

Participatory Visual Methods in Engineering Education: A Validated Protocol for Exploring Organizational Lives

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Abstract

This full methods paper presents and validates a participatory visual methods protocol for interpretive engineering education research. Many studies in engineering education examine how students and professionals make sense of organizational and emotional experiences that unfold across time, yet conventional qualitative interviews alone can limit access to temporally distributed and affective dimensions of lived experience. In response, we formalize a protocol centered on Journey and Emotional Journey Maps that integrates participant-generated visual artifacts into qualitative interviews. The protocol supports participant-led sensemaking, enhances transparency in data generation, and is suitable for longitudinal and cross-stage research designs. Validation is demonstrated through iterative refinement and application across two empirical studies examining student self-adjustment in distinct engineering education contexts. Drawing on established frameworks for research quality in interpretive engineering education research, we articulate how procedural, communicative, and pragmatic validation support theoretical alignment and process reliability. This work contributes a reusable and validated methodological approach for studying organizational and emotional experiences in engineering education.

1. Introduction

Engineering education research frequently seeks to understand how individuals experience, interpret, and navigate complex academic and organizational environments. Phenomena such as student adjustment, identity development, belonging, motivation, and professional formation often unfold across time and are shaped by interactions among institutional structures, interpersonal relationships, and emotional responses [1]-[6]. Qualitative interviews and surveys remain foundational methodological tools for investigating these experiences [7]-[12]; however, they are often tasked with capturing trajectories, emotions, and contextual influences that are temporally distributed, affectively charged, and embedded within layered organizational contexts.

A growing methodological challenge arises when interviews alone are expected to support participants' recall, sensemaking, and articulation of complex lived experiences. Retrospective verbal accounts can limit access to tacit knowledge, affective dimensions, and relationships across time, particularly when experiences are cumulative or emotionally salient [13]-[16]. This challenge is not unique to engineering education research, but it is especially pronounced in studies that aim to understand experiences situated within institutional, cultural, and organizational ecosystems [17], [18]. In response to these challenges, visual elicitation techniques, such as timelines, maps, and other participant-generated artifacts, have been used in qualitative research to support reflection and meaning-making [15], [16], [19], [20]. Within engineering education research, however, the use of visual methods has often been underspecified. Visual artifacts are frequently treated as supplementary aids rather than as integral components of a coherent methodological design, and descriptions of how such artifacts are introduced, interpreted, and validated remain limited [21]- [23]. As a result, researchers may struggle to assess the rigor, transparency, and

transferability of studies that incorporate visual elements, particularly within interpretive and participatory traditions. This lack of methodological specification has implications for research quality. Without clearly articulated protocols, participant agency may be unevenly supported, analytic decisions may remain implicit, and opportunities for reflexivity and transparency may be reduced [24], [25]. Importantly, the methodological challenge addressed here is distinct from questions of instructional effectiveness or learning outcomes. Participatory visual methods are not intended to evaluate educational interventions, but rather to strengthen access to participants' lived experiences and sensemaking processes.

Despite growing interest in visual methods, engineering education research lacks clearly articulated and validated protocols for their use. Without such protocols, researchers struggle to consistently support participant agency, justify analytic decisions, and demonstrate the rigor and transferability of their work. To address this gap, this full methods paper formalizes and validates a participatory visual methods protocol centered on Journey Maps and Emotional Journey Maps. Designed for interpretive engineering education research, the protocol integrates participant-generated visual artifacts into artifact-centered qualitative interviews to support participant-led sensemaking and enhance transparency in data generation. Validation is demonstrated through iterative refinement and application across two empirical studies examining student self-adjustment in distinct engineering education contexts. The result is a reusable, theory-informed methodological resource for studying organizational and emotional experiences in engineering education.

2. Theoretical and Methodological Foundations

This section situates the proposed participatory visual methods protocol within established qualitative research traditions, theoretical frameworks, and interpretive quality principles widely recognized in engineering education research. Rather than introducing a new epistemology or analytic paradigm, this work builds on existing participatory and visual methodologies to formalize a validated approach suitable for studying complex organizational and emotional experiences in engineering education contexts.

