Professor/Lt.Col., Anders McDonald Sookermany, Norwegian Defence University College, Thomas Slensvik, Designing for Complexity: Integrating Systems Oriented Design and AI in Professional Military Education.

Professional military education (PME) is increasingly called upon to prepare officers for a world marked by complexity, fragmentation, and hybrid threats (Enstad & Hagen, 2025), where learning must be situated, adaptive, and embedded in realistic communities of practice (Sookermany, 2011). In such environments, knowledge is often contested, actors unpredictable, and traditional categories of war and peace blurred. This paper explores how Systems Oriented Design (SOD) (Sevaldson, 2022), in combination with artificial intelligence (AI), can serve as both a pedagogical approach and a learning architecture for cultivating reflexivity, systems literacy, and ethical agency in future military leaders. The empirical basis of the study is an upcoming experiment embedded in the Joint Operational Planning course at the Norwegian Defence University College (NDUC), conducted in collaboration with the Swedish Defence University (SDU). As part of a NATO HQ simulation, three J5 planning groups are formed: one rooted in doctrinal planning, another combining doctrine and AI, and a third applying SOD with AI support. This paper focuses on the third group, composed of assigned students with little to no prior training in SOD methodology tasked with engaging operational planning through a systems-oriented design lens. The group will operate as an autonomous cell, exploring alternative ways to make sense of the operational environment and structure their planning approach. Building on previous SOD-integrated teaching practices (Slensvik & Sookermany, 2024), we anticipate that the design process will shift the educational dynamic from procedural training toward exploratory learning, fostering the kind of reflection-in-action that Schön (1983) described as central to professional practice. We aim to investigate how students engage with the planning task differently when exposed to open-ended problem-framing, stakeholder mapping, and iterative sensemaking—key SOD tools that contrast with more prescriptive planning methodologies. We also consider how AI tools may shape cognitive effort and group interaction: Do they support or hinder the development of human-centered judgment, adaptability, and responsibility? This paper contributes to ongoing discussions about how PME can move beyond the transmission of doctrine to support deeper professional formation. We argue that addressing military complexity requires not just new content but new pedagogical forms—ones that might integrate design thinking, ethical reflection, and collaborative inquiry. Ultimately, the experiment offers insights into how military education can help officers prepare not only to plan under complexity, but to think, act, and learn within it.

References

Enstad, K., & Hagen, A. M. (2025). No common understanding? A scoping review of professional military education in the twenty-first century. Scandinavian Journal of Educational Research, 1-21. https://doi.org/10.1080/00313831.2025.2459408

Schön, D. A. (1983). The reflective practitioner : how professionals think in action. Basic Books.

Sevaldson, B. (2022). Designing Complexity: The Methodology and Practice of Systems Oriented Design. Common Ground Research Networks. https://doi.org/https://doi.org/10.18848/978-1-86335-262-8/CGP

Slensvik, T., & Sookermany, A. M. (2024). Unveiling the Two Stories: Contrasting Approaches to Systems Oriented Design in Design Universities and Military Staff Colleges RSD13: Rivers of Conversations, Oslo.

Sookermany, A. M. (2011). Learning in Doing – Skills Acquisition in [Post-] Modernised Military Communities of Practice. Defence Studies, 11(4), 615-635. https://doi.org/10.1080/14702436.2011.642195