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How Does the CREL Framework Facilitate Effective Interdisciplinary Collaboration and Experiential Learning Through Role-Playing?

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ABSTRACT

Traditional models of interdisciplinary collaboration in higher education often struggled to transcend disciplinary silos, resulting in fragmented Communication and superficial integration. The Components of Role-playing in Experiential Learning (CREL) Framework offered a transformative alternative by embedding role-playing mechanics into structured learning environments, enabling participants to embody perspectives beyond their disciplinary boundaries.

First, this paper introduced the five core components of the CREL Framework—Scenario, Social Contract, Collaboration, Choice, and Experience—and explained how they function as an integrated system for designing and assessing collaborative learning environments. Then, it argued that the framework catalyzed effective interdisciplinary collaboration and authentic experiential learning by simulating complex, real-world scenarios that demanded mutual understanding, adaptive thinking, and co-constructed solutions.

Next, drawing from theoretical foundations in ludology, experiential education, and transdisciplinary Communication, the authors demonstrated how CREL facilitated role adoption, dialogic engagement, and reflective inquiry. Finally, by positioning play as a rigorous epistemic practice rather than a pedagogical supplement, the article advanced a more inclusive, participatory, and dynamic vision of interdisciplinary education. It concluded by outlining the theoretical foundations of the framework, addressing key limitations, anticipating common critiques, and calling for curricular, institutional, and policy reforms to legitimize role-play as a mode of scholarly engagement and professional development.

Keywords: Ludology, Power Dynamics, Reflectivity, Scenario Design, Social Contract, Transdisciplinarity, Transformative Learning.

1. INTRODUCTION

Contemporary global challenges—ranging from climate change and health crises to rapid technological transformation—demand collaborative responses that exceed the capacities of individual disciplines. Despite widespread recognition of the value of interdisciplinary collaboration, institutions of higher education often perpetuate fragmented structures that impede meaningful integration. Existing models of collaboration and experiential learning tend to emphasize coordination over Communication and outcomes over processes, resulting in limited epistemic engagement and reduced reflectivity among participants.

This paper posits that the Components of Role-playing in Experiential Learning (CREL) Framework offers a robust model for addressing these limitations. The CREL Framework is designed to facilitate interdisciplinary collaboration and enhance experiential learning by delineating roles, responsibilities, and interactional dynamics among participating agents. When applied to engagements between distinct disciplines or entities, the framework promotes mutual understanding, clarifies communicative protocols, and establishes a shared social contract that respects the autonomy and contributions of each group. In educational settings, it supports the structuring of encounters between instructional designers and learners, balancing guidance with learner agency and thereby optimizing educational outcomes.

The present article emerges from the keynote address titled *"How Does the CREL Framework Facilitate Effective Interdisciplinary Collaboration and Experiential Learning Through Role-Playing?"* delivered by Lipuma and León [1] at the 16th International Multi-Conference on Complexity, Informatics and Cybernetics (IMCIC 2025) on March 26, 2025. The keynote presentation laid the groundwork for the arguments advanced herein. It was subsequently followed by an invitation to contribute this article as part of the special issue of the Open Journal of Systemics, Cybernetics, and Informatics (JSCI), dedicated to the plenary keynote speakers of IMCIC 2025 and its collocated events.[1] Some foundational texts used to build this presentation were *Communication in the Real World Version 2.0* [2], *Role-Playing Game Studies: A Transmedia Approach* [3], *Organizational and Developmental Change* [4], *and Cultures and Organizations: Software of the Mind* [5].

The CREL Framework is composed of five interrelated components: Scenario, Social Contract, Collaboration, Choice, and Experience. These components jointly mediate the distribution of responsibility, autonomy, and control within experiential learning contexts. Drawing from a range of disciplinary insights—including educational psychology, performance studies, and systems thinking—CREL fosters a transdisciplinary perspective necessary for meaningful Communication and co-construction of knowledge.

[1] Page for Keynote Speaker. Source: https://www.iiis-spring25.org/imcic//website/keynotespeakers.asp?vc=26

A key contribution of the CREL Framework lies in its classification of *role-playing*[2] structures along a continuum of control and autonomy. This classification operates across two interrelated dimensions: scenario-driven (external structure determines flow and interaction) and participant-driven (internal participant agency shapes the direction and outcome).

As an educator and curriculum and instructional (CID) designer, one can identify three general approaches to structuring the environment in which learning experiences unfold. These approaches determine the degree of freedom or constraint embedded in the learning design and directly influence how participants engage with content, roles, and collaborative dynamics.

Drawing upon ongoing dialogue with the international community of role-playing practitioners and researchers, the authors developed these approaches as representative of distinct pedagogical philosophies and styles of management—each reflecting a particular stance on how learning should be facilitated, guided, or allowed to emerge organically.

Each axis ranges from closed—where decision-making and roles are prescribed—to open—where participants have considerable autonomy. Within this matrix, three primary role-playing models are identified:

- Railroad, characterized by high external control and closed decision pathways;
- Sandbox, where participants enjoy open-ended freedom to define roles, interactions, and outcomes;
- Playground is a balanced middle ground where structure and freedom are intentionally negotiated.

This continuum helps participants navigate tensions between constraint and creativity, aligning learning goals with interactional freedom. It also underscores how different collaborative environments entail distinct forms of agency and responsibility (see Figure 1 in Appendix 1).

This visualization illustrates how learning designs and role-playing environments can be intentionally positioned along these axes to cultivate specific pedagogical dynamics. For example, a Railroad structure may be suited for foundational learning or high-stakes compliance training, whereas Sandbox configurations promote innovation and emergent problem-solving. The Playground model serves as an intermediary, balancing institutional constraints with participatory flexibility.

These categories are further differentiated by the extent to which collaborative processes are governed by external scenarios or driven internally by participant interaction. Within this continuum, tensions frequently emerge—such as the dissonance experienced when a scenario presents the appearance of openness while operationally constraining collaboration or when excessive freedom results in participant disorientation. CREL assists participants in identifying and managing these tensions, thereby enhancing the quality of their collaborative engagement.

This paper advances the argument that CREL should be formally adopted as a framework for the design, facilitation, and assessment of interdisciplinary, experiential learning. It proceeds by first examining the limitations of prevailing approaches to collaboration and experiential pedagogy, particularly with regard to their neglect of affective, performative, and structural dimensions. Subsequently, the paper elaborates on the conceptual and methodological foundations of the CREL Framework before addressing potential critiques, such as its applicability across institutional contexts or disciplines. The final sections present concrete recommendations for implementation within higher education curricula, professional development, and transdisciplinary initiatives.

By reconfiguring role-playing as a structured, epistemologically grounded practice, the CREL Framework supports the development of dynamic learning environments that empower participants, cultivate transdisciplinary understanding, and promote reflective, collaborative inquiry. As such, it constitutes not merely a pedagogical strategy but a paradigm for rethinking how learning and collaboration occur in academic and professional contexts.

