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RESEARCH BRIEF

Training the Future Public Health Workforce: Reflexive Insights From an Undergraduate Needs Assessment Experience

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PEER REVIEWED

Summary

What is already known on this topic?

The development of a public health workforce relies on competency-based frameworks and experiential learning to promote workforce readiness.

What is added by this report?

This study suggests that capability may develop through iterative engagement with uncertainty, constraint, and reflexive judgment, rather than linear skill acquisition.

What are the implications for public health practice?

These findings may inform further examination of whether training should move beyond competencies. Such approaches may support reflective decision-making, responsibility, and engagement with real-world complexity while strengthening capability development.

Abstract

Objective

The objective of this study was to examine how public health workforce capabilities develop through engagement in real-world research tasks.

Methods

In this qualitative longitudinal autoethnographic study, 72 reflective journal entries were analyzed using reflexive analysis to explore the development of capability during applied research in public health.

Results

Five developmental processes were found to demonstrate that capability emerges through reconstructing understanding rather than through linear skill acquisition: 1) destabilizing prior knowledge, 2) engaging with uncertainty, 3) negotiating real-world constraints, 4) forming professional identity, and 5) developing reflexive judgement.

Discussion

Experiential research participation transforms knowledge into context-sensitive professional capability, highlighting the importance of uncertainty, responsibility, reflection, and practice beyond competency-based training.

Objective

The US public health workforce continues to experience persistent staffing shortages despite expansion of public health education programs, underscoring the need for training approaches that better prepare students for increasingly complex professional practice (1,2). Competency-based frameworks are the primary approach to workforce preparation by defining the knowledge and skills expected of practitioners (3), yet they provide limited insight into how professional capability develops through practice (4,5). In workforce development literature, competency is commonly used to describe the knowledge and skills expected for effective practice, whereas capability emphasizes the capacity to adapt, integrate, and apply those competencies within complex contexts (3–5).

Experiential learning and mentoring are recognized as important mechanisms for workforce development (6), yet research has largely focused on program outcomes rather than developmental processes through which learners engage with complexity, interpret evidence, and make decisions under conditions of uncertainty. As a result, the in situ processes through which capability develops are insufficiently understood and treated as a "black box" of professional training.

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The objective of this study was to examine how public health workforce capability developed through participation in an undergraduate behavioral health needs assessment and use of longitudinal reflexive journal data. Specifically, the study asked: How does capability develop through engagement with health research during field-based training?

Methods

A longitudinal qualitative autoethnographic case study was conducted to examine the development of public health workforce capability. Data consisted of entries in a journal recorded by a single student researcher. During the spring 2026 semester, at a midsized New England university, this researcher, the first author, a senior undergraduate psychology student and a peer recovery specialist in the university's collegiate recovery program for substance abuse disorder, enrolled in an undergraduate psychological and behavioral science research experience course (PSY 496). This course was a supervised applied experience in psychological and behavioral science research that covered research methodology, data collection and analysis, scientific communication, ethical research practice, and scholarly dissemination. Through this course, the student researcher was engaged in a collegiate recovery needs assessment.

The needs assessment was required by the collegiate recovery program's evaluators, the Association of Recovery in Higher Education (7). The needs assessment project used a mixed-methods design to examine perceptions of substance use on campus and barriers to seeking help and accessing support. Data collection included 21 semistructured interviews with students (9 students who interacted with the collegiate recovery program and 12 students recruited through convenience sampling), a stakeholder survey, and an epidemiologic profile of substance use, mental health, and barriers to support. The student researcher was responsible for planning, data collection, analysis, and reporting under faculty supervision and mentoring.

The primary data collection method for this study was reflective journaling, which generated a longitudinal record of research engagement, analytic reasoning, problem-solving, and professional development. Longitudinal journaling is used to capture developmental processes as they unfold over time rather than retrospectively (8). In this study, journal prompts, co-developed by the student researcher and a faculty mentor (A.C-L.) elicited reflection on research experiences, methodological decision-making, responses to uncertainty, evolving professional identity, and the potential influence of personal beliefs, assumptions, and experiences on engagement with the research process. For example, one prompt was, "How do my personal and professional experiences influence my understandings of students' stories?" Because the study analyzed the student researcher's autobiographical data, no participant inclusion or exclusion criteria were required.

The student researcher completed journal entries throughout the semester during the planning, implementation, analysis, and reporting phases of the collegiate recovery needs assessment project. Although reflections emerged across all phases of the project, the qualitative components of the needs assessment, particularly reviewing and coding the semistructured interviews, generated especially rich reflections related to methodological uncertainty, researcher positionality, and interpretation of participant perspectives.

