

Article

Reconceptualizing Mediation in Simulation-Based Learning: Instructional Teams as the Locus of Mediation

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Abstract

This study examines how instructional teams are enacted in clinical simulation-based learning (SBL) in teacher education and how their functioning is shaped by organizational conditions. While prior research has focused on discrete components of SBL, such as facilitation or acting, less is known about how these elements are coordinated. The study adopts a qualitative embedded case study design, drawing on data from 19 simulation center directors, including written reflections, semi-structured interviews, and focus groups. Data were analyzed thematically from a cognitive perspective on meaning-making. The findings address two interrelated dimensions. First, instructional teams were enacted through three core processes: coordinated alignment of roles, relational coordination and trust, and distributed mediation of learning. Across cases, learning was not attributed to individual roles but to the extent to which facilitation and acting were mutually responsive and sustained across interaction and interpretation. Second, the functioning of instructional teams was shaped by organizational conditions, including stability of collaboration, opportunities for joint professional development, and ongoing managerial mediation, which enabled or constrained the coordination of roles over time. The study contributes to a system-level conceptualization of mediation in teacher education, positioning instructional teams as the primary unit through which professional learning is produced in SBL.

Keywords: simulation-based learning; teacher education; instructional teams; mediation; professional learning

1. Introduction

Professional learning in teacher education is widely understood as a mediated process that unfolds through structured engagement in practice. Sociocultural and practice-based perspectives have shown that learning develops through guided participation, in which novices interpret and act within complex situations with the support of more knowledgeable others (Vygotsky, 1978; Grossman et al., 2009; Kavanagh & Danielson, 2020). However, these approaches have largely conceptualized mediation in relation to individual roles, such as mentors or facilitators. Consequently, mediation has been examined primarily as an individual function rather than as a coordinated accomplishment emerging across multiple professional roles.

At the same time, research on collaboration and distributed expertise suggests that professional learning is rarely produced through individual action alone but depends on the coordination of multiple roles and forms of expertise (Spillane, 2005; Vangrieken et al.,



Academic Editor: Federico Corni

Received: 8 May 2026

Revised: 5 July 2026

Accepted: 6 July 2026

Published: 8 July 2026

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2015). Yet, how mediation is coordinated across roles and sustained within institutional contexts remains underexamined.

Simulation-based learning (SBL) provides a particularly useful context for addressing this gap. As a pedagogical environment, SBL deliberately structures interaction and reflection while relying on the coordinated work of facilitators, professional actors, and participants. In this sense, clinical simulation can be understood as a critical case that makes visible a broader phenomenon in teacher education, in which professional learning is mediated through the coordination of roles, teams, and organizational conditions, rather than through the actions of individual practitioners alone.

Within this context, the present study conceptualizes SBL through the lens of instructional teams, focusing on the coordinated work through which learning is produced across interaction, interpretation, and organizational structuring. Empirically, the study examines instructional teams in clinical simulation through data collected from 19 simulation center directors, whose responsibilities include overseeing the design, coordination, and organizational support of SBL within their institutions. It addresses two research questions: (1) How are instructional teams enacted in clinical simulation environments? (2) What organizational conditions support or constrain their functioning? By positioning instructional teams as the central unit of analysis, the study contributes to a more integrated understanding of how professional learning is produced across roles, interactions, and organizational conditions in teacher education. In doing so, the study advances a reconceptualization of mediation as a collective accomplishment emerging through the coordination of professional roles across interactional and organizational contexts.

2. Theoretical Background

2.1. Expert Mediation in Professional Learning

Learning in professional contexts is widely understood as a mediated process that unfolds through structured participation in practice rather than independent performance. Within sociocultural theory, Vygotsky conceptualized learning as occurring within the Zone of Proximal Development (ZPD), where learners extend their capabilities through interaction with a more knowledgeable other (Vygotsky, 1978). In this view, development is not a direct outcome of experience but emerges through participation in activity that is shaped, supported, and interpreted within interaction. In the present study, mediation is understood in a Vygotskian sociocultural sense as the process through which learning and professional meaning-making are organized through culturally and socially situated means of action, including signs, tools, concepts, activities, and social interaction (Vygotsky, 1978; John-Steiner & Mahn, 1996).

Subsequent work has elaborated on how such mediation operates in practice. Wood et al. (1976) describe scaffolding as the contingent structuring of tasks that enables learners to participate beyond their current level of competence. Similarly, Brown et al. (1989) argue that learning is inseparable from the activity, context, and culture in which it develops, emphasizing that knowledge is constructed through participation in situated practice. These perspectives conceptualize mediation as an ongoing shaping of attention, interpretation, and action within situated activity.

Within teacher education, this perspective has been further developed in research on practice-based approaches, which emphasize the need for structured engagement in professional practice under expert mediation (Loewenberg Ball & Forzani, 2009; Grossman et al., 2009). This work shows that learning to teach depends on how novices are supported in noticing, interpreting, and responding to complex classroom situations, particularly through mediated participation in practice (Kavanagh & Danielson, 2020). Recent work

continues to underscore the centrality of expert mediation in these processes, particularly in enabling novices to make sense of practice in context (Zeichner, 2023).

This body of work conceptualizes mediation as a constitutive condition for professional learning, shaping both action and meaning-making within practice. However, while these perspectives clarify how mediation operates in general learning environments, less attention has been given to how it is structured and sustained within SBL contexts.

2.2. Simulation-Based Learning as a Mediated Environment

Simulation-based learning (SBL) is increasingly conceptualized as a pedagogical environment in which professional learning is mediated through the deliberate structuring of participation, interaction, and reflection. Rather than offering simple exposure to practice, SBL creates conditions in which complex professional situations can be represented, enacted, examined, and reinterpreted. Building on this sociocultural understanding, mediation in SBL can be understood as taking shape through the pedagogical configuration of the simulation itself: the scenario, the assigned professional roles, the interaction with simulated others, the facilitator-led debriefing, and the shared language through which experience is interpreted and connected to professional knowledge (Levin, 2026; Dittrich et al., 2022). This understanding aligns with practice-based teacher education, where learning depends on opportunities to approximate practice, receive feedback, and make professional reasoning visible (Angelini, 2026; Levin et al., 2024; Gat et al., 2026; Nichol et al., 2025).