2. THE PROBLEM WITH THE CURRENT APPROACH

Despite the growing discourse around interdisciplinarity in education and research, the prevailing approaches to collaborative engagement often remain insufficiently theorized and poorly operationalized. In many institutions, "interdisciplinary collaboration" is implemented through ad hoc partnerships, isolated team projects, or co-teaching arrangements that lack a common epistemological foundation. While these initiatives may create opportunities for knowledge exchange, they frequently fail to foster the kind of deep, mutual understanding required for meaningful integration across disciplinary boundaries.

One of the primary limitations of current models lies in their over-reliance on content alignment rather than structural design. Collaboration is often conceptualized as the juxtaposition of disciplinary content, assuming that exposure to diverse perspectives alone will lead to synthesis. However, without an explicit framework for guiding interaction, establishing shared roles, and negotiating the terms of collaboration, such initiatives frequently devolve into parallel monologues rather than integrative dialogue. This results in what Nicolescu [6] critiques as "multi-disciplinarity in disguise"—projects that retain disciplinary insularity while nominally operating under an interdisciplinary banner.

A second limitation is the neglect of the affective and performative dimensions of collaboration. Existing models rarely

[2] In the context of the CREL Framework, role-playing refers not merely to the assignment of functional roles (e.g., note-taker, team leader), but to the embodied adoption of a role within a structured system of interaction. This system may or may not align with formal game mechanics but always involves participants enacting perspectives, behaviors, and responsibilities in ways that simulate real or hypothetical scenarios. Role-playing, as used here, emphasizes performative engagement and contextual meaning-making rather than static labels or administrative functions.

attend to how participants experience their roles within interdisciplinary environments. Power asymmetries, implicit biases, and disciplinary hierarchies often go unaddressed, leading to uneven participation, diminished agency, and reduced epistemic plurality. As Jasanoff [7] and Haraway [8] argue, any epistemic community must grapple with the situatedness of knowledge and the relational dynamics that shape it. Without mechanisms for surfacing and managing these dynamics, experiential learning becomes performative only in the superficial sense, devoid of critical reflectivity or transformation. Furthermore, many experiential learning models fall short by adhering to rigid instructional designs that over-determine outcomes**.** In these settings, the role of the learner is often reduced to that of a passive respondent within a pre-structured scenario. Such environments fail to simulate the complexity, uncertainty, and interdependence that characterize real-world interdisciplinary challenges. The result is a pedagogical contradiction: learners are expected to demonstrate collaboration and creativity within systems that neither enable nor reward those very behaviors.

Attempts to integrate project-based learning, case studies, or team-based assessments have made strides, but they often lack a formalized structure for distributing responsibility and control**.** In the absence of such structures, learners may default to familiar roles or disciplinary comfort zones, reinforcing rather than disrupting silos. Moreover, the absence of negotiated social contracts within learning environments leads to misalignment between instructor expectations and learner experiences. This misalignment not only diminishes learning outcomes but can also reproduce exclusionary dynamics, particularly for students from marginalized or underrepresented groups.

Another persistent shortcoming involves the invisibility of decision-making processes in most collaborative frameworks. Participants are rarely invited to examine how decisions are made, who holds authority, or how autonomy is negotiated. As a result, they are deprived of opportunities to develop the meta-cognitive and communicative skills necessary for sustained interdisciplinary engagement. The failure to scaffold such reflective practices limits not only the depth of learning but also the transferability of collaborative competencies beyond the classroom.

These deficiencies are further exacerbated by institutional metrics and incentives that prioritize individual achievement, publication output, and disciplinary mastery. Collaborative labor is often undervalued or rendered invisible in tenure, promotion, and assessment systems. Without structural support and cultural recognition, faculty and students alike are discouraged from investing in the long-term development of collaborative practices that are inherently time-intensive and relationally complex.

The cumulative effect of these limitations is a gap between the aspiration and practice of interdisciplinary collaboration. While mission statements and policy documents frequently extol the virtues of transdisciplinarity, the mechanisms for realizing it remain fragmented, underdeveloped, or symbolic. This disconnect has practical consequences: it impedes the development of inclusive, innovative, and adaptive solutions to complex societal problems and perpetuates epistemic boundaries that hinder intellectual progress.

In light of these challenges, there is an urgent need for a framework that can both diagnose these systemic shortcomings and offer an actionable model for addressing them. The Components of Role-playing in Experiential Learning (CREL) Framework responds to this need by embedding collaboration within a dynamic system of role-play, interaction, and reflection. Rather than treating interdisciplinarity as an emergent property of diverse participation, CREL positions it as the outcome of designed interactions grounded in scenario structure, negotiated responsibility, and participant autonomy. In doing so, it redefines what it means to learn, collaborate, and produce knowledge together.

2.1 Case Example: Degrees of Scenario Control and Collaborative Autonomy

The distinctions articulated above can be illustrated through three general patterns in how participant roles and authority are distributed across the collaborative spectrum:

1. **In the first scenario**, one individual dictates the Scenario, assigns roles, and establishes the rules of engagement that all participants must follow. This structure is typically observed in educational role-playing environments, where the educator exercises considerable control, and the school system prescribes behavioral norms.
2. **In the second scenario**, an external agent—such as a supervisor, client, or broader social condition (e.g., organizational or global context)—establishes the scenario parameters. Within these constraints, participants retain some flexibility in determining the structure and degree of collaboration.
3. **The third Scenario** is open-ended, allowing participants to modify various aspects of the Scenario, including the form and content of collaboration, distribution of tasks, and overall workflow.

These three scenarios illustrate the practical manifestations of the CREL typology: the first aligns with the Railroad model (characterized by high external control and closed decision-making), the second reflects the Playground model (a negotiated balance of guidance and freedom), and the third corresponds to the Sandbox model (high participant autonomy and open-ended structure). Making this connection explicit reinforces the reader's understanding of how role-playing structures map onto collaborative configurations in real-world applications.

Understanding the degree of scenario control and the level of freedom embedded in the social contract is a crucial first step in creating effective working groups and fostering meaningful collaboration—particularly in role-playing environments designed to generate authentic experiential learning.

The following table contrasts how collaborative dynamics manifest along a continuum from scenario-driven to collaborator-driven configurations (see Table 1 in Appendix 2).

3. ARTICULATING A NEW POSITION

To address the limitations outlined in the previous section, this paper proposes the formal adoption of the Components of Role-playing in Experiential Learning (CREL) Framework as a foundational model for structuring interdisciplinary collaboration and experiential learning. Rather than layering collaboration onto traditional educational structures, CREL reimagines the very conditions under which learning, knowledge production, and collective problem-solving occur.

The CREL Framework's five components are not sequential stages but mutually influencing dimensions that define the architecture of a learning or collaboration environment. When consciously designed, these dimensions enable participants to co-construct knowledge through structured interaction, distributed agency, and shared responsibility.