Braun and Clarke's reflexive thematic analysis (8) was used to analyze inductively 72 semistructured journal entries. The student researcher iteratively reviewed the dataset, generated and refined codes, and developed themes through ongoing reflexive engagement and faculty mentorship. Analysis incorporated both semantic and latent coding to examine explicit descriptions of experience along with underlying patterns relevant to workforce capability development. Reflexive memorandum writing and mentor dialogue were used throughout the analytic process to support code refinement, theme development, and analytic transparency (8).

As a woman with sorority experience and lived familiarity with recovery pathways, recovery-support resources, and campus social environments, the student researcher had an insider position relative to many of the academic, social, and substance-use contexts explored in the needs assessment. This positionality provided contextual knowledge that informed understanding of the setting and participant experiences while also introducing the potential for assumptions shaped by personal experience. Accordingly, reflexive journaling was conducted to critically examine the influence of personal experiences, values, beliefs, and social location on the research process and interpretation of findings.

Artificial intelligence (AI)–assisted tools (eg, Claude Sonnet 5.5 by Anthropic) were used during preliminary coding to support data organization and generate provisional coding suggestions. All AI-generated outputs were critically evaluated, compared with researcher-generated interpretations, and either refined or discarded through researcher-led analysis. Final coding, theme development, and interpretation remained the responsibility of the student researcher (9).

The study analyzed autobiographical data only and was reviewed by the university's institutional review board, which determined that it did not constitute human-subjects research.

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Results

Analysis of 72 reflexive journal entries generated 5 interrelated themes describing the development of public health workforce capability through research participation (Table). Together, the themes suggest that capability emerged through iterative engagement with uncertainty, constraint, responsibility, and reflexive interpretation rather than through linear acquisition of skills.

Bridging classroom knowledge and applied research practice. This theme captured the destabilization of classroom-acquired knowledge when applied in real-world contexts. Research methods that appeared straightforward in coursework required reinterpretation, adaptation, and context-dependent decision-making when participant data and research problems were considered.

Research capability develops through iteration rather than passive instruction. This theme reflected learning as a recursive process in which each attempt to apply knowledge generated new questions and uncertainties. Capability developed through repeated cycles of action, reflection, adaptation, and problem-solving rather than through mastery of predefined procedures.

Professional learning occurs within the constraints of real-world practice. This theme identified time, resource, and operational constraints as central developmental conditions. Rather than functioning solely as barriers, constraints required prioritization, flexibility, and judgments regarding what constituted sufficient rigor within practical limitations.

Becoming a researcher through participation in practice. This theme encompassed the emergence of professional identity through increasing responsibility, confidence, and engagement in research activities. The transition from student observer to active contributor occurred through participation in research decision-making and problem-solving.

Research judgment emerges through reflexive engagement. This theme identified reflexivity as the mechanism through which assumptions were examined, interpretations refined, and context-sensitive judgment developed. Reflexive engagement integrated the learning processes represented across all themes.

Rather than representing discrete stages, the themes operated as interconnected developmental processes through which professional capability was continuously reconstructed over time.

Discussion

This study examined how public health workforce capability develops through research tasks. Findings suggest that capability formation extends beyond discrete competencies and emerges through engagement with uncertainty, real-world constraints, responsibility, and reflexive judgment. These findings may help address a gap in understanding the in situ processes through which workforce capability develops in training (10).

Competency-based frameworks are essential for defining knowledge and skills expected of public health practitioners (3). However, our findings suggest that these frameworks may only partially account for workforce preparation because they may not fully explain how learners develop adaptive judgment in complex and uncertain environments (4,5,10). In this study, capability emerged not through mastery of predetermined skills but through integrating knowledge with interpretation, decision-making, and contextual responsiveness (4,5).

An unexpected finding was the role of uncertainty and constraints as developmental conditions rather than barriers to learning. Time limitations, operational challenges, and competing demands required prioritization, adaptation, and judgment. Rather than diminishing as knowledge increased, uncertainty expanded as learners engaged with increasingly complex research activities (10). This finding is consistent with literature suggesting that practice environments shape learning through engagement with real-world conditions rather than application of knowledge alone (6,11).

These findings also point to the importance of participation, mentoring, and reflexive engagement in workforce development. Consistent with prior research, experiential learning and mentorship appeared to support development of professional confidence and identity through participation in meaningful work (6,12). Professional identity appeared to emerge through responsibility, decision-making, and engagement with uncertainty (13). Reflexive engagement may have enabled critical examination of assumptions and interpretations, supporting context-sensitive professional judgment.