2.1 Participatory Research as an Epistemic Commitment. This work is grounded in participatory research as an epistemic commitment that shapes how knowledge is produced and whose perspectives are centered. Participatory approaches position participants as active sense-makers rather than passive sources of data, emphasizing dialogue, reflection, and the co-construction of meaning throughout the research process [26], [27]. Prior scholarship has highlighted that participatory research requires methodological designs that support participant agency and create space for experiential and affective knowledge to inform interpretation [28], [29], [30]. From this perspective, emotion is not treated as noise to be controlled, but as a meaningful dimension of lived experience that contributes to understanding organizational life. In this work, participation is embedded not only in who is studied, but in how experiences are elicited and represented through participant-generated visual artifacts.

2.2 Visual Elicitation Methods in Qualitative Inquiry. Visual elicitation methods, including life maps, timelines, photovoice, and participant-generated diagrams, have a well-established history in qualitative research as tools to support reflection, access tacit or affective dimensions of experience, and scaffold narrative sensemaking [15], [16], [31]. These methods are typically used alongside semi-structured interviews and focus groups, with visual artifacts functioning as elicitation devices rather than as substitutes for verbal data. Journey Maps and Emotional Journey Maps align with these established approaches by inviting participants to represent experiences

across time and articulate meanings associated with salient events, relationships, and emotions. Within engineering education research, however, visual methods are often underspecified or treated as supplementary materials, limiting transparency and transferability. This paper addresses that gap by explicitly articulating how visual artifacts are integrated into a coherent participatory qualitative protocol rather than used ad hoc.

2.3 Ecological Sensemaking and Theoretical Grounding. Many phenomena of interest in engineering education research, such as adjustment, identity development, and responses to institutional expectations, are shaped by interactions among individual, interpersonal, and institutional systems [18], [32]. Ecological perspectives commonly used in education and social science research (e.g., ecological systems theory, communities-of-practice frameworks, and phenomenological extensions) are often employed as sensitizing lenses rather than as theories to be tested [33], [34], [35]. In this work, ecological perspectives inform the design logic of the participatory visual methods protocol by orienting attention toward how participants interpret and navigate organizational contexts over time. As our research agenda increasingly examines participants' experiences as dynamic, longitudinal processes, participatory visual artifacts emerged as a natural extension of interview-based approaches [36], [37], [38], [39]. Journey Maps and Emotional Journey Maps enable participants to externalize interpretations of contexts, relationships, and transitions across time while preserving sensemaking and agency.

2.4 Research Quality in Interpretive Engineering Education Research. In interpretive engineering education research, quality is assessed through credibility, transparency, and coherence between theory, method, and interpretation rather than through prediction or replication [12], [25], [40]. Field-specific frameworks have articulated how research quality emerges from deliberate methodological design and execution. Walther and colleagues conceptualize quality as an interconnected set of validation forms (i.e., procedural, communicative, and pragmatic) that collectively strengthen theoretical alignment and interpretive credibility [24]. This paper draws on these interpretive quality principles to inform the validation of the participatory visual methods protocol. Detailed operationalization of these validation processes is presented following the description of the protocol.

Journey Maps and Emotional Journey Maps are not new visual tools, nor are participatory or interpretive approaches novel within qualitative inquiry. The contribution of this paper lies in the formalization and validation of a participatory visual methods protocol tailored to engineering education research. By integrating participatory epistemic commitments, visual elicitation practices, ecological sensibilities, and interpretive quality frameworks, this work systematizes an approach that has often been applied implicitly or inconsistently. The following section details the protocol itself and its application across research contexts.

3. The Participatory Visual Methods Protocol

This section presents a validated protocol for participatory visual methods in interpretive engineering education research. The protocol integrates Journey Maps and Emotional Journey Maps into artifact-centered qualitative interviews to support participant-centered sensemaking of organizational and emotional experiences across time. It is intended for qualitative and mixed-methods studies and is methodological in purpose, not evaluative of learning outcomes.

3.1 Inputs and Contexts.

Participants. The protocol is designed for participants who can reflect on and articulate experiences situated within organizational or educational contexts. It has been applied with

undergraduate and graduate engineering students and is similarly suitable for trainees, early-career professionals, or others whose experiences unfold within structured institutional environments. The protocol is optimized for individual participation, supporting participant-led narration and in-depth exploration of lived experience. It can be used in both cross-sectional and longitudinal designs, including repeated engagements to examine change over time.