Within teacher education, SBL takes several forms, including human-based clinical simulations, role-play, computer-based simulations, and mixed-reality environments. These modalities differ in the kind of mediation they provide. Digital and branching simulations structure decision-making through scenario design, choice pathways, and embedded feedback (Dexter et al., 2022); mixed-reality simulations combine avatar-based interaction (Dieker et al., 2023); and clinical simulations rely on live interaction with professional actors who respond contingently to participants' actions (B. Dotger & Chandler-Olcott, 2022).

Across these modalities, the core pedagogical contribution of SBL lies in its capacity to reduce the risks of real-world practice while preserving enough authenticity, complexity, and emotional involvement to support professional learning (Chernikova et al., 2020). These variations indicate that mediation in SBL is not uniform but modality-dependent, shaping not only how learners act but also the conditions under which they interpret and respond to practice (Kaplan et al., 2025).

The clinical model of simulation provides a particularly clear example of this mediated structure. Originating in healthcare education and adapted to teacher education, clinical simulation is typically built around a structured scenario, a participant, a professional actor conceptualized as a standardized individual, and a trained facilitator, followed by guided debriefing (Cil & Dotger, 2017; Levin, 2024). In this model, professional actors portray standardized characters based on detailed role descriptions that specify the character's background, goals, and behavioral tendencies (B. Dotger & Chandler-Olcott, 2022). While the scenario provides a common framework, actors are expected to respond authentically to participants' actions as the interaction unfolds (Levin et al., 2025). Following the simulation, they contribute feedback from the perspective of the character portrayed.

Recent work on actor-based simulations has shown that trained actors contribute not only to realism but also to learners' emotional engagement, perspective-taking, confidence, self-knowledge, and feedback processes (Antila et al., 2024). These findings highlight that the actor functions as an active pedagogical agent within the simulation environment.

In teacher education, this clinical structure mediates learning across phases. The interaction phase places participants in uncertain, emotionally charged professional encounters

that require immediate response (Levi-Keren et al., 2024). The debriefing phase then creates a reflective space in which participants revisit the encounter, articulate tacit reasoning, examine alternatives, and connect experience to professional knowledge (Aagaard et al., 2025; Muchnik-Rozanov & Levin, 2024). Recent studies further show that this reflective work is not only cognitive. It also involves emotional and linguistic processing: preservice teachers' reflective discourse after SBL can reveal different levels of emotional awareness, with higher emotional awareness associated with richer emotional language and more complex discourse organization (Muchnik-Rozanov & Weinberger, 2026). Thus, language functions not only as a medium for reflection but also as a mechanism through which emotional experience is organized and transformed into professional understanding.

At the same time, mediation in SBL cannot be reduced to debriefing or reflection alone. Research on teacher behavior in simulated conflict situations shows that participants' enacted responses may diverge from their declared values. Yablon et al. (2024), for example, found that teachers reported a preference for morality in conflict situations, yet their observed behavior in simulations emphasized agency and control. This discrepancy underscores that mediation in SBL operates not only through reflective discourse but also through the affective and regulatory conditions that shape action in real time.

Learners' experience of the simulation environment also shapes what can be learned from it. Cross-domain research comparing medical and teacher education indicates that perceived authenticity and involvement are positively related to performance, whereas extraneous cognitive load is negatively related to diagnostic accuracy (Chernikova et al., 2024). These findings suggest that design features of simulation environments directly shape the cognitive and affective conditions under which professional action becomes possible: authenticity must be sufficient to support meaningful engagement but not so overwhelming that it interferes with interpretation and response (Levin et al., 2025). This balance is especially important in interaction-based simulations, where learners must process information, manage emotion, and respond in real time.

SBL can therefore be understood as a mediated professional learning environment. Within this environment, learning is shaped through the interplay of design, interaction, emotional engagement, and reflective discourse. However, existing research has largely examined these elements in isolation. Studies on debriefing have focused on reflective learning processes (Kasperski & Hemi, 2026); research on simulation experience has examined authenticity, involvement, and cognitive load in relation to performance (Chernikova et al., 2024); and studies of simulated interaction have examined the role of professional actors in interactional processes that shape authenticity and perspective-taking (Levin, 2022). What remains underexamined is how these dimensions are coordinated in practice, particularly through the interaction between the roles that constitute clinical simulation. As a result, the processes through which mediation is sustained across the simulation process remain insufficiently theorized.

2.3. Instructional Teams in Simulation-Based Learning

The concept of instructional teams provides a useful lens for examining the coordinated work through which SBL is enacted. In educational research, instructional teams refer to collaborative professional arrangements in which educators jointly organize, interpret, and support instruction (Ronfeldt et al., 2015). Applied to SBL, this lens foregrounds not individual roles but the patterned coordination through which learning is made possible during and after simulated encounters.

A key contribution of this perspective is to shift attention from role description to relational coordination as an interactional accomplishment. Studies of teamwork show that effective coordination depends on shared goals, shared knowledge, and mutual respect that

enable rapid, situation-sensitive alignment under time pressure (Hoffer Gittell, 2002). In SBL, such coordination is enacted between facilitator and actor in real time, before, during, and after the interaction. This aligns with work on team cognition, which conceptualizes coordination as the development of shared mental models that allow distributed actors to anticipate and adapt to one another's actions (Salas et al., 2005; Cooke et al., 2013).