These findings may inform further examination of how public health training experiences support capability development. Educational experiences that create opportunities for learners to engage with complexity, exercise judgment, assume responsibility, and participate in structured reflection merit further study. Exposure to uncertainty and real-world constraints may function as developmental conditions that cultivate adaptability and context-sensitive decision-making (10,11). Future research should examine whether training environments that integrate participation, mentorship, and reflexive practice may better prepare trainees for contemporary public health work (2,6,12).

This study is limited by its single-case autoethnographic design, which does not aim for statistical generalizability but provides an in-depth examination of capability development to support hypo-

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thesis generation. Because the researcher served as both participant and analyst, the study is subject to selectivity and interpretive bias despite ongoing reflexive practices and faculty mentorship. Future research should examine these processes across diverse learners, settings, and public health training programs.

Overall, these findings suggest that workforce capability may develop through sustained engagement with practice and may inform educational approaches that extend beyond competency acquisition to cultivate reflective public health professionals.

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References

1. Leider JP, Yeager VA, Kirkland C, Krasna H, Hare Bork R, Resnick B. The state of the US public health workforce: ongoing challenges and future directions. *Annu Rev Public Health*. 2023;44(1):323–341. doi:10.1146/annurev-publhealth-071421-032830
2. Madsen ER, Mui P, Resnick B, Yeager VA. Innovations and hiring improvements to address public health workforce recruitment. *J Public Health Manag Pract*. 2025;31(5):806–817. doi:10.1097/PHH.0000000000002179
3. MacKay M, Ford C, Grant LE, Papadopoulos A, McWhirter JE. Developing competencies in public health: a scoping review of the literature on developing competency frameworks and student and workforce development. *Front Public Health*. 2024;12:1332412. doi:10.3389/fpubh.2024.1332412
4. Frahsa A, Abel T, Gelius P, Rütten A. The capability approach as a bridging framework across health promotion settings: theoretical and empirical considerations. *Health Promot Int*. 2021;36(2):493–504. doi:10.1093/heapro/daaa076
5. Lozano JF, Boni A, Peris J, Hueso A. Competencies in higher education: a critical analysis from the capabilities approach. *J Philos Educ*. 2012;46(1):132–147. doi:10.1111/j.1467-9752.2011.00839.x
6. Blenner SR, Roth SE, Manukyan R, Escutia-Calderon Y, Chan-Golston AM, Owusu E, et al. Community partnerships and experiential learning: investing in the next generation of a diverse, qualified public health workforce. *Pedagogy Health Promot*. 2021;7(Suppl 1):51S–62S. doi:10.1177/23733799211046974
7. Association of Recovery in Higher Education. About ARHE. 2026. Accessed October 22, 2026. https://collegiaterecovery.org
8. Braun V, Clarke V. Reflecting on reflexive thematic analysis. *Qual Res Sport Exerc Health*. 2019;11(4):589–597. doi:10.1080/2159676X.2019.1628806
9. Xu W. Doing thematic analysis in the age of generative AI: practices, ethics and reflexivity. *Int J Qual Methods*. 2026;25:1–14. doi:10.1177/16094069261425173
10. Moffett J, Hammond J, Murphy P, Pawlikowska T. The ubiquity of uncertainty: a scoping review on how undergraduate health professions' students engage with uncertainty. *Adv Health Sci Educ Theory Pract*. 2021;26(3):913–958. doi:10.1007/s10459-021-10028-z
11. Kennedy M, Billett S, Gherardi S, Grealish L. Practice-based learning in higher education: jostling cultures. In: Kennedy M, Billett S, Gherardi S, Grealish L, editors. *Practice-Based Learning in Higher Education: Jostling Cultures*. Springer Netherlands; 2015:1–13. doi:10.1007/978-94-017-9502-9_1
12. Grilo S, Bryant M, Garbers S, Wiggin M, Samari G. Effects of a mentoring program for Black, indigenous, and people of color and first-generation public health students. *Public Health Rep*. 2024;139(3):385–393. doi:10.1177/00333549231181346
13. Wenger E. *Communities of Practice: Learning, Meaning, and Identity*. Cambridge University Press; 1998. doi:10.1017/CBO9780511803932

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Table

Table. Major Themes Reflecting Processes in Development of Public Health Workforce Capability[a]