Where dominant models prioritize content transmission, CREL centers process, participation, and positionality. It draws on the constructivist tradition of John Dewey [9], [10], who emphasized learning through doing, and on Paulo Freire's [11] vision of dialogical, emancipatory education. However, CREL extends these insights by embedding them in a ludological framework that recognizes the performative, affective, and negotiated nature of collaboration [12], [13], [14], [15]. In doing so, it elevates role-playing from a supplementary strategy to a disciplined epistemic tool [16].

Rather than assuming roles are logistical designations, CREL positions roles as identity enactments. Through role exchange and simulation, participants engage in perspective-taking that fosters empathy, surfaces implicit assumptions, and shifts communicative strategies. A scientist adopting the role of a policymaker or a student embodying a public health official must account for values, priorities, and constraints beyond their disciplinary perspective. These dissonances generate the reflective tension that Mezirow [17], [18] identifies as a prerequisite for transformative learning.

3.1. Defining the Scenario and Scope

The Scenario component of the CREL Framework defines the formal boundaries of a learning or collaborative encounter. Whether designed by educators, facilitators, or collaboratively by participants, the Scenario sets the initial conditions: a shared problem or goal, a proposed timeline, deliverables, resource allocations, and the distribution of roles and responsibilities. These parameters constitute the scope of the activity—what is to be achieved, by whom, and within which constraints.

In the CREL Framework, scenario design is not a neutral backdrop but a generative structure that actively shapes what kinds of collaboration, inquiry, and identity work are possible. It operates along a continuum of openness and closure: the more closed the Scenario (i.e., roles, tasks, and pathways are predefined), the more training or orientation participants will be required to fulfill designated roles. Conversely, the more open the Scenario (i.e., roles, outcomes, and processes are co-created), the more participants must actively negotiate, inhabit, and perform those roles within the defined scope.

In this way, Scenario, Scope, and Role-Playing form a dynamic pedagogical triad. The Scenario establishes the structural boundaries of the Experience; the scope delineates the collaborative processes and procedural expectations, and role-playing serves as the performative and epistemic enactment of both. This integrated design not only facilitates immersive engagement but also enables authentic assessment and meaningful evaluation of the learning experience. Rather than treating role-play as an informal or optional add-on, CREL positions it as a disciplined, embodied practice through which participants explore complexity, exercise agency, and generate shared meaning. As in Piaget's [19] theory of cognitive conflict, productive learning environments must balance challenge with comprehensibility. The Scenario sets this equilibrium (see Figure 2 in Appendix 1).

Establishing a well-structured scenario is essential for framing the collaborative Experience and aligning participant efforts. This component sets the foundational parameters within which experiential learning and problem-solving will occur:

- **Identify the Problem or Goal:** Clearly articulate the central problem to be addressed or the specific goal to be achieved. This articulation provides focus, defines the purpose of the collaboration, and establishes the conceptual boundaries of the project.
- **Determine the Tasks and Deliverables:** Deconstruct the overall goal into discrete, manageable tasks. For each task, define concrete deliverables with associated expectations for quality and accountability. This breakdown enhances clarity and ensures that participants understand both the process and the desired outcomes.
- **Establish Timelines and Allocate Resources:** Develop realistic timelines for task completion and identify all necessary resources—human, material, technological, and financial. Assigning resources strategically ensures that participants are adequately equipped to fulfill their responsibilities.
- **Document the Scope of Work:** Create a comprehensive yet concise document outlining the project's scope, including goals, tasks, timelines, deliverables, and resource allocations. This document serves as a shared reference point for all group members, facilitating coordination and reducing ambiguity.

3.2. Defining the Social Contract

The **Social Contract** governs how the group forms and aligns itself. According to Jean-Jacques Rousseau [20], it includes shared goals, project purpose, vision, roles, and responsibilities. Ground rules, values, and behavioral expectations are collectively established to shape a respectful, cohesive environment. Far from being a procedural footnote, the social contract enacts Frey's [21] principles of group norm-setting and facilitates trust and psychological safety. When participants co-author this agreement, they transition from a collection of individuals into a functional learning community (see Figure 3 in Appendix 1). This is also a key concept in role-playing game theory [22], [23].

Group Member Information

- **Identification and Contact Details**: Compile a roster listing each participant's full name, preferred contact methods (e.g., email, phone, messaging platforms), and any relevant communication preferences or availability constraints. This information supports coordination and reinforces professional accountability.

Shared Goals and Objectives

- **Project Description and Purpose**: Clearly define the task, problem, or project the group is addressing. This includes outlining the broader purpose, anticipated impact, and intended outcomes of the collaboration.
- **Shared Vision or Mission Statement (if applicable):** Develop a concise vision or mission statement that reflects the group's collective intentions and values. This statement provides a philosophical and strategic anchor for ongoing decision-making and interaction.

Roles and Responsibilities

- **Task Allocation**: Specify the responsibilities assigned to each group member, including deliverables and deadlines where applicable. Ensure that each participant understands their role concerning the group's overarching objectives.
- **Leadership and Functional Roles**: Identify formal roles (e.g., project coordinator, facilitator, note-taker, liaison) and the responsibilities associated with each. Where appropriate, include rotation policies or shared leadership models to promote equity and skill development.

Norms and Expectations

- **Ground Rules for Interaction**: Establish agreed-upon behavioral norms, such as punctuality, respectful Communication, constructive feedback, and confidentiality. These ground rules foster a safe, inclusive, and productive working environment.
- **Core Values and Guiding Principles (optional):** If relevant, articulate shared values—such as integrity, equity, or creativity—that will guide group behavior, conflict resolution, and decision-making. These principles support a shared ethical framework and help align actions with purpose.

3.3. Defining Collaboration

Collaboration, within the CREL Framework, refers to the interpersonal dynamics and communicative practices through which participants coordinate, co-create, and sustain shared meaning and collective action. The **Collaboration** component focuses on Communication, scheduling, and meeting etiquette. CREL supports structured yet adaptive communication protocols, helping groups determine platforms, meeting formats, and dialogue styles (see Figure 4 in Appendix 1). Vygotsky's [24] theory of social mediation underscores the significance of these tools—not merely as logistical aids but as scaffolds for learning and identity construction. Sara Lynn Bowman's [25] seminal work takes an analytical approach to the world of role-playing games. This provides a theoretical framework for understanding collaboration as well as its psychological and sociological functions.

Effective collaboration requires transparent, consistent, and inclusive Communication. Establishing clear protocols for interaction supports coordination, minimizes misunderstandings, and promotes equitable participation across diverse contexts.

Communication Channels

- **Platform Selection and Frequency**: Identify the primary communication tools the group will use (e.g., email, instant messaging platforms, shared documents, learning management systems). Specify the expected frequency of Communication and outline preferred formats or response time expectations.
- **Communication Style and Tone**: Agree on appropriate communication styles for different contexts (e.g., formal for reports, informal for updates), and encourage clarity, professionalism, and mutual respect in all exchanges.

Meeting Schedules

- **Frequency, Duration, and Modality**: Determine how often the group will meet, the typical length of each session, and whether meetings will occur in person, virtually, or in hybrid formats. Align meeting frequency with project timelines and group availability.