A second implication concerns the design–enactment link. Research on teacher collaboration indicates that collective work around instruction improves learning when teams engage not only in planning but also in the joint interpretation of practice and student responses (Vangrieken et al., 2015; Admiraal et al., 2021). In SBL, this link is intensified: design decisions (scenario parameters, cues, pacing) are continuously recalibrated through enactment (actor responses, facilitator prompts) and taken up in debriefing. Instructional teams thus operate as design-in-action systems, where planning, interaction, and interpretation are iteratively aligned rather than sequentially executed.

Third, the instructional team perspective makes visible the distributed nature of expertise in simulation. Research on distributed expertise shows that complex tasks are accomplished through the complementary contributions of actors with different forms of knowledge (Spillane, 2005; Penuel et al., 2015). In SBL, facilitation expertise (structuring reflection), interactional expertise (actor responsiveness), and situated decision-making (participant action) are interdependent. Learning quality depends on how these forms of expertise are synchronized in real time to sustain a coherent learning trajectory.

Finally, this perspective clarifies what is at stake when coordination breaks down. Work on interdependence in teams demonstrates that misalignment in goals or timing leads to performance losses even when individual competence is high (Decuyper et al., 2010). In SBL, analogous misalignments between the actor's interactional moves and the facilitator's learning focus, or between scenario design and debriefing uptake, can fragment the learning experience. Conceptualizing SBL through instructional teams therefore directs analytic attention to how alignment is produced and maintained across phases of the simulation process.

Building on sociocultural perspectives on mediated action, this study conceptualizes instructional teams in clinical SBL as a coordinated system of practice in which learning is produced through the alignment of design, interaction, and interpretation across roles. From this perspective, the present study examines whether and how mediation in clinical SBL extends beyond a single instructional role or moment of guidance and is organized through the interdependence of pedagogical tools, professional roles, interactional processes, and the organizational conditions that sustain them.

However, existing research has not sufficiently examined how such instructional teams operate within simulation environments. While prior studies have examined collaboration in educational settings (Ronfeldt et al., 2015) and coordination in team-based work (Hoffer Gittell, 2002), less is known about how coordination is enacted in simulation contexts, where roles are temporally distributed and interactionally interdependent. In particular, the processes through which facilitators and actors jointly calibrate interaction, interpretation, and reflection remain underexplored.

Addressing this gap, the current study examines instructional teams in clinical SBL from the perspective of simulation center directors, focusing on how instructional teams are enacted and how their functioning is shaped by organizational conditions.

3. Materials and Methods

3.1. Research Design

This study employed a qualitative research design to examine how instructional teams are enacted and supported within SBL environments. This approach was selected to capture

the complexity of professional practices as they unfold within institutional settings and to explore how these practices are interpreted by those responsible for organizing and sustaining them. The study was designed as a single-case, embedded case study (Yin, 2009), with clinical SBL in teacher education constituting the case. Individual simulation centers served as embedded units through which the broader phenomenon was examined. This design enabled the exploration of how mediation was enacted across multiple institutional settings while maintaining focus on a common pedagogical context. Rather than comparing centers, the analysis sought to identify recurring patterns and variations in the enactment of instructional teams across embedded units, thereby contributing to an understanding of the broader case.

3.2. Research Context

The study was conducted within a simulation-based teacher education program operating across 29 academic institutions. This program utilizes clinical simulation, in which preservice and in-service teacher-education learners engage in structured interactions with professional actors, followed by guided debriefing sessions led by trained facilitators. Facilitators are experienced educators and certified group facilitators who guide the simulation process and lead the reflective debriefing, supporting participants in examining their decisions, considering alternative responses, and connecting the experience to broader professional practice. In addition to their prior training in group facilitation, they undergo dedicated preparation for SBL facilitation, including training in creating psychologically safe learning environments, leading reflective debriefing, and supporting participants' reflection and learning processes. Professional actors are recruited from the performing arts and receive dedicated preparation for SBL work, including training in scenario enactment, educational objectives, and character-based feedback practices. Together, these roles constitute the core instructional structure through which simulations are enacted.

Clinical simulation in this context draws on models originally developed in healthcare education and adapted for teacher education (B. H. Dotger, 2010). It is characterized by clearly differentiated roles, structured scenarios, and an emphasis on reflective dialogue as a central process through which professional learning is developed. The clinical simulation setting was selected as a critical case, as it relies on ongoing collaboration among multiple professional roles and therefore provides a particularly suitable context for examining how instructional teams are enacted and supported within organizational settings. Within this context, simulation center directors occupy a key organizational position: they oversee the conditions under which facilitators and actors are recruited, prepared, coordinated, and supported over time. For this reason, their accounts provide a leadership-level perspective on how instructional teams are developed and sustained within SBL practice.

3.3. Participants

The research participants were 19 directors of simulation centers in teacher education institutions. A purposive sampling strategy was used to recruit directors with responsibility for the design, implementation, and management of SBL in their institutions. This sampling strategy was consistent with the study's focus on the organizational and leadership conditions through which instructional teams are developed, coordinated, and sustained. The sample reflected diversity across socio-cultural contexts, institutional settings, and levels of managerial experience. Participants represented three socio-cultural sectors: Jewish (secular and religious; $n = 12$), Jewish ultra-Orthodox ($n = 5$), and Arab ($n = 2$). In terms of gender, 15 participants were women (84%) and 4 were men (16%). Participants' experience in managing simulation centers ranged from 1 to 9 years ($M = 3.1$, $SD = 2.0$), capturing

both newly established centers and more experienced leadership contexts. An overview of participants' characteristics is presented in Table 1.

Table 1. Overview of participants' characteristics.

Characteristic	Category	Value
Socio-cultural sector	Jewish (secular and religious)	12 (63%)
	Jewish Ultra-Orthodox	5 (26%)
	Arab	2 (11%)
Gender	Women	15 (84%)
	Men	4 (16%)
Experience (years)	Range	1–9
	Mean (SD)	3.1 (2.0)

3.4. Data Collection

Data were collected from three complementary sources: written reflection, semi-structured interviews, and focus groups with simulation center directors. This combination was designed to capture directors' individual reflections, their practice-based managerial accounts, and collective dialogue around the development and support of instructional teams in clinical simulation.