3.2 Data Types and Artifacts. The protocol integrates multiple data types to support artifact-centered qualitative inquiry, Journey Maps, and Emotional Journey Maps. These artifacts are used as elicitation devices during semi-structured interviews, where participants guide narrative reflection and sensemaking. Supplementary data may include brief pre-surveys capturing contextual or demographic information to inform sampling and interpretation. Optional materials, such as written instructions, orientation videos, or digital or paper-based tools, support participant preparation and flexibility in implementation.

3.3 Research Contexts. The protocol can be implemented in both in-person and virtual settings and adapted for one-time or repeated engagement. It is particularly well-suited for studies examining organizational or ecosystem-level phenomena, including transitions, adjustment processes, identity development, and responses to institutional expectations. While adaptable across institutional contexts, the protocol maintains a consistent methodological structure to support transparency and rigor.

3.4 Procedural Stages of the Protocol. The participatory visual methods protocol consists of four interconnected stages that can be adapted to different research contexts while maintaining a consistent methodological structure. Table 1 summarizes the purpose, key activities, and researcher considerations for each stage.

Table 1. Procedural Stages of the Participatory Visual Methods Protocol

STAGE	PURPOSE	KEY ACTIVITIES	RESEARCHER ROLE
STAGE 1: ORIENTATION AND FRAMING	Establish shared understanding and participant agency	Explain study purpose; clarify expectations; introduce visual artifacts; emphasize participant ownership	Frame the activity; provide guidance without prescribing content
STAGE 2: VISUAL ARTIFACT CREATION	Support participant reflection and externalization of experience	Participants create Journey Maps or Emotional Journey Maps representing experiences across a defined period	Offer structured but minimal instructions; avoid interpretive influence
STAGE 3: ARTIFACT- CENTERED INTERVIEW	Elicit participant-led sensemaking through dialogue	Use visual artifacts to anchor interviews; encourage narration and elaboration of salient experiences	Facilitate participant-led narration; probe selectively and reflexively
STAGE 4: POST-INTERVIEW HANDLING	Preserve data integrity and ethical standards	Collect artifacts; de-identify materials; document contextual notes; store data securely	Ensure confidentiality, organization, and transparency

Stage 1: Orientation and Framing. The protocol begins with an orientation stage that establishes a shared understanding of the study purpose and participant expectations. Researchers introduce how visual artifacts will be used and emphasize participant ownership over representation. Instructions are structured but open-ended, reinforcing that there are no correct responses and that participants determine what experiences, events, or emotions to include. This stage is critical for supporting participant agency and framing the visual artifacts as sensemaking tools rather than evaluative instruments.

Stage 2: Visual Artifact Creation. Participants create either a Journey Map or an Emotional Journey Map, depending on the study focus. Researchers provide minimal guidance on the timeframe and medium, while avoiding predefined categories or interpretive frameworks. Participants determine the content, structure, and level of detail of their maps, allowing artifacts to reflect individual sensemaking priorities.

Stage 3: Artifact-Centered Interview. Following artifact creation, participants engage in a semi-structured interview anchored in their visual artifact. Participants narrate their maps, explain relationships among elements, and reflect on salient experiences. Researchers use open-ended prompts to encourage elaboration and clarification while remaining attentive to emergent topics. Probing is used selectively to deepen understanding rather than redirect participant narratives.

Stage 4: Post-Interview Handling. Post-interview handling focuses on ethical data management and transparency. Visual artifacts are submitted through secure procedures, de-identified, and stored in accordance with institutional review protocols. Researchers may document contextual notes to support later interpretation. This stage ensures data integrity while respecting participant ownership and consent.

4. Demonstration of Protocol Application Across Two Studies

To demonstrate the adaptability of the participatory visual methods protocol across engineering education contexts, we describe its implementation in two empirical studies that examined students' self-adjustment processes but differed in population, scope, and temporal orientation. In both studies, a participant-generated visual artifact (Journey Map or Emotional Journey Map) was used as an elicitation device to anchor a semi-structured, artifact-centered interview. Table 2 summarizes key study characteristics and illustrates how the protocol can be implemented consistently while remaining responsive to different research purposes and participant populations.

