach's alpha, yielding coefficients of 0.84 for the overall instrument, 0.81 for the equity and inclusion subscale, and 0.86 for the intercultural communication subscale, indicating robust reliability.
These validation procedures demonstrate that the instrument reliably and accurately captures participants' perceptions of the Sim+VE project's impact on competencies related to equity, inclusion, and intercultural communication.
Sample Items by Category

- *Equity and Inclusion*: Items assessed accessibility for pre-service teachers with financial or personal constraints, the inclusivity of the learning environment, and the extent to which the simulation fostered awareness of equity and social justice issues.
- *Intercultural Communication*: Items evaluated the perceived value of international learning experiences, enhancement of intercultural communication skills, preparation for diverse classrooms, opportunities for cross-cultural interaction, promotion of global understanding, ease of technology use, authenticity of scenarios, and the development of a global mindset.

Additionally, the simulation was designed to expose participants to scenarios that challenge existing beliefs, thereby inducing cognitive dissonance—a process intended to stimulate reflection and self-examination.

3.2 Qualitative Study

Complementing the quantitative data, qualitative insights were gathered through reflective reports, direct observations of simulation sessions, and debriefing sessions. These qualitative sources offered rich, descriptive data on participants' metacognitive development, evolving professional identities, and nuanced understandings of the challenges and opportunities in fostering equitable and inclusive learning environments. The qualitative data analysis was conducted using Dedoose version 9.2.005 (SocioCultural Research Consultants, LLC, 2023). This software helped identify the most common and dominant themes within the data, which informed further analysis and interpretation.

3.3 Participants

The study sample comprised 79 pre-service teachers representing nine faculties of education across four continents, strategically selected to ensure diverse perspectives and facilitate robust intercultural exchange. This diverse cohort allowed for a more comprehensive understanding of how simulation-based learning, incorporating elements of cognitive dissonance, can be effectively implemented across various cultural and educational contexts.

3.4 The "School of Valtance" Simulation

The "School of Valtance" simulation was designed to immerse pre-service teachers in multifaceted educational roles—including administrators, teachers, parents, and community members—each with distinct backgrounds and perspectives. Throughout the simulation, participants were tasked with collaboratively engaging with a series of complex, real-world dilemmas central to contemporary schooling. These included decisions about resource allocation for students with special needs,

debates over the integration and ethical implications of artificial intelligence in teaching, and the negotiation of institutional policies related to co-teaching, internationalization, and equity. Each scenario was intentionally crafted to present participants with conflicting viewpoints and competing interests, thereby inducing cognitive dissonance. For example, participants might encounter a situation in which one stakeholder advocates for full inclusion of special needs students in mainstream classrooms, while another supports specialised programs—requiring the team to debate, negotiate, and justify their decisions. Similarly, discussions around AI integration would force participants to weigh the benefits of personalised learning against concerns about data privacy and algorithmic bias. The simulation was conducted in a psychologically safe environment, with facilitators ensuring that all voices were heard and that participants felt supported in expressing and reflecting upon their views. This supportive context was essential, as research underscores the importance of psychological safety in enabling cognitive dissonance to serve as a catalyst for growth rather than defensiveness or disengagement (Carrera et al., 2016; Crookall, 2010). Through this carefully structured approach, the simulation not only challenged participants' assumptions but also fostered critical reflection, adaptive expertise, and a deeper commitment to equity and inclusion in education.

3.5 Declarations

All procedures involving human participants were conducted in accordance with the ethical standards of the British Educational Research Association (BERA, 2024). Informed consent was obtained from all participants, who were explicitly informed that no foreseeable risks or discomforts were associated with participation in this research. At no point were participants' names or any other identifying information collected or disclosed, ensuring strict confidentiality and anonymity.

3.6 Data Availability

Raw data were generated at Universidad Católica de Valencia. Derived data supporting the findings of this study are available from the co-author MLA and IGALA Research Group on request. However, restrictions apply to the availability of these data, which were used under licence for the current study and are not publicly available.
Competing interests: The authors declare that there are no competing interests.