First, written reflections were collected from the 19 participating simulation center directors through an online form. The reflection prompts invited participants to describe the roles of the facilitator and actor, the relationship between them, and the managerial opportunities and challenges involved in developing this professional configuration within their centers.

Second, semi-structured interviews were conducted with 17 of the 19 participants. Each interview lasted approximately one hour and was conducted by an experienced interviewer who was not part of the research team, in order to support openness and reduce potential response bias. The interviews were audio-recorded and transcribed. The interview protocol included 12 open-ended questions designed to deepen issues raised in the reflections and to examine how directors' perceptions were translated into managerial practices and professional-development processes.

Third, two focus groups were conducted, each with five simulation center directors representing the different socio-cultural sectors included in the study. Each focus group lasted between 60 and 90 min and was facilitated by the same professional interviewer who conducted the individual interviews. The focus groups addressed the roles of facilitators and actors, ways of developing the instructional team, and broader organizational aspects of training and professional development. The discussions were audio-recorded and transcribed.

Together, these three data sources enabled triangulation across individual, managerial, and collective–systemic perspectives.

3.5. Data Analysis

Data were analyzed using a thematic analysis approach, informed by a cognitive perspective on meaning-making (Shkedi, 2010). The analysis focused on how simulation center directors interpret and articulate the functioning of instructional teams, as well as the organizational conditions shaping their development.

All data sources were read repeatedly to identify initial patterns related to role coordination, relationships, and organizational context. Initial codes were generated inductively across the dataset and applied across reflections, interviews, and focus groups. Coding was conducted collaboratively by the research team. Codes and interpretations were compared

and discussed, and discrepancies were resolved through dialogue, contributing to the consistency and credibility of the analysis.

Codes were then grouped into broader themes, refined through constant comparison across participants and data sources. Themes were organized in alignment with the research questions, resulting in two analytic domains: (1) the enactment of instructional teams in practice and (2) the organizational conditions shaping their functioning. This process allowed for an integrated interpretation of relational and systemic dimensions of SBL. To illustrate this analytic process, Table 2 presents an example of the coding procedure for Theme 1.

Table 2. An illustrative example of the qualitative coding process for Theme 1.

Theme	Sub-Theme	Description	Representative Quote
The Enactment of Instructional Teams in Clinical Simulation	Coordinated enactment of roles	Real-time integration of facilitator and actor roles through continuous, responsive alignment of interaction and learning focus	“It’s not that each one comes and does their part separately. What really matters is how they work together in the moment. The facilitator is looking at the learning, but the actor is inside the interaction. . . If there isn’t that connection, the whole thing feels fragmented.” (Katherin, interview)
	Relational coordination and trust	Familiarity and trust enable implicit coordination, flexibility, and reduced reliance on formal structure	“Over time, you develop a kind of trust that allows you to take risks together. You can move away from the planned structure because you know the other person will catch you and continue from there.” (Alex, focus group)
	Distributed mediation of learning	Learning emerges across roles and phases, linking interaction with its interpretation in debriefing	“Learning does not begin only in the debriefing. It already happens during the simulation. The actor is not only playing a role—they are guiding the situation and creating the learning moments.” (Jordan, reflection)

Trustworthiness was supported through the use of multiple data sources, including written reflections, interviews, and focus groups, allowing for triangulation across individual and collective perspectives. In addition, the collaborative coding process enabled ongoing comparison and refinement of interpretations. Regular discussions among the researchers supported consistency in coding and strengthened the credibility of the findings. Finally, the analysis was grounded in participants’ accounts while attending to recurring patterns across the dataset, supporting a coherent and well-substantiated interpretation of the phenomenon.

3.6. Ethics

The study was conducted in accordance with institutional ethical guidelines for research involving human participants. Ethical approval was granted by the institutional ethics committee (Approval No. INS2304). All participants were informed about the purpose of the study and provided informed consent prior to participation. Participation was voluntary, and participants were assured that they could withdraw at any stage without consequence. To ensure confidentiality, all identifying details were removed from the data, and findings are reported in a manner that prevents the identification of individuals or institutions.

4. Results

The analysis examines how SBL is enacted through instructional teams in clinical simulation and how these teams are shaped by organizational conditions within simulation centers. Across data sources, directors consistently positioned the instructional team as a central unit of practice in SBL.

4.1. *The Enactment of Instructional Teams in Clinical Simulation*

The analysis identified three interrelated themes that characterize how instructional teams are enacted in SBL: (1) coordinated enactment of roles, (2) relational coordination and trust, and (3) distributed mediation of learning. These themes reflect a shift from viewing facilitation and acting as separate functions toward understanding them as interdependent practices that shape both interaction and learning.

4.1.1. Coordinated Enactment of Roles

Across participants' accounts, SBL was described as dependent on the coordinated work of facilitators and actors. Directors emphasized that the quality of the simulation emerges from the ongoing coordination between roles, particularly in how they jointly shape both the interaction and the learning focus:

"It's not that each one comes and does their part separately. What really matters is how they work together in the moment. The facilitator is looking at the learning, but the actor is inside the interaction, and they have to constantly respond to each other. If there isn't that connection, the whole thing feels fragmented." (Katherin, interview)

This account reflects a clear departure from a segmented view of roles toward a relational understanding of practice. The concern that "the whole thing feels fragmented" when coordination is lacking highlights not only the importance of coordination but also its vulnerability. Participants described meaningful learning as contingent upon the successful alignment of roles, suggesting that breakdowns in coordination may weaken the coherence through which learning is supported.