Meeting Etiquette and Participation Norms

- **Interaction Ground Rules**: Establish expectations for participation during meetings, including punctuality, active listening, equitable turn-taking, and respectful engagement. Emphasize the importance of inclusive dialogue that values diverse perspectives and encourages constructive feedback.

3.4. Defining Choice

The **Choice** component addresses decision-making and accountability. Participants must define decision authority, recognize bias, select consensus-building strategies, and establish mechanisms for resolving conflict. This capacity for reflective, ethical decision-making is not incidental—it is integral to the learning process [26]. The CREL Framework draws from organizational psychology and democratic pedagogy to ensure that participants not only reach decisions but understand *how* those decisions were made and *why* they matter (see Figure 5 and Figure 6 in Appendix 1). Explicitly defining these elements enhances transparency, equity, and group cohesion.

Understanding Decision-Making Processes

- **Identify Decision-Making Authority:** Determine who holds decision-making authority within the group. Specify whether decisions will be made by consensus, majority vote, delegated authority, or another agreed-upon mechanism.
- **Analyze Decision-Making Styles:** Observe and reflect on the group's general approach to decision-making—whether it tends toward collaborative, authoritative, democratic, or emergent styles. Understanding these tendencies can inform appropriate facilitation strategies.
- **Evaluate Decision-Making Methods:** Identify the specific techniques the group uses to reach decisions, such as brainstorming, nominal group technique, Delphi method, or structured debate. These tools should align with the group's goals and participation dynamics.
- **Assess Decision-Making Effectiveness:** Periodically evaluate the quality of decisions and the group's ability to reach timely, coherent agreements. This assessment should consider decision outcomes, the inclusivity of the process, and participant satisfaction.
- **Recognize Biases and Sources of Conflict:** Acknowledge and monitor potential cognitive and social biases (e.g., groupthink, confirmation bias) as well as interpersonal or structural conflicts that could compromise decision quality or group equity.
- **Consensus-Building Strategies:** Develop a transparent, shared process for reaching decisions—whether by consensus, voting, rotational leadership, or hybrid models. Document these procedures to ensure consistency and alignment with the group's social contract.

Conflict Resolution

- **Resolution Protocols:** Establish a transparent plan for addressing conflict as it arises. This may include mediation strategies, escalation pathways, and guidelines for respectful disagreement. Proactive conflict resolution supports psychological safety and long-term collaboration.

Accountability and Performance Standards

- **Clarify Individual Contributions:** Define clear expectations for each participant's responsibilities, including deadlines, performance benchmarks, and quality

standards. Document how individual efforts will be tracked and reviewed.

- **Performance Monitoring:** Determine how progress will be monitored at both individual and group levels. Identify methods for providing feedback, documenting milestones, and assessing performance throughout the project lifecycle.
- **Review and Reaffirm Standards:** If necessary, schedule periodic reviews of group agreements and performance expectations. This allows for recalibration in response to changes in context, team composition, or project scope.

3.5. Defining Experience

Finally, **Experience** refers to iterative reflection and critical analysis of the collaborative process. Teams document and assess their encounters, evaluate outcomes, and refine procedures. This metacognitive feedback loop echoes Freire's [11] notion of praxis—reflection and action in constant interplay—as well as Mezirow's [27] emphasis on reflective discourse as a means for reframing assumptions (see Figure 7, Figure 8, and Figure 9 in Appendix 1).

Adaptability and Flexibility

- **Change Management:** Define a clear strategy for managing changes in project scope, timelines, deliverables, or other external and internal variables. This includes identifying points of escalation and determining how changes will be communicated, assessed, and implemented to ensure group alignment.
- **Feedback Mechanisms:** Establish continuous feedback loops that promote constructive dialogue, timely response to emerging issues, and iterative refinement of both the collaborative process and project outcomes. Feedback should be both formative (ongoing) and summative (periodic) and guided by mutually agreed norms.
- **Review and Revision:**
    - **Regular Check-ins**: Schedule consistent meetings or checkpoints to assess progress, discuss obstacles, and maintain alignment with the original Scenario and social contract.
    - **Revision Process**: Design a flexible protocol for modifying the group contract and project parameters in response to participant feedback, contextual shifts, or evolving learning needs. This supports sustainable collaboration and continuous improvement.

Critical Analysis of Group Experience

- **Systematic Reflection:** Encourage groups to analyze not only task completion but also underlying social and structural dynamics that influence collaboration. This includes evaluating decision-making processes, communication equity, and role enactment to foster reflective learning.
- **Analyzing Power Dynamics:**
    - **Identify Key Actors**: Map both formal authority (e.g., designated leaders, facilitators) and informal influence (e.g., subject-matter experts, socially dominant individuals) to understand internal hierarchies.
    - **Observe Communication Patterns**: Track who speaks most frequently, who is interrupted or ignored, and whose input shapes outcomes. These indicators help surface latent power imbalances.
    - **Recognize Influence Strategies**: Identify tactics such as persuasion, negotiation, or coercion and assess how they affect group cohesion and decision-making legitimacy.
    - **Assess Control over Resources**: Evaluate which individuals or subgroups have access to essential resources—information, tools, funding—and how this access shapes participation and authority.
    - **Evaluate Group Norms and Culture**: Reflect on implicit and explicit norms that reinforce or disrupt established power structures. Consider how group culture influences inclusion, trust, and equity.

Strategies for Enhancing Group Dynamics

- **Define Clear Roles and Responsibilities:** Clarify individual roles early in the process to ensure distributed workload, avoid redundancy, and promote accountability.
- **Foster Open Communication:** Encourage respectful dialogue, active listening, and the open exchange of ideas to create an inclusive environment that values all perspectives.
- **Promote Collaborative Decision-Making:** Employ participatory methods such as consensus building, round-robin sharing, or democratic voting to ensure balanced input and collective ownership of outcomes.
- **Mitigate Power Imbalances:** Take intentional steps to equalize participation—rotating roles, encouraging quieter voices, and intervening when dominant behaviors threaten group cohesion.
- **Cultivate a Culture of Trust and Respect:** Reinforce shared values of empathy, transparency, and mutual accountability to build a psychologically safe environment conducive to critical dialogue and transformative learning.

3.6. The five components of the CREL framework

Taken together, the five components of CREL constitute a dynamic system that supports the emergence of transdisciplinary teams capable of self-organization, critical inquiry, and sustained collaboration. The model is not bound by discipline, age, or context. It applies equally to undergraduate classrooms, research consortia, or community partnerships—any context where people must engage with difference, negotiate meaning, and cooperate toward a common goal.

Unlike traditional pedagogies that assume collaboration is a byproduct of group work, CREL treats collaboration as a design challenge—an intentional process requiring thoughtful structure, facilitation, and participant engagement—the facilitator's role shifts from content deliverer to experience architect. The learner becomes not a passive recipient but an active co-author of both process and outcome.

In doing so, CREL operationalizes a theoretical position grounded in constructivist, experiential, and critical pedagogical traditions while offering a flexible, actionable framework for diverse institutional settings. It provides a language, a structure, and a method for cultivating reflective, autonomous, and socially conscious learners in a world that increasingly demands such capacities.