4. Key Findings

The integration of structured cognitive dissonance within the "School of Valtance" simulation yielded several significant outcomes for pre-service teachers. First and foremost, participants reported a marked increase in their awareness of implicit biases and the structural barriers that marginalised students often face. By being exposed to scenarios that deliberately challenged their preconceptions, participants were compelled to confront the limits of their own perspectives, which heightened their sensitivity to issues of equity and inclusion. This heightened awareness was closely linked to the process of critical self-reflection. The distribution of responses on the 5-point Likert scale is notably skewed toward the higher end, reflecting overwhelmingly positive perceptions of Equity & Inclusiveness within the Sim+VE project. Specifically, 64.6% of participants selected the highest rating (5), indicating strong agreement with the relevant statements, while an additional 29.1% chose a rating of 4, signifying general agreement. In contrast, only 6.3% of responses fell within the lower categories (2 or 3), suggesting that neutral or negative perceptions were minimal.
This pronounced concentration of responses in the top two categories (4 and 5) is consistent with the descriptive statistics, which reveal a mean score of 4.56 and a median of 5 for this variable. Furthermore, the low standard deviation of 0.69 highlights the limited variability in responses, reinforcing the consistency and strength of these positive perceptions.
Overall, the strong positive skew in the data underscores the Sim+VE project's effectiveness in promoting Equity & Inclusiveness. These findings suggest that the project successfully supports the preparation of future educators for inclusive learning environments and advances social justice in teacher education.
The simulation's conflicting viewpoints and ethically charged dilemmas prompted participants to deeply examine—and in many cases, revise—their prior beliefs about fairness, diversity, and the role of educators in fostering inclusive environments. Many participants described a transformative shift in their thinking, moving from a theoretical understanding of social justice to a more nuanced, actionable commitment to equity in their future practice.

In addition to fostering critical reflection, the iterative engagement with complex, real-world scenarios significantly contributed to the development of adaptive expertise. Participants reported greater confidence and proficiency in applying dynamic differentiation, trauma-informed instruction, and culturally responsive pedagogy. These skills were honed through repeated cycles of negotiation, problem-solving, and collaborative decision-making within the simulation, mirroring the unpredictable and multifaceted nature of actual classroom environments. Both quantitative and qualitative data indicated not only an increase in participants' commitment to equity and social justice but also a notable improvement in their ability to manage intercultural communication challenges. This was evidenced by participants' willingness to engage with diverse perspectives, mediate conflicts, and advocate for inclusive policies.

A key conceptual contribution of the study was the introduction of the "Reflection-Action Cycle" model, which maps how simulated experiences of cognitive dissonance translate into real-world equity praxis. This model emphasises an iterative process: participants first encounter dissonant perspectives in the simulation, then engage in critical reflection and dialogue, subsequently revise their assumptions and develop new strategies, and finally apply these insights to their actual teaching practice. The cycle underscores that meaningful change is not the result of a single experience, but rather of ongoing, supported engagement with challenging ideas and situations.

The findings from this study underscore the importance of deliberately integrating cognitive dissonance as a pedagogical strategy within simulation-based teacher training. To maximise the benefits, scenarios should be carefully calibrated to induce moderate, manageable discomfort—enough to prompt reflection and learning, but not so much as to cause defensiveness or disengagement. Facilitators play a crucial role in this process by providing structured opportunities for guided debriefing and peer discussion, which help participants process their experiences and translate discomfort into growth. Finally, the authenticity and contextual relevance of scenarios are essential; when participants perceive the dilemmas as reflective of real-world challenges, their engagement deepens and the transfer of learning to professional practice is enhanced. Collectively, these findings highlight that simulation-based learning, grounded in cognitive dissonance and transformative reflection, is a powerful approach for preparing educators to lead inclusive and socially just classrooms.