Facilitators' attention to learning and actors' immersion in interaction function as complementary orientations that must be continuously integrated. Participants further described role boundaries as flexible and responsive to the unfolding interaction. Their work was characterized by ongoing adjustment, with each role adapting to the direction and intensity of the interaction:

"There is a formal definition of roles, but in practice it shifts all the time. Sometimes the actor takes the lead because of what is happening with the participant, and the facilitator follows that and builds on it. In other moments, the facilitator redirects, and the actor adjusts immediately. It's a continuous movement that depends on what emerges in the room." (Participant 7, reflection)

The description illustrates the dynamic nature of role enactment in SBL. Instructional teams operate through real-time coordination, where responsiveness to participants takes precedence over fixed role boundaries. Participants framed this flexibility as professional sensitivity. Such flexibility supports both authenticity and clarity of the learning focus.

At the same time, participants emphasized that flexibility did not eliminate the need for clear role differentiation: "There were times when facilitators said that the actor became confused for a moment and took on the facilitator's role. In such cases, we held a joint conversation to reposition each role." (Participant 12, reflection). This account suggests that responsiveness and adaptability were valued insofar as they remained anchored in a shared understanding of professional boundaries.

4.1.2. Relational Coordination and Trust

Beyond functional coordination, participants emphasized the relational dimension of instructional teams as a central condition for effective SBL. Trust, familiarity, and shared understanding were described as enabling a level of coordination that could not be achieved through role definition alone:

“When the facilitator and the actor really know each other, something else happens in the simulation. They don’t have to explain every move. There is a kind of mutual understanding that allows them to respond in the moment, even to unexpected situations.” (Daniel, focus group)

This perspective illustrates how familiarity supports a more immediate and responsive form of coordination. It reflects shared interpretive frames that allow team members to remain aligned as interaction evolves and is sustained through relational attunement developed over time.

Participants also described how their absence shapes interaction: “When they don’t know each other well yet, they rely much more on the structure. It becomes more cautious, less flexible.” (Lina, interview). This contrast shows that relational familiarity shapes responsiveness in the simulation. When shared understanding is limited, coordination follows predefined structures more closely, reducing the team’s capacity to respond flexibly to emerging situations. Trust therefore appears as a condition that shapes how instructional teams manage uncertainty in practice.

Relational coordination thus functions as an enabling condition for instructional teams, shaping not only how roles are enacted but also how learning unfolds within the simulation.

4.1.3. Distributed Mediation of Learning

Participants consistently described SBL as a process in which the locus of learning extends beyond any single role and unfolds across the interaction and its subsequent interpretation. Learning was described as emerging across roles and moments within the simulation:

“The learning doesn’t happen only because of what the facilitator says in the debriefing. It already begins in the interaction itself. The actor is not just ‘playing a role’—they are responding, pushing, sometimes even challenging the participant in ways that create the learning moment. The facilitator then helps to make sense of it, but it starts there.” (Sofia, interview)

This account reflects an understanding of learning as unfolding across interactional moments and their subsequent interpretation. Interaction and debriefing form a continuous learning process. The actor’s responsiveness is described as shaping the conditions for learning, while the facilitator supports interpretation and reflection.

Participants further emphasized the need to connect interaction with its subsequent interpretation:

“If the actor and the facilitator are not aligned, the learning can get lost. The actor might create something very powerful in the interaction, but if it’s not picked up and developed, it doesn’t become learning. It needs both.” (David, focus group)

This observation highlights when interaction becomes learning. Moments of insight or tension that emerge during the interaction require subsequent framing and reflection in order to be integrated into participants’ understanding. Learning, therefore, is not attached to a specific role but is co-constructed through the sequencing of interaction and its interpretation over time.

Participants also described occasions in which facilitators and actors differed in their interpretations of what constituted effective simulation practice:

“There was once an actor who came to me and said that she felt a particular facilitator was looking for more performance, more drama in the acting. The scenario was already well-written, but the facilitator would ask, ‘Why didn’t you say it more like this?’ and the actor felt that it was no longer authentic. I tried to understand what was behind it, and eventually we had to talk about what was important for us as a simulation center.” (Clara, interview)

Resolving such situations required explicit discussion regarding the principles guiding the simulation. Such accounts suggest that coordination within instructional teams involves not only alignment but also the negotiation of competing professional judgments regarding authenticity, performance, and educational purpose.

In this sense, mediation in SBL is distributed across roles and phases, with each contributing to different aspects of the learning process. Instructional teams function as the locus through which experience is shaped, interpreted, and transformed into professional understanding.

4.2. *Organizational Conditions Shaping Instructional Teams*

Extending the analysis of how instructional teams are enacted in SBL, this section addresses the second research question by examining the organizational conditions that shape their development and functioning. Instructional teams were described as emerging within institutional arrangements that enable or constrain their work. Three interrelated themes were identified: (1) stability and continuity of collaboration, (2) professional development and shared language, and (3) organizational structuring and managerial mediation.

4.2.1. *Stability and Continuity of Collaboration*

Participants emphasized stability as a condition shaping team development over time. Collaboration depended on sustained working relationships:

“You can’t expect this kind of coordination to happen if people work together once or twice. It develops over time. When the same facilitator and actor work together repeatedly, they begin to build something shared—not just familiarity, but a way of working.” (Emma, interview)

This account points to stability as enabling the formation of shared practices. Repeated collaboration was described as allowing teams to move beyond initial coordination toward a more integrated mode of working, in which expectations, timing, and responses become aligned through experience.

Participants also noted that stability is not always easily achieved within institutional settings:

“In practice, we often have to rotate people, and that affects the team. Every time you bring in someone new, you start again. It’s not that the work isn’t good, but it’s different; it takes time to rebuild that coordination.” (Michael, focus group)

This contrast highlights the tension between organizational constraints and the conditions required for sustained collaboration. While rotation was sometimes necessary, it was described as interrupting the continuity through which instructional teams develop their shared practices. Participants thus portrayed team coordination as an ongoing organizational accomplishment that requires continual rebuilding when collaborative relationships are disrupted.

