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Ruhija Hodza-Beganovic

**Developing non-technical skills through designed  
experiential learning**

**Participatory research in a Balkan healthcare context**

**Author:** Ruhija Hodza-Beganovic

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## **Abstract**

Rapid changes in population health needs have increased the importance of understanding how healthcare institutions in low- and middle-income countries (LMICs) support the development of healthcare professionals' competencies. While traditional training has primarily emphasised clinical and technical skills, healthcare systems in LMICs often face additional challenges related to limited resources, entrenched hierarchies, and complex cultural contexts. These conditions highlight the need to better understand the development of non-technical skills (NTSs), including communication, teamwork, leadership, and interprofessional collaboration.

This thesis examines how healthcare professionals understand and develop NTSs, with particular attention to leadership and interprofessional collaboration within healthcare settings in the Balkan region and in the context of international healthcare partnerships in Sweden. The study applies a designed experiential learning approach grounded in participatory and interactive educational practices. Kolb's experiential learning theory serves as the overarching conceptual framework and is applied across individual, team, and organisational levels, with surveys-used to stimulate dialogue.

The thesis is presented as a compilation, consisting of an introduction and four empirical studies employing both qualitative and quantitative research methods. Data were collected through interviews, focus groups, and observations.

The findings indicate that designed experiential learning approaches effectively foster the development and understanding of NTSs. These skills develop in ways that are closely shaped by organisational structures and cultural contexts. The results contribute to a growing body of evidence supporting experiential, participatory, and context-sensitive approaches in healthcare education and suggest that traditional dyadic mentoring alone is insufficient to support professional development in increasingly complex healthcare environments.

**Keywords:** non-technical skills, experiential learning, healthcare professionals, survey-based experiential learning.

I dedicate this work to the memory of my late parents, Sukrija and Zekija Hodza, whose values, strength, and guidance have continually inspired and motivated me.

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## **Abbreviations**

ELT – Experiential learning theory

DBR – Design-based research

HICs – High-income countries

LMICs – Low-and middle-income countries

NTS – Non-technical skills

SBEL – Survey-based experiential learning

## List of papers

- I. Hodza-Beganovic, R., Berggren, P., Hugelius, K., & Edelbring, S. (2021). Survey-based experiential learning as a new approach to strengthening non-technical skills in LMIC health care settings. *BMC medical education*, 21(1), 240  
<https://doi.org/10.1186/s12909-021-02619-6>
- II. Hodza-Beganovic, R., Berggren, P., & Edelbring, S. Developing non-technical skills among healthcare professionals in international healthcare partnerships: A qualitative study with a survey-based experiential learning approach (manuscript)
- III. Hodza-Beganovic, R., Berggren, P., & Edelbring, S. (2025). Contextualizing interprofessional competencies in the Balkans: Healthcare workers' understanding of the concepts based on an existing framework and a self-report instrument. *Journal of Interprofessional Education & Practice*, 100787.  
<https://doi.org/https://doi.org/10.1016/j.xjep.2025.100787>
- IV. Hodza-Beganovic, R., Berggren, P., & Edelbring, S. The role of leadership in enhancing non-technical skills in healthcare: A qualitative study in a Balkan context. *Human Resources for Health* 23, 53 (2025). <https://doi.org/10.1186/s12960-025-01022-2>

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## Preface

International health partnerships, representing collaborations between healthcare institutions, have long played a vital role in advancing the competencies of healthcare professionals, thereby strengthening healthcare capacity in low- and middle-income countries (LMICs). For such partnerships to be effective, however, the educational approaches and knowledge they promote must be thoughtfully designed, grounded in local realities, and responsive to the needs of the participating organisations. Meaningful collaboration requires more than a unidirectional transfer of expertise across borders; it involves mutual understanding, bidirectional knowledge exchange, and the co-creation of practices that align with local organisational structures and cultural contexts.

The Kosovo crisis in 1999 marked a decisive turning point in my professional life. At that time, I was a newly qualified urologist, eager to begin my surgical career. Witnessing the devastation of the health sector in Kosovo, and the urgent need for recovery and reconciliation after the conflict, redirected my professional path. Instead of pursuing a purely clinical career, I became involved in coordinating international aid and collaborative projects aimed at rebuilding Kosovo's healthcare system. The international support provided during this period constituted one of the largest global aid efforts, focusing predominantly on strengthening technical skills and delivering professional training, an extension of the traditional education of physicians and nurses in the Balkans. Although competencies such as communication and teamwork were recognised, they were rarely addressed through structured training.