4. ADDRESSING COUNTERARGUMENTS

While the Components of Role-playing in Experiential Learning (CREL) framework offers a compelling model for rethinking

experiential learning and interdisciplinary collaboration, it is essential to engage with potential critiques that may arise from both theoretical and practical perspectives. This section anticipates common counterarguments and offers clarifications that reinforce the framework's value, adaptability, and applicability across diverse contexts.

4.1. Critique 1: Role-playing lacks academic rigor and is unsuitable for formal education

A common objection to role-playing in educational settings is the perception that it is too informal, imaginative, or "game-like" to be taken seriously as a rigorous academic practice. Critics may view role-play as a distraction from content mastery or as incompatible with high-stakes learning environments.

However, this critique conflates *form* with *function*. CREL does not promote unstructured play but instead advances **structured, epistemologically grounded role-play** as a method of inquiry, reflection, and co-construction of knowledge. The framework is aligned with constructivist theories of learning [10], [19], transformative learning [17], and ludological approaches that emphasize rules, boundaries, and meaning-making [12]. When properly facilitated, role-playing scenarios simulate real-world complexity, making them ideally suited for interdisciplinary learning that demands adaptive thinking, ethical reasoning, and empathy. Additionally, role-playing is transdisciplinary by nature, as it integrates multiple modes of knowing and doing and functions as a transmedia phenomenon that unfolds across narrative, performative, and symbolic dimensions [28], [29, pp. 322–323] .

4.2 Critique 2: CREL is challenging to implement at scale or in traditional educational structures

Another concern is that CREL may be impractical in large classrooms, rigid curricula, or time-constrained environments. Critics may argue that the framework requires too much facilitation, customization, or reflection to be integrated into existing systems.

While CREL thrives in flexible environments, it is also **modular** and **scalable**. Its five components can be adapted individually or collectively, depending on institutional constraints and learning goals. For example, an instructor may choose to focus on co-developing the Social Contract or embedding Choice elements in a capstone course. Furthermore, digital platforms and collaborative tools (e.g., Miro, Padlet, asynchronous forums) can facilitate CREL implementations in hybrid or large-enrollment courses. Rather than replacing existing structures, CREL supplements and strengthens them through intentional design.

4.3. Critique 3: CREL places excessive responsibility on learners

Some may argue that CREL requires too much self-direction, particularly from students who are unfamiliar with interdisciplinary work or collaborative settings. This concern is especially relevant in educational systems where students are conditioned to expect clear instructions and top-down decision-making.

CREL explicitly **scaffolds autonomy**, offering a guided path from structured to open collaboration through models such as *Railroad*, *Playground*, and *Sandbox*. The role of the facilitator is not to relinquish structure entirely but to *shift* it—moving from directive to collaborative over time. In this way, participants develop critical capacities for negotiation, reflection, and shared governance at a pace suited to their developmental stage and context. This gradual release of control is well supported in Vygotsky's [24] Zone of Proximal Development and dialogical education traditions.

4.4. Critique 4: Assessing experiential learning and role-playing is too subjective

Assessment remains a recurring challenge in experiential education. Critics may contend that CREL lacks standardized metrics, making it challenging to evaluate learning outcomes or ensure accountability.

In response, CREL encourages the use of performance-based assessment**,** rubric-guided reflection, and peer co-evaluation, all of which are grounded in recognized assessment practices [21]. Thus, participant actions become observable and assessable, generating opportunities for authentic assessment as well as a meaningful mechanism for evaluating the quality and impact of the learning experience [30]. Additionally, CREL aligns with Universal Design for Learning (UDL) principles by allowing learners to demonstrate understanding through diverse modalities—discussion, role performance, documentation, and metacognitive analysis [31], [32], [33]. Rather than relying solely on quantitative rubrics, CREL promotes triangulated evaluation—capturing both process and product, individual and group contributions, and learning as both outcome and transformation.

4.5. Critique 5: The framework lacks disciplinary specificity

Some may question whether CREL is too abstract or generalizable to be applied meaningfully within specific disciplines such as engineering, medicine, or the arts.

However, CREL is intentionally designed as a **t**ransdisciplinary framework**,** providing a common scaffold upon which discipline-specific content, methods, and goals can be layered [34], [35], [36]. Its flexibility allows it to be adapted to case-based medical ethics, speculative design studios, sustainability labs, or business strategy simulations. The absence of rigid disciplinary coding makes CREL particularly suited for **b**oundary-crossing educational goals**,** where disciplines must communicate, negotiate, and collaborate effectively.

By engaging with these critiques, it becomes evident that the CREL Framework not only anticipates but addresses many of the concerns commonly leveled against experiential, collaborative, and role-based learning. Its theoretical grounding, adaptability, and intentional design position it not as a replacement for traditional education but as a critical enhancement—one that aligns with 21st-century learning demands and fosters the competencies required for ethical, interdisciplinary, and socially engaged action [37].

5. RECOMMENDATIONS

The increasing complexity of interdisciplinary challenges and the growing legitimacy of experiential learning demands an educational paradigm that is both participatory and critically reflective. The Components of Role-playing in Experiential Learning **(CREL) Framework** offers such a paradigm. Its structured yet flexible approach empowers institutions, educators, and learners to engage in collaborative inquiry, explore diverse perspectives, and co-construct knowledge in

transformative ways. To realize the potential of CREL, we offer the following recommendations:

I. Integrate CREL into Experiential Learning Initiatives
Institutions should incorporate the CREL Framework into existing experiential learning programs, including capstone projects, service-learning, design studios, and problem-based courses. Each of the five components can be tailored to suit a variety of disciplines and pedagogical contexts. Importantly, role-playing scenarios should not be treated as peripheral or recreational but as core epistemic tools for developing decision-making, ethical reasoning, and transdisciplinary Communication.

II. **Recognize Role-Playing as a Valid Academic Method**
In recent years, there has been a significant increase in scholarly interest in role-playing games (RPGs) as legitimate subjects of academic inquiry and pedagogical innovation [38], [39], [40], [41], [42], [43], [44]. Institutions should build on this momentum by promoting RPGs not only as case studies but also as methodologies for reflective practice, identity exploration, and critical analysis. Academic journals, conferences, and faculty development initiatives should be encouraged to include panels, tracks, and publications dedicated to role-playing as a learning strategy [45], [46], [47].

III. **Embed Facilitator Training and Reflectivity in Faculty Development**
Effective implementation of CREL requires facilitators who are comfortable navigating ambiguity, modeling inclusive dialogue, and supporting distributed agency. Institutions should provide faculty development programs that train educators in experiential facilitation, role negotiation, and collaborative scenario design. These programs should emphasize reflectivity**,** helping instructors develop a critical awareness of their own positionality and interactional impact.