5. Conclusions

This study demonstrates that simulation-based teacher training, when intentionally designed to incorporate cognitive dissonance, can serve as a transformative pedagogical tool for cultivating inclusive, equity-oriented educators. Through the "School of Valtance" simulation, pre-service teachers engaged in authentic, multifaceted scenarios that challenged their assumptions, heightened their awareness of implicit biases, and deepened their understanding of the structural barriers faced by marginalised students. The findings reveal that structured experiences of cognitive dissonance not only prompt critical self-reflection but also foster adaptive expertise in dynamic differentiation, trauma-informed instruction, and culturally responsive pedagogy. Participants reported a significant increase in their commitment to equity and social justice, as well as greater confidence in addressing intercultural communication challenges. The introduction of the "Reflection-Action Cycle" model further elucidates how simulated dissonance, followed by guided reflection and dialogue, translates into actionable equity praxis in real-world educational contexts.

Despite these promising results, several limitations should be acknowledged. First, the study's reliance on self-reported data and reflective accounts may introduce bias, as participants might overestimate their growth or report socially desirable responses. Second, while the sample was diverse in terms of geography and background, the voluntary nature of participation outside Spain may have attracted individuals already predisposed toward equity and inclusion, potentially limiting the generalizability of the findings. Third, the study focused on short-term outcomes; longitudinal research is needed to determine the persistence of these changes in actual classroom practice over time. Additionally, while the simulation scenarios were carefully designed to induce moderate dissonance, individual tolerance for discomfort may vary, and some participants may have experienced either insufficient or excessive challenge.

Future research should address these limitations by employing longitudinal designs that track participants into their teaching careers to assess the sustained impact of simulation-based interventions on professional practice and student outcomes. Further studies could also explore the optimal calibration of cognitive dissonance for diverse learner profiles, as well as the role of facilitator training in creating psychologically safe environments that maximise growth. Expanding the research

to include in-service teachers and administrators could provide insights into the scalability and adaptability of this approach across different educational contexts. Finally, integrating digital analytics and observational data could complement self-reported measures and provide a more nuanced understanding of participants' learning processes.

In summary, this research advances the field of teacher education by illustrating how simulation-based learning, grounded in cognitive dissonance theory and transformative reflection, bridges the gap between theory and practice. It offers a scalable and impactful strategy for preparing educators who are not only knowledgeable but also critically conscious, adaptive, and committed to leading inclusive and socially just classrooms.

Acknowledgment

This research was supported by Congresist Funding-UCV. The authors gratefully acknowledge this support, which made the study and its dissemination possible.

REFERENCES

[1] Abdal-Haqq, I. (1998). *Constructivism in Teacher Education: Considerations for Those Who Would Link Practice to Theory*. ERIC Digest.

[2] Álvarez, M. N. (2023). Aprendizaje visible y consciente a través de "lesson study" y "debriefing" en la formación inicial docente (Doctoral dissertation). https://riucv.ucv.es/handle/20.500.12466/2833

[3] Bogost, I. (2007). *Persuasive games* (Vol. 5). MIT Press.

[4] Carrera, A. M., Naweed, A., Leigh, E., Crea, T., Krynski, B., Heveldt, K., & Khetia, S. (2016). Constructing safe containers for effective learning: Vignettes of breakdown in psychological safety during simulated scenarios. In *Intersections in Simulation and Gaming* (pp. 15–29): Springer.

[5] Cooper, J., & Fazio, R. H. (1984). A new look at dissonance theory. In *Advances in experimental social psychology* (Vol. 17, pp. 229-266). Academic Press.

[6] Crookall, D., & Oxford, R. L. (1990). *Simulation, Gaming, and Language Learning*. Newbury House Publishers.

[7] Crookall, D. (2010). Serious games, debriefing, and simulation/gaming as a discipline. *Simulation & gaming,* 41(6), 898-920.