Over time, international healthcare partnerships evolved into long-term collaborations oriented towards sustainable development. This created opportunities to improve understanding of the existing experiences, challenges, and areas for improvement among healthcare professionals. With the understanding created, it became evident that the benefits of transferred technical expertise can only be realised when supported by equally strong non-technical skills (NTS), such as

communication, teamwork, leadership, and interprofessional competencies.

The international healthcare partnership underpinning this research was developed through the International Medical Program at Linköping University Hospital in Sweden. This partnership aimed to strengthen healthcare services in the Balkans in different fields. In this particular project, the emphasis was on developing surgical capacity and expertise for managing malformations in children across Bosnia and Herzegovina, Kosovo, and Montenegro. The initiative was led by a Swedish team working in the field of paediatric urodynamics. Once surgical techniques and competencies had been successfully transferred, several persistent challenges became apparent. These included difficulties in functional communication between team members, especially those from different clinical units, gaps in patient follow-up procedures, and shortcomings in counselling families regarding the long-term care of affected children. These challenges underscored the importance of non-technical competencies, particularly team-oriented and supportive leadership, effective communication within multidisciplinary teams, and the development of cross-cultural competence. In the Swedish context, these competencies are embedded within a multidisciplinary care model in which a surgeon, paediatrician, and urodynamic nurse collaboratively manage these cases. Adapting this model to the Balkan context required not only structural adjustments of competencies but also the development of interprofessional collaboration and distributed leadership practices, which are central to organisational learning and the sustainability of multiprofessional healthcare practice.

Ultimately, this project represents both a professional and personal journey of continuous learning in healthcare. It illustrates that meaningful change does not arise solely from the transfer of knowledge or technical skills but from building relationships, fostering reflection and open dialogue, and cultivating shared understanding among all participants. By strengthening NTS and collaborative practices, resilient health systems are created, advancing the broader vision of sustainable, high-quality healthcare for all.

# 1 Introduction

Effective healthcare systems depend on professionals competent in delivering high-quality, safe, and reliable care (1, 2, 3). In high-income countries (HICs), healthcare services are typically supported by well-established systems that promote continuous professional development and standardised training (3, 4, 5, 6). In contrast, LMICs, including many developing and post-crisis settings, face persistent cultural (7, 8, 9), structural, and resource-related constraints that limit the development and sustainability of robust healthcare services (10, 11).

Traditionally, education and training efforts for healthcare professionals have emphasised technical and clinical competencies focused on individual patient care (1, 2, 12). While these skills remain essential, they are increasingly insufficient to address the growing complexity of modern healthcare delivery (11, 13). Rising rates of chronic disease, ageing populations and multimorbidity require coordinated team-based care and continuous follow-up rather than standalone technical expertise (10, 12, 14). Evidence demonstrates that NTS—including communication, teamwork, leadership, decision-making, and situational awareness—are essential for safe and effective performance (15). Deficiencies in these skills are implicated in a substantial proportion of adverse events in healthcare settings (15, 16, 17). Earlier estimates suggested that between 50–80% of errors or adverse outcomes were influenced by limitations in NTSs (16, 17, 18, 19), although more recent research highlights the need for refined measurement contextual analyses (20, 21, 22). In response, many HICs have developed structured NTS training programmes in areas such as surgery, anaesthesiology, and emergency medicine, showing improvements in teamwork communication, leadership and clinical decision-making (15, 16, 17). The ability of healthcare professionals to function effectively within multidisciplinary and multicultural environments is widely recognised as a core competency of NTS and a cornerstone of coordinated, high-quality care (23, 24). Health education organisations in Canada (25) and the United States (26, 27, 28) have formalised learning on these competencies through interprofessional education frameworks that emphasise collaboration among physicians,

nurses, pharmacists, therapists, and other healthcare professionals to improve patient outcomes.

As healthcare systems continue to evolve, there is an increasing need to expand and adapt educational approaches for healthcare professionals sensitive to local contexts (29, 30, 31). Educational interventions that are co-created with local professionals and tailored to the sociocultural, organisational, and resource conditions of specific settings are more likely to foster local ownership and achieve sustained impact (32, 33). Experientially designed approaches offer a robust framework for the development and evaluation of such interventions in real-world healthcare environments, as they allow learning processes to be closely aligned with practice (34, 35).

Kolb's experiential learning theory (ELT) provides a conceptual foundation for participatory educational approaches by emphasising the role of experience, reflection, and conscious engagement in the learning process (36, 37). Learning is understood as an active process in which individuals construct knowledge through direct experience and reflective attention. In practical terms, this means that the present research not only iteratively designs and refines the educational intervention based on participant feedback, but also ensures that learning activities mirror the professional settings in which participants operate. By situating learning within existing work environments, the intervention supports the integration of experience and cognition, thereby enhancing the relevance and transferability of learning outcomes (37, 38).