IV. **Create Institutional Support Structures for Collaborative Pedagogies**
Academic units should recognize and reward collaborative teaching and research through tenure criteria, funding incentives, and workload policies [36], [48]. Institutional leadership must value the relational labor of interdisciplinary collaboration and the design work required to scaffold experiential learning environments. The adoption of CREL should be linked to institutional strategic plans for innovation, equity, and student engagement.

V. **Develop Evaluation Tools that Capture Processes and Transformation**
Assessment frameworks should go beyond measuring deliverables and content mastery. Institutions must adopt **r**ubrics, reflective protocols, and formative assessment tools that capture the dynamics of collaboration, identity formation, and transformation over time. Evaluating the impact of CREL requires attention to both outcomes and processes—what was learned, how it was learned, and how learners changed as a result.

VI. **Foster Communities of Practice Around Role-Playing in Education**
Finally, we recommend the development of cross-institutional communities of practice that share models, facilitate co-designed scenarios, and advance research on role-play and experiential learning [49], [50], [51]. Such communities can contribute to the growing scholarly discourse on serious games, role play, and role-playing games (RPGs) and ensure that the pedagogical innovations inspired by CREL are documented, tested, and refined across diverse settings.

By implementing these recommendations, educational institutions can transform the way they approach collaboration, learning, and knowledge production. The CREL Framework provides the structure, vocabulary, and theoretical foundation needed to center experiential, participatory, and critically engaged education—one that affirms the scholarly and pedagogical power of role-playing.

6. CONCLUSION

The Components of Role-playing in Experiential Learning (CREL) Framework offers a timely and transformative approach—one that reimagines interdisciplinary collaboration not as an incidental byproduct of group work but as a designed, reflective, and empowering learning experience.
Through the strategic use of role-playing mechanics, CREL enables participants to assume diverse perspectives, negotiate shared meaning, and engage with real-world complexity in deeply embodied and socially conscious ways. In doing so, it addresses the persistent limitations of traditional approaches to experiential learning and fosters environments where knowledge is co-produced rather than transmitted.

The recent growth of scholarly literature on role-playing games and their application in education underscores a broader recognition of their academic potential. No longer confined to the margins of entertainment or informal learning, role-playing has emerged as a robust methodology for developing empathy, critical thinking, and transdisciplinary fluency. The CREL Framework builds on this momentum, offering both theoretical depth and practical utility.

We conclude by extending an invitation to educators, researchers, and institutions to adopt, adapt, and critically engage with CREL. Experiment with its application, contribute to its evolution and join a growing community committed to reshaping education through participation, collaboration, and play. In doing so, we move closer to realizing a more inclusive, experiential, and future-ready academic culture.

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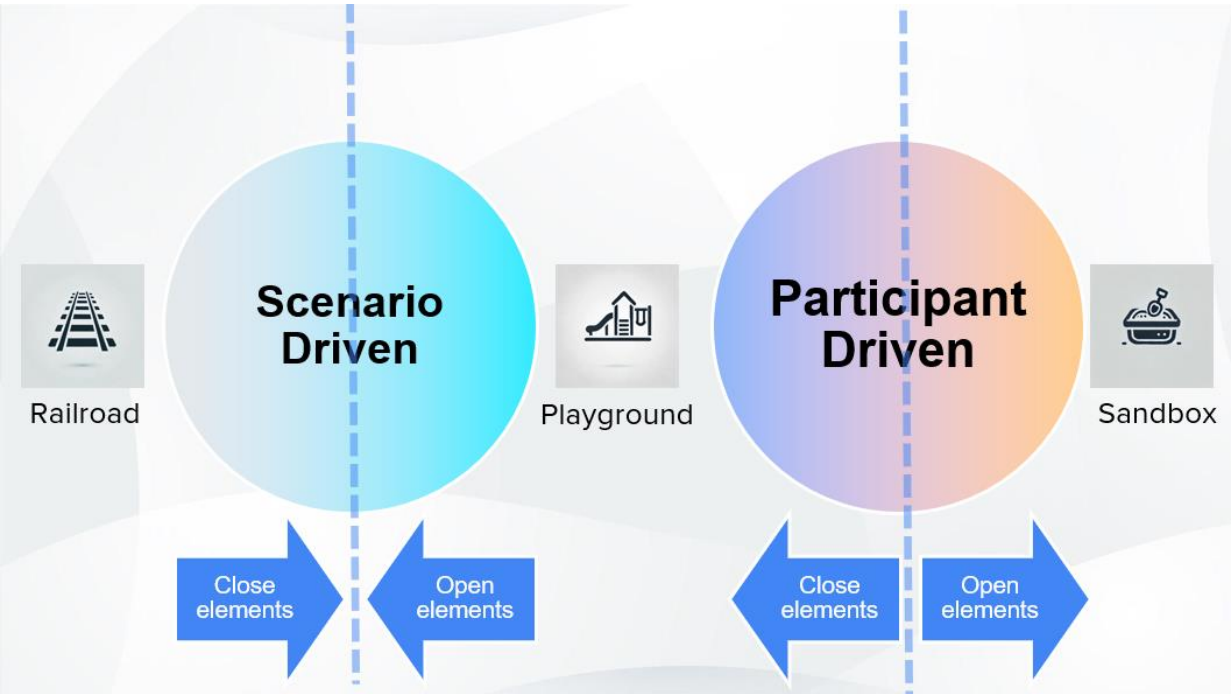
APPENDICES

Appendix 1. Figures

Figure 1.- *Typology of Role-Playing Structures in the CREL Framework*



Note. This typology is plotted across Scenario-Driven and Participant-driven axes, each ranging from Closed to Open design.