[8] de Wijse-van Heeswijk, M. (2021). Ethics and the simulation facilitator: Taking your professional role seriously. *Simulation & Gaming*, 52(3), 312-332.

[9] Dieker, L. A., Rodriguez, J. A., Lignugaris/Kraft, B., Hynes, M. C., & Hughes, C. E. (2014). The potential of simulated environments in teacher education: Current and future possibilities. *Teacher Education and Special Education*, 37(1), 21-33.

[10] Dieckmann, P. (2020). The unexpected and the non-fitting - considering the edges of simulation as social practice. *Advances in simulation* (London, England), 5, 2. doi:10.1186/s41077- 020-0120.

[11] Duke, R., & Greenblat, C. (1981). *Principles and practices of gaming simulation.* Sage.

[12] Fosnot, C. T. (2013). *Constructivism: Theory, perspectives, and practice*. Teachers College Press.

[13] Granziera, H., & Perera, H. N. (2019). Relations among teachers' self-efficacy beliefs, engagement, and work satisfaction: A social cognitive view. *Contemporary Educational Psychology*, 58, 75-84.

[14] Greenblat, C. (1988). *Designing Games and Simulations. An Illustrated Handbook*. Sage Publications

[15] Feldman, M. (1995). Import/export email business simulation. In M. Warschauer (ed.): pp. 363-364.

[16] Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press. doi, 10, 9781503620766.

[17] Goetz, J. P., & Le Compte, M. D. (1988). *Ethnography and qualitative design of educational research.* Morata

[18] Harmon-Jones, E., & Mills, J. (2019). An introduction to cognitive dissonance theory and an overview of current perspectives on the theory. In E. Harmon-Jones (Ed.), *Cognitive dissonance: Reexamining a pivotal theory in psychology* (2nd ed., pp. 3–24). American Psychological Association. https://doi.org/10.1037/0000135-001

[19] Harris, K. S. (2005). Teachers' Perceptions of Modular Technology Education Laboratories. *Journal of Industrial Teacher Education*, *42*(4), 52-71.
[20] Harteveld, C., Thij, E. T., & Copier, M. (2011). Design for engaging experience and social interaction. *Simulation & Gaming,* 42(5), 590-595.
[21] Jones, K. (1998). What are We Talking about? *Simulation & Gaming*, 29(3), 314–320. doi:10.1177/104687819829300
[22] Jones, K. (2013). Simulations: *A Handbook for Teachers and Trainers*. Routledge.
[23] Kasperski, R., Levin, O., & Hemi, M. E. (2025). Systematic Literature Review of Simulation-Based Learning for Developing Teacher SEL. *Education Sciences*, 15(2), 129.
[24] Kato, F. (2010). How We Think and Talk About Facilitation. *Simulation & Gaming*, 41(5), 694–704
[25] Krahenbuhl, K. S. (2016). Student-centered education and constructivism: Challenges, concerns, and clarity for teachers. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 89(3), 97-105.
[26] Kriz, W. C. (2010). A Systemic-Constructivist Approach to the Facilitation and Debriefing of Simulations and Games. *Simulation & Gaming,* 41(5), 663–680. doi:10.1177/104687810831986.
[27] Kriz, W. C. (2017). Types of gaming simulation applications. *Simulation & Gaming*, 48(1), 3-7.
[28] Kriz, W. C. (2020). Gaming in the Time of COVID-19. *Simulation & Gaming*, 51(4), 403-410.
[29] Levin, O., Frei-Landau, R., Flavian, H., & Miller, E. C. (2023). Creating authenticity in simulation-based learning scenarios in teacher education. *European Journal of Teacher Education,* 1-22.
[30] Ledger, S., Burgess, M., Rappa, N., Power, B., Wong, K. W., Teo, T., & Hilliard, B. (2022). Simulation platforms in initial teacher education: Past practice informing future potentiality. *Computers & Education*, 178, 104385.