Theme	Subtheme	Interpretive definition	Illustrative excerpt
Bridging classroom knowledge and applied research practice	Methodological uncertainty	Instances in which classroom-acquired methodological knowledge becomes unstable when applied in real-world contexts, requiring reinterpretation and situated decision-making.	Upon education on Invivo, I found much difficulty just reporting students' words as I had so many things I wanted to say.
	Coding and analysis difficulty	Situations in which analytic tasks require interpretive judgment beyond procedural instruction, revealing the limits of rule-based understanding and the need for data-grounded decision-making.	I have to remind myself to focus on how participants themselves are making sense of their experiences rather than imposing my own understanding.
	Skill gaps	Recognition of discrepancies between conceptual knowledge and the procedural and interpretive capabilities required in practice, prompting adaptation and experiential learning.	There seem to be hundreds of invisible steps embedded within each stage I wouldn't have thought of.
Research capability develops through iteration rather than passive instruction	Iterative learning	Cyclical engagement in practice, reflection, and revision through which understanding is progressively restructured rather than linearly acquired.	Every time I learned 1 component of the process, I discovered 5 additional things I did not know.
	Adaptation	Modification of expectations, strategies, and approaches in response to emerging challenges, reflecting increasing flexibility in navigating uncertainty.	At first, these changes felt frustrating because I tend to abide by a strict plan, but adjustment has become an expectancy.
	Problem-solving	Active engagement with obstacles that requires evaluating options and adjusting approaches, contributing to the development of independent analytic capacity.	While I prefer in-person interviews, it seems that the participants do not, so we are adjusting approaches and promoting the virtual option.
Professional learning occurs within the constraints of real-world practice	Time constraint	Recognition of finite temporal boundaries that require prioritization and decision-making about what constitutes sufficient and achievable work.	There is never enough time. No matter how much progress I make, I feel there is always more that needs to be done.
	Resource constraint	Limitations in access to tools, support, or information that necessitate adaptation and influence the scope and execution of research activities.	Since the universities are lacking in communication, we are shifting perspectives.
	Operational constraint	Practical and organizational conditions that structure how research is conducted, requiring negotiation between ideal methods and feasible actions.	School doesn't teach you how to do this stuff. They just say, "Then put it in an Excel and analyze!"
Becoming a researcher through participation in practice	Confidence development	Increasing trust in one's ability to conduct research tasks effectively, emerging through repeated engagement and successful navigation of challenges.	But I ask different and better questions now, I better tolerate ambiguity, and I pay closer attention to the evidence.
	Identity development	The process through which participation in research leads to internalization of professional roles, shifting from observer to active contributor.	Now that I have the privilege to be surrounded by people who are established in the field I want to go into, I just feel humbled like I have so much to learn.
	Role uncertainty	Early-stage ambiguity regarding expectations, behaviors, and responsibilities within the researcher role, prompting reflection and adjustment.	How do I interview the participant, should I be friendly, should I be professional, should I respond back to them, should I stay quiet, do I take notes, do I not? There are so many specific details I wish I knew but are just assumed to be common knowledge.
Research judgment emerges through reflexive engagement	Bias awareness	Recognition that personal experiences and assumptions influence interpretation, requiring attention to how meaning is constructed.	Now that I have the voice and opportunity to educate and shed light on this very important issue, it is hard to not use my own trauma with the experience as motivation to include my own biases.

[a] A longitudinal qualitative autoethnographic case study was conducted to examine the development of public health workforce capability. Data consisted of entries in a journal recorded by a single student researcher during spring 2026 at a midsized New England university. The student researcher engaged in a mixed-methods collegiate substance abuse recovery needs assessment that included semistructured interviews, a stakeholder survey, and an epidemiologic profile.

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Theme	Subtheme	Interpretive definition	Illustrative excerpt
	Reflexivity	Ongoing critical examination of how positionality and prior experience shape analytic decision-making and interpretation.	As someone working in recovery support, I naturally view some of these behaviors as concerning. I have to remind myself to focus on how participants themselves are making sense of their experiences.
	Self-monitoring	Active regulation of interpretive processes through questioning, checking assumptions, and aligning analysis with data rather than personal reaction.	Throughout doing my initial round of Invivo coding, I am noticing much bias appearing within myself. As someone who was in Greek life . . . I am putting much emphasis on how bad Greek life is for students' well-being. But I also have to remember that it is not my words, it is the students' words, and that is what I am writing.

[a] A longitudinal qualitative autoethnographic case study was conducted to examine the development of public health workforce capability. Data consisted of entries in a journal recorded by a single student researcher during spring 2026 at a midsized New England university. The student researcher engaged in a mixed-methods collegiate substance abuse recovery needs assessment that included semistructured interviews, a stakeholder survey, and an epidemiologic profile.

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