In this vein, stability functions as a structuring condition that supports the development of instructional teams over time. It shapes not only the efficiency of coordination but also the extent to which teams are able to sustain and deepen their work within SBL.

4.2.2. Professional Development and Shared Language

Participants emphasized the role of professional development in shaping instructional teams as a structured organizational practice. Directors described deliberate efforts to create opportunities for facilitators and actors to develop a shared understanding of simulation pedagogy:

“It’s not enough that each one is good in their role. If they don’t develop together, they don’t think in the same way about the simulation. We invest in joint training because that’s where a common understanding begins to form.” (Sara, interview)

This highlights the role of joint training in establishing a shared pedagogical orientation. Participants described how training processes create a common frame for interpreting situations, guiding decisions during both the interaction and the debriefing. Such shared language was seen as essential for aligning expectations and enabling coordinated action.

Participants further distinguished between role-specific training and joint training, emphasizing that the latter plays a unique role in shaping instructional teams:

“You can train facilitators and actors separately, but something different happens when they train together. They start to see the same moments in similar ways, and that changes how they work in the simulation.” (Daniel, focus group)

Joint training was described as enabling teams to develop shared reference points, allowing for more coherent responses to complex situations.

At the same time, participants indicated that such processes require organizational commitment. Without dedicated time and resources, opportunities for joint development were limited, constraining the extent to which a shared language could be established. As a result, the coherence attributed to instructional teams was described not as an inherent feature of collaboration, but as an organizational achievement that depends on sustained investment. Professional development thus functions as an organizational condition that shapes how instructional teams are formed, supported, and maintained within SBL.

4.2.3. Organizational Structuring and Managerial Mediation

Instructional teams were shaped by ongoing organizational structuring and managerial decisions. They positioned their role as actively mediating the conditions under which instructional teams operate:

“It doesn’t happen on its own. If you don’t build it intentionally—who works with whom, how much time they have to prepare, what kind of support they receive—it won’t develop in the way you want. These are decisions that have to be made at the organizational level.” (Leah, interview)

This highlights the extent to which instructional teams are produced through deliberate organizational arrangements. Decisions regarding team composition, time allocation, and preparation were described as directly shaping how collaboration unfolds in practice. Participants further emphasized that these decisions were rarely neutral. Organizational priorities influenced which forms of collaboration could be sustained, which professional-development opportunities were supported, and how resources were distributed across teams. Instructional teams were thus understood as dependent on structures that are designed and maintained by the organization, rather than emerging solely from the interaction between roles.

Participants also emphasized the role of managerial mediation in sustaining these structures over time:

“You have to keep working at it. It’s not enough to define a structure once. You need to follow what is happening in the sessions, talk to the facilitators and the actors, adjust things when needed. Otherwise, it slowly weakens.” (Omar, focus group)

This perspective points to management as an ongoing process of monitoring and adjustment. Organizational structuring was not described as static but as requiring continuous attention in order to remain effective. Directors framed their role as maintaining alignment between institutional constraints and pedagogical intentions.

Participants further described situations in which directors became actively involved in addressing difficulties within instructional teams: “When it concerns the acting itself, it is relatively easy; but when it concerns the interaction between them, it is harder for them to open it up without hurting each other and while maintaining a good relationship. Then it is my place to enter the picture.” (Participant 18, reflection). Such accounts position managerial mediation not only as a structural function but also as an interpersonal process through which tensions within instructional teams are identified, negotiated, and addressed.

However, participants also described operating within constraints that limited their ability to fully support instructional teams. Resource limitations, scheduling demands, and institutional expectations were identified as shaping what could be implemented in practice:

“There are things we know would improve the work, like giving teams more time together or keeping them stable, but we don’t always have that flexibility. We are constantly balancing between what we want to do and what is possible.” (Nadia, interview)

This underscores the tension between desired practices and organizational realities. Participants repeatedly described situations in which pedagogical priorities competed with institutional demands, requiring ongoing negotiation regarding resources, staffing, and scheduling. Instructional teams were thus situated within a broader institutional context that both enables and constrains their development, highlighting the role of organizational power and decision-making in shaping what forms of coordination become possible in practice. Together, these findings suggest that managerial mediation was enacted through the ongoing organization of the conditions under which instructional teams operated. Directors described their role not only in responding to emerging challenges but also in sustaining the organizational foundations that enabled collaborative work within instructional teams. Managerial mediation therefore functions as a key organizing principle through which instructional teams are shaped, sustained, and negotiated within SBL.

5. Discussion

The discussion is organized around the two research questions. First, it considers how instructional teams are enacted in clinical simulation environments. Second, it examines the organizational conditions that support or constrain their functioning. The final section draws these findings together to consider their broader implications for understanding mediation in SBL and teacher education.

5.1. Enacting Instructional Teams in Clinical SBL

In relation to the first research question, the findings show that instructional teams are enacted through the continuous alignment of facilitator and actor roles across interaction and interpretation. Accounts of SBL in teacher education often describe learning as emerging from guided reflection and the support of expert facilitators. However, this framing

tends to treat these elements as functionally distinct, assigning significance to instructional moves taken in isolation. The findings of the present study refine this view. Across participants' accounts, the effectiveness of SBL did not hinge on the actions of facilitators or actors independently but on the extent to which their work was continuously aligned within unfolding interaction. When such alignment was achieved, interactional moments were sustained and developed into learning; when it was not, situations were described as fragmenting or losing their learning potential. These observations extend existing sociocultural accounts of mediation by suggesting that, in SBL, mediation is best understood not as individual guidance but as an accomplishment of coordinated professional practice. In this sense, the locus of mediation shifts from individual actors to collective professional practice. In this respect, the clinical simulation context examined here not only illuminates processes specific to SBL but also offers analytic leverage for understanding a broader phenomenon in teacher education: how professional learning is mediated through coordinated work across roles.