Table 2. Characteristics of Studies Used to Demonstrate Protocol Application

	Study A	Study B
Study population	Undergraduate engineering transfer students	Graduate students in engineering and computer science
Research focus	Post-transfer self-adjustment to a four-year university and how adjustment evolves over time	Self-adjustment to institutional expectations in graduate programs
Guiding research questions	How do transfer students adjust to a four-year institution, and how does this adjustment change over time?	How do graduate students interpret institutional expectations, and what challenges or tensions do they experience?
Participatory method	Journey Map + semi-structured interviews	Emotional Journey Map + semi-structured interviews
Role of visual artifact	Journey Map captured critical events and transitions during the current semester and guided in-depth interview discussion	Emotional Journey Map represented emotionally significant experiences and guided reflection on expectations, identity, and adjustment
Temporal scope of data	One academic semester (with planned follow-up across first three semesters)	Since starting graduate school (master's; early, mid, and late Ph.D. stages)
Study design	Longitudinal	Cross-sectional

In Study A, the four protocol stages were implemented as follows. During Stage 1, researchers framed the Journey Map explicitly as a reflective tool rather than a curricular or planning document. This distinction proved important, as early pilot interviews revealed that some participants initially interpreted it otherwise. Written instructions and a brief orientation video

were provided in advance to support independent preparation while preserving participant agency. In Stage 2, undergraduate transfer students created Journey Maps representing their current semester, selecting their own events, timeframes, and visual structures without predefined categories. Stage 3 consisted of a semi-structured interview anchored in the participant's map, during which the Journey Map guided a substantial portion of the conversation, enabling participants to connect experiences to academic goals, belonging, and navigation of institutional resources. Stage 4 involved secure artifact submission through Qualtrics, de-identification, and contextual notetaking to support later interpretation.

In Study B, the same four stages were adapted to a graduate context characterized by longer, more emotionally complex trajectories. Stage 1 required particular care in framing, because Emotional Journey Maps foreground affective experience. Orientation sessions explicitly acknowledged the emotional nature of the activity and communicated referral resources as part of the consent process. In Stage 2, graduate students created Emotional Journey Maps spanning their time since beginning their programs, with varying temporal scopes by career stage. During Stage 3, emotional indicators on participants' maps, such as emotion faces or markers, served as anchor points for narrating experiences related to institutional expectations, identity tensions, and coping. As in Study A, Stage 4 followed consistent ethical data management procedures, with additional attention to confidentiality given the sensitivity of the experiences shared.

Across both studies, participants' maps often took a timeline form, with a sequence of milestones (e.g., "first exam," "joining a lab," "dropping a course"), accompanied by emotion markers, brief labels, and, in some cases, symbols or doodles. Figure 1 provides anonymized examples of Emotional Journey Maps to illustrate the form and variety of visual artifacts generated through the protocol.

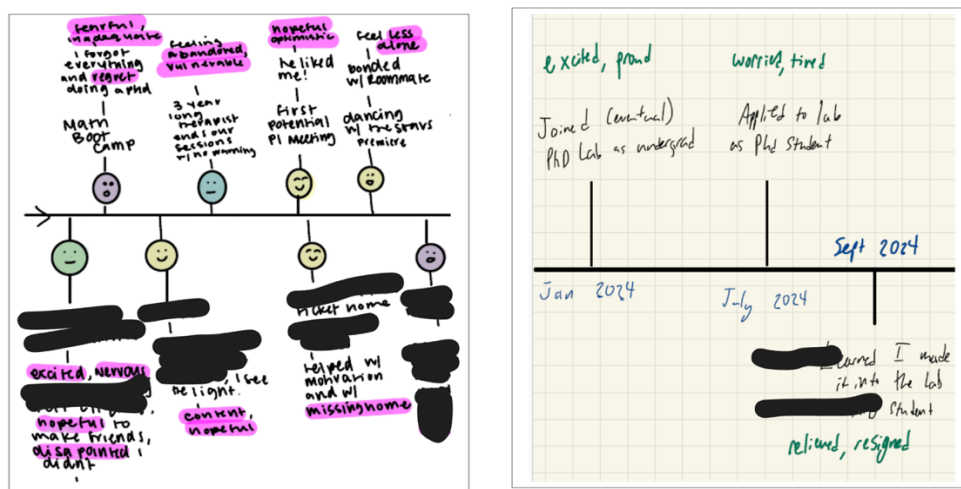


Figure 1. Examples of Emotional Journey Map (anonymized).