Figure 2 *Define the Scenario and Scope*

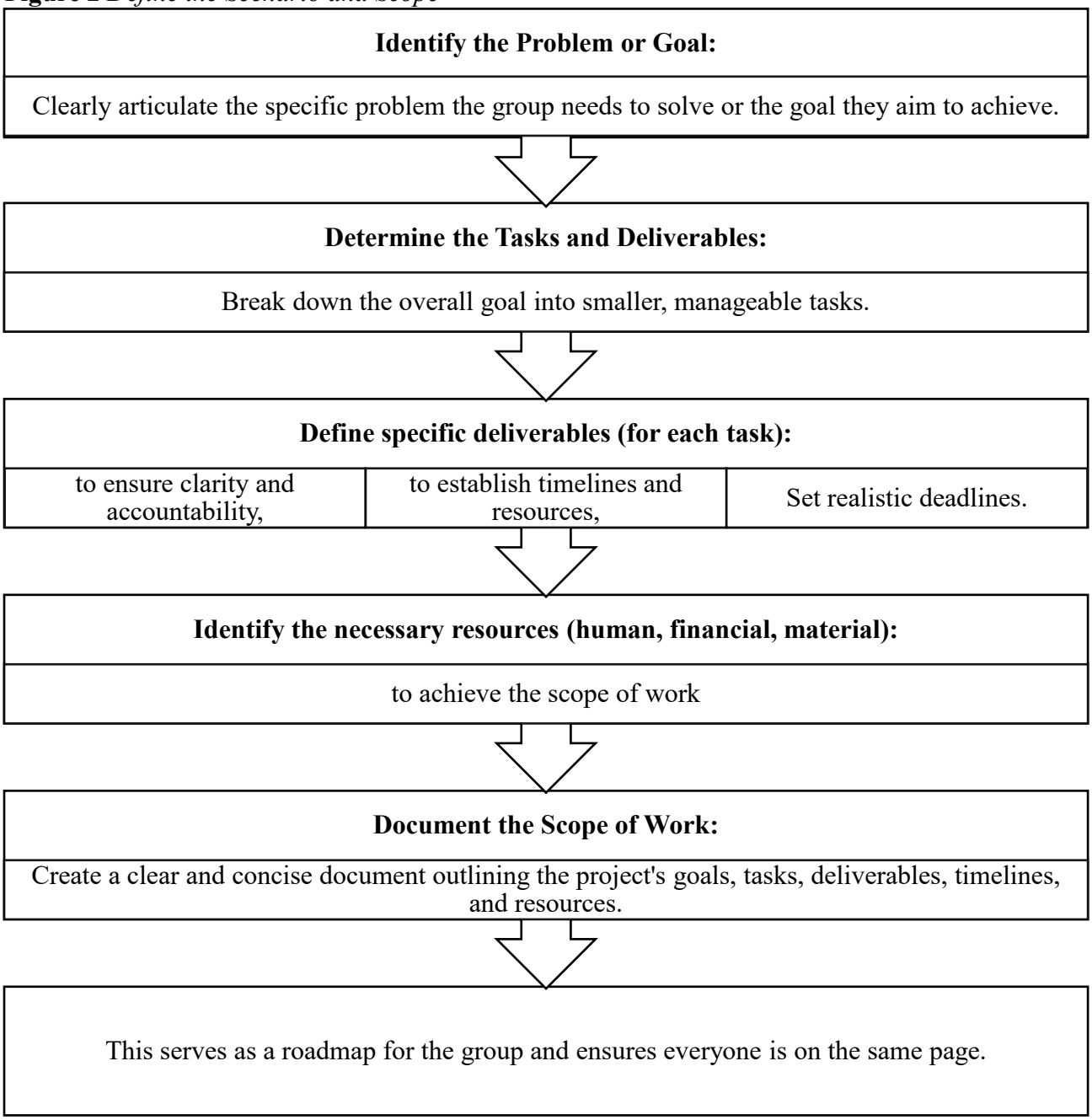


Figure 3.- *Group Formation and Alignment*

Group Member Information	**Identification and Contact Details**: Compile a roster that includes each participant's full name, preferred contact methods (e.g., email, phone, messaging platforms), and relevant communication preferences. This ensures effective coordination and professional accountability.
Shared Goals and Objectives	**Project Description and Purpose**: Clearly define the nature of the task, problem, or project the group is undertaking. Include the broader context, rationale, and scope of the collaboration.
	Overall Goals and Desired Outcomes: Outline the specific objectives the group aims to achieve, identifying success indicators and intended deliverables.
	Shared Vision or Mission Statement (if applicable): Where appropriate, co-create a guiding vision or mission that articulates the group's collective values and long-term purpose.
Roles and Responsibilities	**Role Clarification**: Clearly define the roles of each group member. Include formal titles where relevant and describe functional responsibilities in detail.
	Task Allocation: Assign specific tasks to each participant, ensuring alignment with expertise, interests, and capacity. Clarify expectations for deliverables, timelines, and interdependencies.
	Leadership and Functional Roles: Designate leadership positions such as facilitator, coordinator, or note-taker. Outline the responsibilities attached to each role and consider rotation.
Norms and Expectations for Collaboration	**Ground Rules for Group Interaction**: Establish shared behavioral expectations, such as respectful communication, timeliness, constructive feedback, and equitable participation. These norms should be co-developed and reaffirmed regularly.
	Core Values and Guiding Principles (if applicable): Articulate any foundational values—such as transparency, empathy, inclusion, or accountability—that the group agrees to uphold throughout the collaboration. These principles provide an ethical framework for interaction and decision-making.

Figure 4.- *Communication and Meeting Protocols*

Communication Channels:	Specify the primary methods of communication (email, messaging platforms, online tools), frequency, and preferred communication styles.
Meeting Schedules:	Determine group meetings' frequency, duration, and location (in-person or virtual).
Meeting Etiquette:	Establish ground rules for meeting participation, including respecting diverse perspectives, active listening, and productive discussion.