This view calls for a reconsideration of how mediation is understood in teacher education. While sociocultural and practice-based perspectives have been instrumental in conceptualizing mediation as guided participation in practice (Vygotsky, 1978; Grossman et al., 2009), they tend to anchor it in the actions of a more knowledgeable other. The present findings reconfigure this emphasis by relocating mediation from individual guidance to coordinated action in practice. In simulation, mediation does not appear to be located in the expertise of a particular role but in the ongoing alignment between roles as interaction unfolds.

Rather than extending existing descriptions of facilitators and actors as separate contributors (Hemi et al., 2025; Levin, 2022), the findings suggest that their role in shaping learning emerges through their interdependence. Thus, coordination is not merely a condition that supports learning but a constitutive process through which learning is produced. From this perspective, instructional teams do not simply facilitate professional learning; they provide the relational infrastructure through which professional learning is organized, interpreted, and sustained. In this sense, mediation is less a property of individual action and more a feature of coordinated professional practice. Within this perspective, instructional teams are not merely a structural arrangement within simulation centers but the primary unit through which mediation is enacted and sustained in practice.

Examining how coordination operates in practice further clarifies how learning is produced in SBL. Learning, from this perspective, does not reside within simulation events themselves. Instead, learning value emerges through processes of collective interpretation and uptake. This helps explain why moments described as powerful or challenging during the interaction were also seen as fragile: without alignment within instructional teams, such moments could dissipate without contributing to learning. In this respect, the findings complicate accounts of SBL that emphasize discrete phases, particularly the distinction between interaction within the simulation and debriefing, as separate sites of learning (B. Dotger & Chandler-Olcott, 2022).

While prior research has highlighted the role of structured reflection in making practice visible (Grossman et al., 2009; Kavanagh & Danielson, 2020), the present findings suggest that the learning potential of interaction depends on how it is continuously connected to subsequent interpretation. More specifically, learning emerges when interaction and interpretation are not treated as separate phases but as interdependent processes coordinated by the instructional team. This perspective also refines broader discussions of the multiple contributors to SBL environments, such as scenario design, which has been shown to shape the conditions of participation (Angelini et al., 2026; Linder & Weissblueth, 2024). Rather than locating their influence primarily at the level of design, the findings redirect

attention to the real-time coordination through which interactional events are transformed into learning.

Although facilitators and actors contribute in different ways to the simulation process, these contributions become consequential for learning only when they are coordinated within a shared process of action and interpretation. Learning, in this sense, is not tied to a specific phase or role but emerges through the coordinated linking of interaction and interpretation over the course of the SBL process.

5.2. Organizational Conditions for Sustaining Instructional Teams

Extending this analysis beyond the level of interaction addresses the second research question and highlights that the coordination through which learning is produced is also shaped by organizational conditions. The findings suggest that coordination is not solely an interactional accomplishment but also an organizational achievement. The capacity of instructional teams to function as mediating structures depends on conditions that support continuity, shared development, and sustained alignment over time. Thus, instructional teams cannot be understood apart from the institutional contexts in which their collaboration is organized.

The findings also point to a distinction between mediation of learning and managerial mediation. While mediation of learning operates through the coordinated work of facilitators and actors in shaping learning processes, managerial mediation functions at a different level. Rather than directly influencing learning interactions, it involves creating, maintaining, and adjusting the organizational conditions that enable instructional teams to work in coordinated ways. In this sense, managerial mediation supports the conditions through which mediation of learning can occur. Taken together, these findings support a system-level conceptualization of mediation in SBL, as captured in Figure 1.

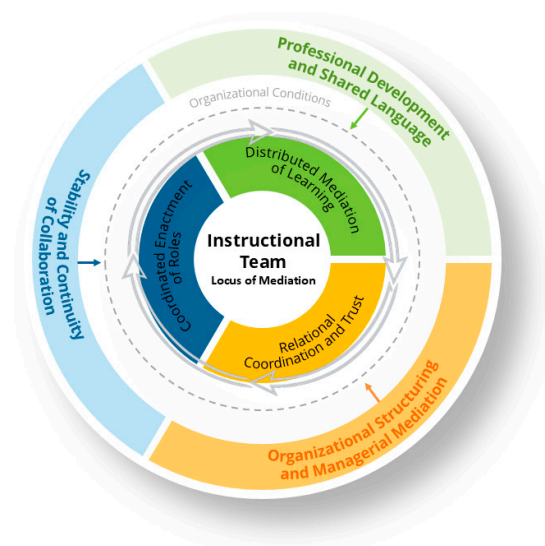


Figure 1. Instructional teams as the locus of mediation in simulation-based learning.

A system-level conceptualization derived from the study findings. The model positions instructional teams as the locus of mediation and depicts the relationship between the interactional processes through which mediation is enacted and the organizational conditions that shape and sustain these processes over time.

This perspective extends existing discussions of collaboration and distributed expertise in teacher education, which have emphasized the value of joint work and shared responsibility (Spillane, 2005; Vangrieken et al., 2015). While such accounts have typically focused on collaboration as a feature of professional communities or instructional design,

the present findings suggest that, in SBL, coordination is actively produced through organizational structuring and ongoing managerial mediation. Instructional teams, therefore, are not simply enacted in practice but are constituted through the conditions that enable their continuity, development, and alignment. This underscores their role as an organizationally produced condition for learning. It is particularly important in simulation centers, where learning quality depends on how roles, preparation time, training structures, and managerial decisions are configured to support their joint work (Elendu et al., 2024). This reframing positions coordination as both an interactional and an organizational phenomenon, linking the micro-dynamics of SBL practice with the broader institutional processes that sustain it.

5.3. Toward a System-Level Understanding of Mediation in SBL and Teacher Education

Taken together, the findings related to the two research questions suggest that mediation in clinical SBL is both interactionally enacted and organizationally sustained. An important question arising from these findings concerns how instructional teams may be configured in emerging simulation modalities. While the present study examined human-based clinical SBL involving facilitators, actors, and center directors, mixed-reality and AI-supported simulations may involve alternative configurations of roles through which learning is organized and mediated. Future research is therefore needed to examine whether and how the concept of instructional teams can be extended to these evolving simulation environments.