Overall, this introduction established the rationale for focusing on the development of NTS within healthcare settings in LMICs. It has highlighted limitations in traditional training approaches, the documented impact of NTS on healthcare outcomes (39), and the value of adopting context-sensitive, experiential learning strategies (40). The theoretical and methodological foundations of the study, Kolb's ELT (35, 37) and a design-based research (DBR) approach (41, 42), have been introduced, along with their integration in the design of the educational intervention.

The following chapters present the research objectives, methodological framework, and findings of this participatory DBR study. Through this work, the thesis aims to demonstrate how a locally adapted experiential learning intervention can strengthen non-technical competencies and contribute to safer, more effective healthcare delivery in resource-limited contexts.

## **1.1 Background**

This study is situated within the context of three Balkan countries—Bosnia and Herzegovina, Kosovo, and Montenegro—all classified by the World Bank as lower-middle-income economies (43). Study II was conducted in international health partnership between Sweden and the LMICs. The health systems in these Balkan countries reflect the legacy of the 1990s, which followed the dissolution of the former Yugoslavia and resulted in the emergence of several independent states. Understanding the broader LMIC context is essential when introducing educational interventions aimed at strengthening healthcare systems. Without careful consideration of contextual cultural, and organisational factors, even well-intentioned externally driven initiatives may fail to achieve a sustainable impact (14, 38, 44).

Creating a learning context aligned with experiential learning design requires providing structured opportunities for engagement with experience, reflection, and conceptual thinking, while placing responsibility for learning on the learner and ensuring sufficient time for repeated practice (35-37). Designed experiential learning further emphasises the creation of spaces in which individuals reflect on their own understanding, share insight with teams, and extend learning to the organisational level (45-48).

In many low-resource healthcare settings, including those in the Balkan region, formal education and training in NTS have been largely absent (49-51). Healthcare professionals have traditionally been educated through profession-specific programmes that focus predominantly on clinical and technical expertise. As a result, essential competencies such as teamwork, interprofessional communication, collaborative problem-solving, leadership, and situational awareness have not been systematically addressed (49). This gap in NTS learning

means that even technically skilled clinicians may struggle to function effectively within teams or to manage the complex, coordinated care processes required for patient safety (49, 50).

Moreover, when NTS or team training programmes developed in HICs have been transferred directly to LMIC contexts, they have often failed to account for local cultural, educational, and organisational conditions (49, 51). Such one-size-fits-all interventions frequently demonstrate limited uptake and little sustainability once external support is withdrawn. Within the healthcare institutions that constitute the setting of this research, the absence of contextually adapted training in NTS and interprofessional collaboration emerged as significant barriers to improving healthcare delivery (49, 51).

The conceptual understanding of NTS in healthcare has been shaped by foundational work by Flin and colleagues, who defined NTS as essential cognitive and interpersonal skills—including situational awareness, communication, teamwork, and decision-making—that support safe clinical performance and reduce human error in complex environments (18, 19, 45). Building on this conceptual foundation, Gordon and colleagues developed a competency framework that translates these broad NTS concepts into observable, teachable, and assessable competencies (20-22). This framework defines NTS as a combination of social and cognitive skills required for safe, effective, and efficient interprofessional care and distinguishes between core competencies applicable to all practitioners and additional competencies specific to team leaders (21). Together, these frameworks provide a complementary link between theory and practice, supporting both the education and the assessment of NTS.

Sustainable improvement of healthcare systems in LMIC contexts requires deep cultural understanding, genuine local ownership, and long-term engagement (52, 53, 54). Development efforts must extend beyond technical solutions to include strengthening NTS and collaborative practices that enable healthcare teams to function effectively. In this study, experiential learning within the international partnership was operationalised through participatory workshops and on-site training sessions focused on real-world challenges encountered by

local healthcare teams. This approach aligns with the global health education model proposed by Chambers (55), which emphasises sets of ideas and activities empowering local practitioners to analyse and address challenges grounded in their own lived experiences. Such an approach increases the likelihood of sustainability and supports bidirectional learning, strengthening healthcare systems in LMICs while also enriching practices and perspectives in HIC settings (56).