During interviews, researchers asked participants to explain the meaning of specific segments and symbols (e.g., "What does this image represent for you?"), supporting accurate interpretation and participant-led elaboration. This practice ensured that visual elements were treated as participant-authored representations requiring contextual explanation rather than as researcher-interpreted "codes" in isolation. A brief illustrative excerpt shows how the protocol supported participant sensemaking without positioning the method as an intervention. One transfer student

noted: *“I would say this interview was really helpful in helping me reflect about my experiences here, and it helped me kind of have a clearer understanding of what my goals are, and what I should change for next semester”*. This excerpt illustrates the *sensemaking function* of the artifact-centered interview structure, rather than claiming educational impact.

5. Methodological Validation and Contributions

This section describes how the participatory visual methods protocol was validated and why it constitutes a methodological contribution for interpretive engineering education research. Consistent with interpretive quality principles, validation is treated as a design and process concern, focused on the credibility and usefulness of knowledge generated, rather than as a demonstration of predictive power or replication. We draw on Walther et al.’s conceptualization of research quality in engineering education as spanning data collection and data analysis, with quality supported through interrelated forms of validation (procedural, communicative, pragmatic) that collectively strengthen theoretical alignment and interpretive credibility [24].

Within this framework, theoretical validation represents the central criterion of quality, supported by procedural, communicative, and pragmatic validation. Procedural validation mitigates methodological threats through coherent design and triangulation; communicative validation establishes a community of interpretation through dialogue and consensus; and pragmatic validation examines the alignment between theoretical claims and empirical reality. Together, these forms of validation supported by process reliability ensure that the theory produced is coherently grounded in participants’ lived experiences.

5.1 Protocol Development and Pre-Implementation Refinement. Prior to data collection, the team refined the protocol through iterative design work to ensure that participant-facing materials and interview structures were comprehensible, context-appropriate, and supportive of participant agency. First, we reviewed prior scholarship on participant-generated mapping (e.g., journey maps and life maps) to identify design principles that foreground agency, reflexivity, and meaning-making. Second, research team members and individuals similar to the intended study populations participated in mock interviews and pilot mapping activities to test the feasibility of the map prompts and the flow of the interview guide. Third, pilot participants provided feedback on question clarity, language appropriateness, and the usability of mapping instructions (e.g., expectations for content, level of detail, and how to begin). Fourth, the team used analytic notes from mock sessions and debrief discussions to revise prompts, improve transitions, and clarify facilitation guidance for both in-person and virtual implementation.

Because the protocol relies on participant-generated visual artifacts, we implemented explicit ethical procedures to protect confidentiality and preserve participant control. Maps were submitted via a secure Qualtrics link that separated identifying information from artifact files and supported the handling of confidential data. The consent process emphasized participant ownership of visual materials, the option to omit sensitive content, and the ability to withdraw or revise submissions. We also introduced potential emotional risks associated with narrating lived experiences and shared referral information for university support resources when needed. Participants then developed a Journey Map or Emotional Journey Map using written examples and video/paper guidelines that emphasized



Figure 2. Physical interview space.

participant-driven storytelling and flexible graphic expression. Semi-structured interviews were conducted in person or virtually in a private setting and centered on the participant's map as the primary elicitation artifact. Figure 2 shows the physical interview space, intentionally arranged to be warm and welcoming, supporting comfort during reflection and sharing. Interviews were audio-recorded and centered on narrative sensemaking anchored in the participant's map. These procedural choices reflect deliberate design decisions intended to support the quality criteria described in the following section.

5.2 Validation of the Participatory Visual Methods Protocol. To evaluate the quality of the participatory visual methods protocol, we draw on Walther et al.'s framework. Within this framework, research quality is supported through procedural, communicative, and pragmatic validation, which together strengthen theoretical alignment and are stabilized through process reliability. The sections below describe how each form of validation was operationalized across the two studies used to demonstrate the protocol.

5.2.1 Procedural Validation. Procedural validation concerns the extent to which research design and data-generation procedures support credible and defensible interpretations. Across both studies, procedural validation was supported through iterative instrument refinement, a transparent methodological structure, and multiple forms of triangulation.

Iterative instrument refinement. Instruments were refined through mock interviews, pilot Journey Maps or Emotional Journey Maps, inter-researcher calibration, and participant feedback. These cycles ensured that interview prompts and mapping instructions aligned with participants' lived experiences and evolved responsively as early insights emerged. For example, in Study A, early interviews revealed that some participants initially interpreted the Journey Map as a curricular planning tool, prompting refinements to emphasize reflection and sensemaking. In Study B, refinements supported usability in a multilingual context.