Although these findings are grounded in the context of simulation, they point to a broader way of understanding professional learning in teacher education. Practice-based approaches have emphasized the importance of approximations of practice, guided participation, and structured reflection (Grossman et al., 2009; Kavanagh & Danielson, 2020). The present study suggests that these elements remain insufficiently captured when treated as discrete components of instructional design. Instead, the findings suggest that professional learning may be understood less as participation in discrete learning structures and more as participation in coordinated systems of practice. This shift foregrounds the relational and organizational processes through which learning opportunities are produced, sustained, and interpreted. This perspective has implications for other settings in teacher education, including mentoring, co-teaching, and school-based practicum, where learning is similarly situated in collaborative practice and shaped through joint professional activity (Zeichner, 2023; Admiraal et al., 2021).

From this perspective, strengthening teacher education may depend on designing conditions that enable coordinated professional work. Attention to how roles are paired, how shared understanding is developed, and how interaction is linked to subsequent interpretation may be as consequential as the design of tasks or reflective activities themselves. In this vein, the contribution of SBL environments lies not only in their capacity to approximate practice but in making the coordinated processes through which professional learning is accomplished visible.

The current findings call for a reconceptualization of mediation in SBL in teacher education. Rather than locating mediation in the actions of individual experts or in discrete interactional moments, the findings demonstrate that it is constituted through the coordinated alignment of roles as interaction unfolds and is sustained through the organizational conditions that enable such alignment over time. Thus, mediation is not delivered but produced, emerging through the dynamic interplay between facilitation, acting, and institutional arrangements that organize their joint work. Instructional teams are therefore positioned not merely as a structural feature of simulation design but as the primary analytic unit through which mediation can be understood. In this way, the study advances a system-level account of professional learning, showing how learning

is produced through coordinated systems of practice within SBL and, potentially, across teacher education settings more broadly.

6. Conclusions

This study examined two interrelated questions: how instructional teams are enacted in clinical SBL and what organizational conditions support or constrain their functioning. In relation to the first question, the findings show that instructional teams are enacted through coordinated role alignment, relational trust, and distributed mediation of learning across interaction and interpretation. In relation to the second question, the findings show that such teams are supported or constrained by conditions of continuity, joint professional development, shared language, organizational structuring, and ongoing managerial mediation. Taken together, these findings advance a system-level understanding of mediation in SBL by demonstrating that professional learning is not primarily the outcome of individual instructional actions but of the coordinated work of instructional teams. By repositioning instructional teams as the central analytic unit through which mediation is accomplished, the study extends sociocultural and practice-based perspectives beyond individual guidance toward coordinated professional practice. In doing so, it offers a theoretical shift from viewing mediation as a role-bound function to conceptualizing it as an emergent property of interactional alignment that is sustained by organizational conditions.

At the same time, several limitations should be acknowledged. The study is based on qualitative data drawn from a specific simulation context, which may limit the transferability of findings across different simulation models or cultural settings. Although participants represented diverse sociocultural sectors, the study was not designed as a comparative inquiry, and no systematic sector-specific patterns emerged that would support comparative interpretation. In addition, the sample was predominantly female (84%), reflecting the composition of the participants who held leadership roles in the participating simulation centers. Although the study was not designed to examine gender-related differences, and the number of male participants did not support meaningful comparison, gendered perspectives on collaboration, trust, and professional relationships may have influenced participants' accounts. Future research could explore these issues more directly. A further limitation concerns the focus on reported perceptions of coordination, which does not fully capture its moment-to-moment enactment in practice. Future research may therefore benefit from micro-analytic approaches, including video-based analysis, to examine how coordination unfolds in real time. Further studies could also explore instructional teams across diverse simulation models, as well as examine how different configurations of roles influence learning processes. Finally, extending this line of inquiry to other practice-based settings, such as mentoring or co-teaching, may help assess the broader applicability of the proposed conceptualization.

Beyond its empirical contribution, the study highlights the importance of designing teacher education environments that support coordinated professional work. It suggests that the effectiveness of SBL depends on the alignment of roles, interactions, and organizational structures that together shape learning. In this vein, the study contributes to a more integrated understanding of how professional learning is produced in complex educational settings.

Author Contributions: Conceptualization, O.L., L.O., and T.H.; Methodology, O.L. and L.O.; Validation, O.L., L.O., and T.H.; Formal Analysis, O.L. and L.O.; Investigation, O.L., L.O., and T.H.; Resources, T.H.; Data Curation, O.L. and L.O.; Writing—Original Draft Preparation, O.L., L.O., and T.H.; Writing—Review & Editing, O.L., L.O., and T.H.; Visualization, O.L.; Supervision, O.L.; Project Administration, L.O.; Funding Acquisition, T.H. All authors have read and agreed to the published version of the manuscript.

Funding: This research was supported by the Research Authority of the MOFET Institute.

Institutional Review Board Statement: The study was conducted in accordance with institutional ethical guidelines for research involving human participants. The study was conducted in accordance with the Declaration of Helsinki, and approved by the MOFET Institute Review Board (Approval No. INS2304 and date of approval: 24 October 2023).

Informed Consent Statement: All participants were informed about the purpose of the study and provided informed consent prior to participation. Participation was voluntary, and participants were assured that they could withdraw at any stage without consequence. To ensure confidentiality, all identifying details were removed from the data, and findings are reported in a manner that prevents the identification of individuals or institutions.

Data Availability Statement: The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Acknowledgments: The authors wish to thank the simulation center directors who participated in this study for generously sharing their time, experiences, and professional insights. We also extend our appreciation to the research assistants who supported the data collection and organization processes. Their contribution was essential to the successful completion of this study.

Conflicts of Interest: The authors declare no conflicts of interest. The funding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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