International healthcare collaboration refers to partnerships between professionals or organisations across countries, often between institutions in HICs and LMICs, aimed at addressing health challenges through shared knowledge, resources and training (57, 58). Historically, many such initiatives have been characterised by one-directional aid models, delivered through short-term missions or externally driven projects (59, 60). Increasingly, however, research and practice highlight that effective collaborations are reciprocal and grounded in mutual respect, recognising that all partners contribute valuable expertise (61, 62). Successful partnerships enable two-way learning, whereby LMIC partners gain support for capacity building, and HIC partners gain insights into global health practice, innovation under resource constraints, and culturally grounded approaches to care (3, 56).

In summary, this thesis addresses a substantial gap in the education and practice of NTS within LMIC healthcare settings, particularly in the post-conflict Balkan context. This gap manifests in limited teamwork, ineffective communication, and weak interprofessional collaboration, which may contribute to preventable errors and suboptimal patient outcomes (63). This thesis addresses this challenge through the design of an experiential learning intervention grounded in Kolb's ELT and the principles of deliberate learning, emphasising learners' ability to intentionally engage with and regulate their own learning processes (35, 36). The intervention aims to investigate how healthcare professionals in the Balkan perceive and develop NTS and to examine their transferability within a Swedish context. This approach developed with attention to local needs and embraced by participating professionals, seeks to strengthen healthcare systems in resource-constrained environments and improve the safety and quality of patient care (64).

## 1.2 Purpose and aims

The overall purpose of this thesis was to explore how healthcare professionals in the Balkans and Sweden perceive NTSs and how these skills can be developed. More specifically, it aimed to understand how the designed approach and experience of healthcare professionals influenced the development of NTS knowledge. To achieve this aim, an experiential learning-designed approach was employed to frame, implement and iteratively evaluate the intervention, ensuring that it aligned with existing knowledge and the local healthcare organisation culture. The research examines how knowledge about NTSs is understood, interpreted, and adapted by healthcare professionals with clinical experience, and how learning progresses from the individual to the team and organisational levels (65).

The work presented in this thesis was conducted through a series of participatory workshops that introduced, discussed, and contextualised NTSs in healthcare settings in both the Balkans and Sweden. These workshops functioned simultaneously as learning interventions and data-gathering processes. They combined group discussions, reflection, observations, focus groups, and collaborative analysis. This participatory approach is grounded in well-established traditions of collaborative and practice-based enquiry, drawing on Chambers's (55) model of participatory workshops and Kolb's ELT (34, 37), both of which emphasise local engagement, experiential learning, and co-creation with practitioners. Applying these perspectives, the workshops generated locally relevant insights into current practices, needs, and opportunities for capacity building in the participating institutions.

The specific aims of the thesis were as follows:

1. To explore and optimise teaching approaches for NTS within LMIC contexts, with a particular focus on the Balkan healthcare setting.
2. To investigate how healthcare professionals in the Balkans understand and experience NTS learning delivered through an experiential and interactive educational approach.

3. To examine how survey-based experiential learning functions within a international healthcare partnership collaboration context, and to assess its potential transferability across healthcare settings.
4. To explore how interprofessional collaboration IPEC competencies are understood, interpreted, and contextualised within the Balkan healthcare context.
5. To investigate the role of leadership in the development of NTSs, including how healthcare leaders perceive and enact their responsibility for facilitating NTS development among their teams.

Together, these aims addressed both the development of an educational intervention and the generation of new NTS knowledge in different healthcare contexts. By achieving these aims, this thesis seeks to contribute a model for contextually adapting NTS training in LMIC settings and to provide insights that may inform future capacity-building initiatives.

### **1.3 Outline of this thesis**

The thesis is structured as follows:

#### **Chapter 1 – Introduction**

This chapter introduces the research topic and highlights its significance for healthcare education and international capacity building. It includes a brief personal preface outlining the author's motivation for the study and describes the problem of limited NTS education in LMICs. The chapter also situates the study within its broader context, presents the background, states the problem, purpose and aims of the research, and provides an overview of this thesis structure.

#### **Chapter 2 – Theoretical Framing**

This chapter presents the theoretical foundations that guided the study. It outlines the methodological principles of DBR, Kolb's ELT and the conceptual frameworks used for understanding NTS, interprofessional competencies and multicultural understanding. The

chapter also introduces the research questions that structure and guide the enquiry.

### Chapter 3 – Methods

This chapter describes the research design and methodological approach. It explains how the educational intervention was designed, implemented, and adapted within the DBR framework. Qualitative and quantitative data collection methods are presented, along with the epistemological and ontological assumptions underlying the research. The rationale for using a DBR approach in this context is also discussed.

### Chapter 4 – Results

This chapter presents the empirical findings. It reports the outcomes of the participatory workshops, focus groups, interviews, with a focus on how the participants' understanding of NTS and interprofessional competencies and cultural understanding evolved through the intervention. Observations of changes in understanding at the individual, team, and organisational levels are summarised and linked to the aims of the study.