Figure 5.- *Understand Decision-Making Processes:*

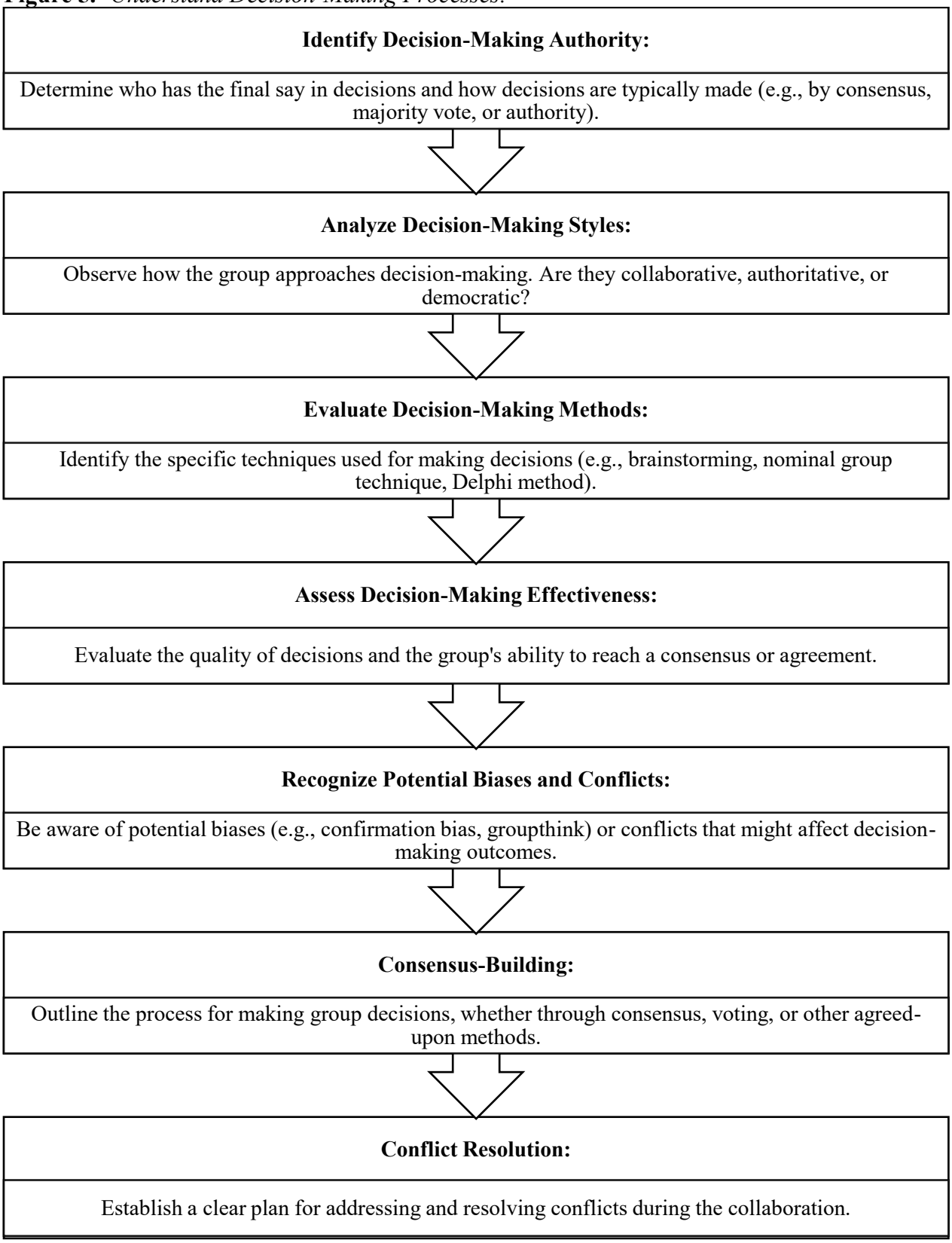


Figure 6.- *Accountability and Performance Standards*

Individual Contributions:	Clearly define expectations for each participant's contributions, including deadlines, quality benchmarks, and the criteria by which progress will be assessed. These expectations should be co-developed and documented within the group's initial agreements to promote transparency and mutual accountability.
Performance Monitoring:	Establish mechanisms for monitoring collective and individual progress throughout the collaborative process. This may include interim check-ins, shared progress trackers, or peer feedback protocols. The aim is to ensure timely identification of challenges, equitable workload distribution, and adherence to quality standards.
Standards Review and Adjustment:	Include provisions for periodic review of the agreed-upon standards and expectations. This process allows the group to revise initial commitments in light of emerging needs, unforeseen challenges, or changes in project scope. Reviewing and refining the social contract and performance standards reinforces group cohesion and supports the transition from an ad hoc assembly to a high-functioning collaborative team.

Figure 7.- *Experience: Adaptability and Flexibility*

Change Management:	Define a clear strategy for managing changes in project scope, timelines, deliverables, or other external and internal variables. This includes identifying points of escalation and determining how changes will be communicated, assessed, and implemented to ensure group alignment.
Feedback Mechanisms:	Establish continuous feedback loops that promote constructive dialogue, timely response to emerging issues, and iterative refinement of both the collaborative process and project outcomes. Feedback should be both formative (ongoing) and summative (periodic), and guided by mutually agreed norms.
Review and Revision:	**Regular Check-ins**: Schedule consistent meetings or checkpoints to assess progress, discuss obstacles, and maintain alignment with the original scenario and social contract.
	Revision Process: Design a flexible protocol for modifying the group contract and project parameters in response to participant feedback, contextual shifts, or evolving learning needs. This supports sustainable collaboration and continuous improvement.

Figure 8.- *Experience: Critical Analysis of Group Experience*

Systematic Reflection:	Encourage groups to analyze not only task completion but also underlying social and structural dynamics that influence collaboration. This includes evaluating decision-making processes, communication equity, and role enactment to foster reflective learning.
Analyzing Power Dynamics:	**Identify Key Actors**: Map both formal authority (e.g., designated leaders, facilitators) and informal influence (e.g., subject-matter experts, socially dominant individuals) to understand internal hierarchies.
	Observe Communication Patterns: Track who speaks most frequently, who is interrupted or ignored, and whose input shapes outcomes. These indicators help surface latent power imbalances.
	Recognize Influence Strategies: Identify tactics such as persuasion, negotiation, or coercion, and assess how they affect group cohesion and decision-making legitimacy.
	Assess Control over Resources: Evaluate which individuals or subgroups have access to essential resources—information, tools, funding—and how this access shapes participation and authority.
	Evaluate Group Norms and Culture: Reflect on implicit and explicit norms that reinforce or disrupt established power structures. Consider how group culture influences inclusion, trust, and equity.

Figure 9.- *Experience: Strategies for Enhancing Group Dynamics*

Define Clear Roles and Responsibilities:	Clarify individual roles early in the process to ensure distributed workload, avoid redundancy, and promote accountability.
Foster Open Communication:	Encourage respectful dialogue, active listening, and the open exchange of ideas to create an inclusive environment that values all perspectives.
Promote Collaborative Decision-Making:	Employ participatory methods such as consensus building, round-robin sharing, or democratic voting to ensure balanced input and collective ownership of outcomes.
Mitigate Power Imbalances:	Take intentional steps to equalize participation—rotating roles, encouraging quieter voices, and intervening when dominant behaviors threaten group cohesion.
Cultivate a Culture of Trust and Respect:	Reinforce shared values of empathy, transparency, and mutual accountability to build a psychologically safe environment conducive to critical dialogue and transformative learning.

Appendix 2. Tables

Table 1.- *Comparison of Scenario-Driven and Collaborator-Driven Structures in Role-Playing Environments*

Element	More Scenario driven	More collaborator-driven
Identify the Problem or Goal	Problems defined in isolation without collaboration	The problem must be clearly articulated within participant groups.
Determine the Tasks and Deliverables	Tasks are assigned with specific deliverables and tied to accountability mechanisms.	Tasks are put in line or left to the group to decide how to attain goals and maintain accountability.
Establish Timelines and Resources	Deadlines are set for participants with little flexibility or additional resources beyond those initially provided	Participants plan and manage timelines and resources. Resources are gathered and developed by the group.
Document the Scope of Work	The scope of work is provided with clearly defined parameters and direction	The participants are expected to develop the scope of work
Group Member Information	Participants may not know each other or formally exchange contact information or preferences.	Participants share contact details and communication preferences for coordination.
Shared Vision	Goals are provided and may not match the desires of participants	Goals and objectives are developed and defined by participants
Roles and Responsibilities	Roles and responsibilities are pre-assigned, and decision-making and control are aligned with roles and duties.	Participants choose roles as decision-making, and participants define duties for activities.
Norms and Expectations	There are no established ground rules or expectations for interactions beyond explicitly defined norms given in the Scenario or assumed by the larger context.	Ground rules are established to create a respectful and productive group environment.
Communication and Meeting Protocols	Unless specified in the Scenario, meetings occur ad hoc	Participants will define the meeting structure schedule and communication protocols.
Understand Decision-Making Processes	Decisions are set by the Scenario or handled as appeals to the outside agent of control.	Participants must define and adopt a decision-making process, protocols for appeals to outside sources, and mechanisms to resolve conflict.
Conflict Resolution	Conflicts arise without a predefined resolution mechanism, resulting in either an appeal to the Scenario's established rules or higher authorities.	Participants negotiate a formalized conflict-resolution mechanism, adopt existing norms or mechanisms, or rely on ad hoc methods/ appeals to a higher authority on a case-by-case basis.