Transparent methodological structure. Data generation followed a consistent sequence: (1) a brief pre-survey capturing contextual information, (2) an orientation clarifying the purpose and use of the visual artifact, (3) artifact creation, and (4) a semi-structured interview anchored in the participant's map. This transparency reduced procedural ambiguity and enhanced dependability across participants and study contexts.

Triangulation. Interpretation was stabilized through method triangulation (pre-surveys, interviews, and visual artifacts), investigator triangulation (multiple researchers reviewing and negotiating interpretations), and data source triangulation (longitudinal undergraduate and cross-sectional graduate samples). Where relevant, theory triangulation supported interpretive depth. To further illustrate how triangulation was operationalized during data generation, Figure 3 presents an anonymized participant's Journey Map annotated with contemporaneous researcher notes (shown in blue). These notes document points of clarification, emergent analytic questions, and follow-up prompts generated during the artifact-centered interview, demonstrating how visual artifacts, interview dialogue, and researcher sensemaking were integrated in real time. Identifying information has been removed.

5.2.2 Communicative Validation.

Communicative validation addresses the co-construction of meaning between researchers and participants and ensures interpretations remain grounded in participants' lived realities. Across both studies, communicative validation was supported through transparent communication, participatory interviewing practices, and collaborative analytic reflection. Orientation sessions and instructional materials clearly communicated research purposes, procedures, and participant roles, fostering conditions for meaningful engagement. During interviews, Journey Maps and Emotional Journey Maps seed as shared reference points, enabling participants to guide narrative flow, clarify meanings, and elaborate on salient experiences. In Study B, emotional indicators on Emotional Journey Maps served as anchors for discussing affective dimensions of graduate experiences, supporting articulation of tensions, coping processes, and identity-related interpretations. Within the research team, collaborative engagement with the data through Reflexive Thematic Analysis supported dialogic sensemaking while mitigating individual researcher bias.

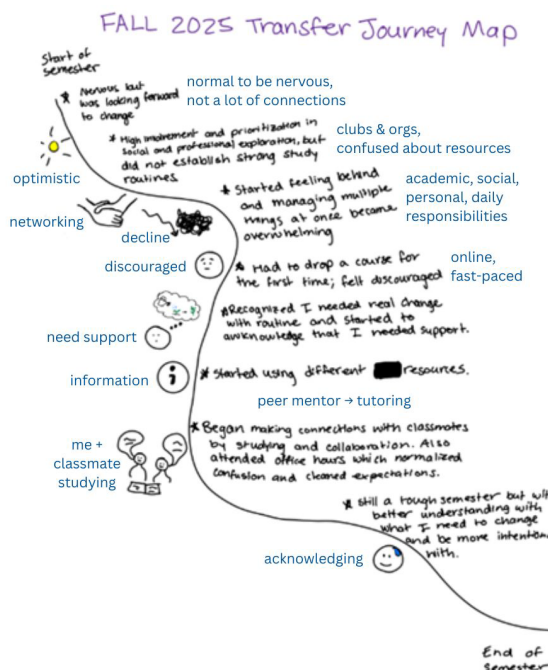


Figure 3. Participant Journey Map with Contemporaneous Researcher Annotations Supporting Procedural and Communicative Validation

5.2.3 Pragmatic Validation. Pragmatic validation examines whether research methods function effectively in practice. Across both studies, pragmatic validation was supported through protocol usability, participant engagement, and feasibility across contexts. Revisions to participant-facing materials, including mapping guides and orientation resources, improved clarity and accessibility, enabling participants to meaningfully engage in artifact creation and discussion. During interviews, participants actively referenced, modified, and elaborated on their visual artifacts, demonstrating that the protocol functioned as intended to support reflection and sensemaking. Participant feedback is used here to illustrate the functional alignment between the protocol design and its purpose, rather than to claim educational or developmental impact.

5.2.4 Theoretical Alignment and Process Reliability. Across Walther et al.'s framework, procedural, communicative, and pragmatic validation collectively support theoretical alignment by strengthening the fit between interpretive claims and participants' lived experiences. In this work, alignment was supported through coherence between participatory epistemic commitments, artifact-centered design, and analytic practices. Process reliability was further strengthened through protocol refinement prior to data collection and multiple researchers' engagement with interview transcripts and visual artifacts during analysis, stabilizing interpretation and reinforcing the credibility of knowledge generated through the protocol.

6. Limitations and Recommendations for Future Use

This section reflects on methodological limitations encountered during implementation of the participatory visual methods protocol and offers recommendations for researchers seeking to adapt or extend its use. These reflections are presented as design considerations, not empirical findings, and are intended to support transparent and responsible use of participatory visual artifacts in interpretive engineering education research.

6.1 Methodological Limitations and Implementation Challenges. As with all participatory qualitative methods, the protocol places meaningful demands on both participants and researchers. Across both studies, several challenges emerged that are common to participatory and interview-based research, as well as challenges specific to the use of visual artifacts. First, participant preparation varied. Some participants arrived without having completed their Journey Map prior to the interview. In these cases, researchers scaffolded map creation during the interview using a basic timeline structure. While this approach preserved access to participant narratives and avoided rescheduling, it reduced opportunities for independent reflection. This highlights a recurring tension between logistical feasibility and participant autonomy in participatory research designs. Second, communicative and emotional challenges arose, particularly in multilingual and emotionally charged contexts. When interviewers and participants had different first languages, articulation of complex or affective experiences required additional clarification and cultural sensitivity. In several interviews, participants experienced strong emotional responses. While these moments underscore the depth of sensemaking supported by visual artifacts, they also require interviewer preparedness, ethical awareness, and clear protocols for emotional support. Third, the protocol relies on participants' ability to externalize experiences visually and emotionally. Some participants, particularly when using Emotional Journey Maps, initially struggled to name or label emotions. To avoid introducing interpretive bias, researchers refrained from supplying emotion labels and instead used open-ended prompts to support articulation. This preserved participant agency but occasionally limited affective specificity. Finally, the emergence of generative AI-assisted artifact creation introduced an unanticipated methodological consideration. One participant reported using ChatGPT to help generate a Journey Map. While this does not inherently invalidate the artifact, it raises questions about authorship, creativity, and agency in participatory research. Because the protocol is designed to privilege participant-driven representation, unexamined AI mediation may shape or obscure individual sensemaking processes.

6.2 Recommendations for Future Use and Adaptation. Based on these limitations, we offer the following recommendations:

- **Support preparation without over-structuring.** Clear but flexible orientation materials (e.g., brief videos) can improve readiness while preserving creative freedom. Emphasizing reflection over aesthetics helps reduce participant anxiety and variability in preparation.
- **Plan explicitly for emotional labor.** Because visual artifacts can surface emotionally salient experiences, researchers should be trained in trauma-informed interviewing practices and prepared to pause, redirect, or provide referrals when needed. Acknowledging emotional risk during consent strengthens ethical transparency.
- **Treat visual artifacts as contextualized representations.** Journey Maps and Emotional Journey Maps should always be interpreted through participant narration. Researchers should ask participants to explain symbols, spatial arrangements, and emotion markers rather than coding visual elements in isolation.

- **Address generative AI use intentionally but neutrally.** Rather than prohibiting or encouraging AI use, we recommend keeping artifact creation instructions open and non-prescriptive. This preserves participant choice while avoiding normative pressure. Future methodological work may more directly examine how AI-mediated artifact creation interacts with participatory agency and interpretive validity.

These limitations and recommendations should be interpreted considering the protocol's intended purpose. The participatory visual methods protocol is not designed to standardize participant experience or optimize efficiency; rather, it functions as a flexible methodological scaffold for supporting participant-led sensemaking of organizational and emotional experiences. Researchers adapting this protocol to new populations, institutional contexts, or digital platforms should treat it as a design space for reflexive methodological decision-making rather than a fixed procedure.

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8. Author Contributions

Conceptualization and methodology: Rivera-Jiménez conceptualized the participatory visual methods protocol and designed the overarching methodological framework. **Investigation and data curation, Study A:** Lubbe led participant recruitment, data collection, analysis, and interpretation for Study A. **Investigation and data curation, Study B:** Herrera Palacio led participant recruitment, data collection, analysis, and interpretation for Study B. **Supervision and project administration:** Rivera-Jiménez supervised both student researchers and oversaw project coordination across both studies. **Writing, original draft:** Rivera-Jiménez drafted and structured the manuscript, drawing on preliminary written contributions from Lubbe and Herrera Palacio. **Writing, review, and editing:** All authors reviewed and edited the manuscript and approved the final version.

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