### Chapter 5 – Discussion

This chapter offers an in-depth discussion of the findings in relation to the theoretical framework and the existing literature. It interprets how the intervention and educational approaches addressed the identified educational gaps and examines how the outcomes compare with earlier research. It discusses the understanding of NTS in the studied context. Broader implications are considered, including their relevance for healthcare education, interprofessional learning, and international collaboration. The strengths and limitations of the study are also critically reflected upon.

### Chapter 6 – Conclusions

This concluding chapter summarises how the research objectives were achieved and outlines the key contributions to knowledge and

practice. It presents the main conclusions, offers practical recommendations for implementing NTS training in LMIC settings, and identifies directions for future research and development work in global health education.



## 2 Context and conceptual framework

This thesis is situated within the context of international healthcare partnership work between high-income country and LMIC settings, with a particular focus on strengthening NTS in healthcare practice. In many LMIC contexts, formal education has traditionally emphasised profession-specific clinical competencies, while the structured development of teamwork, leadership, communication, and interprofessional collaboration has received limited attention (49, 65, 66). Addressing this gap requires educational approaches that are embedded within healthcare practice and responsive to local organisational and cultural conditions (3, 20, 67).

This study adopted a health profession education perspective in which educational planning, implementation, and evaluation are closely integrated with clinical practice, generating contextually grounded knowledge while contributing to real-world improvement (2, 13, 40). Within this context, the thesis applies a designed experiential learning approach. By ‘designed’, the study refers to learning experiences that are intentionally structured to promote reflection, dialogue, and application in practice (40, 41, 48). This differs from incidental workplace experiences, where learning may occur informally but without systematic facilitation or conceptual grounding. In designed experiential learning, educational activities are deliberately created to engage participants in cycles of experience, reflection, conceptualisation, and experimentation in relation to authentic professional challenges.

The conceptual foundation of this approach draws primarily on Kolb’s ELT, which conceptualises professional learning as a continuous, cyclical process grounded in experience and reflection (36, 37). ELT provides a theoretical basis for structuring educational activities that support the development of NTS within real healthcare environments.

The study also draws on DBR as a methodological framework (41, 42). DBR is characterised by iterative, collaborative processes that link educational design with authentic practice contexts, allowing

interventions to be continuously refined in dialogue with participants and stakeholders (47, 48). As a research approach, DBR supports the development of theoretically informed and practically relevant interventions.

In this thesis, the development of NTS is conceptualised as a situated and socially constructed process that unfolds through guided experiential engagement (68, 69). Rather than treating NTS as discrete competencies to be transmitted, this study investigated how intentionally designed experiential learning environments can make tacit team practices visible, support reflective enquiry, and foster adaptive leadership and collaboration. Developing NTS thus becomes both the pedagogical aim and the analytical focus of the research.

The primary focus of the thesis is the development of NTS, defined as the cognitive and social competencies required for effective teamwork and patient safety (49, 66). The framework further integrates the principles of interprofessional collaboration to examine teamwork as a mechanism for improving healthcare delivery (27, 70), and recognises cultural competence as essential within multicultural healthcare environments (71). Together, these perspectives inform the design and analysis of the intervention and provide a coherent conceptual basis for examining how NTS can be strengthened within LMIC healthcare systems.

## **2.1 Design-based research**

DBR is a methodological approach developed to bridge the gap between educational theory and practice by designing and studying interventions in real-world contexts (41, 47, 48). It is characterised by iterative cycles of design, implementation, analysis, and refinement conducted in close collaboration with practitioners (47). Rather than testing predetermined interventions under controlled conditions, DBR seeks to generate contextually grounded knowledge through systematic enquiry embedded in authentic practice. Its participatory orientation ensures that the knowledge produced is both theoretically informed and practically relevant. In this way, DBR simultaneously contributes to educational innovation and theoretical development (72).

Although DBR has been widely applied in health professions education and other professional learning environments to support curriculum development and pedagogical innovation (41, 47), it has also been critiqued for lacking standardised procedures, which may pose challenges related to transparency, rigour and generalisability (46). Addressing such concerns requires explicit documentation of design decisions, iterative processes, and analytic strategies.

In this thesis, DBR provided the methodological framework for the development of a training intervention targeting NTS in an LMIC context. The process was conducted as a bottom-up, co-creative collaboration with healthcare professionals in the Balkans, emphasising mutual capacity building and responsiveness to local needs (64). Successive iterations of the intervention were shaped by participants' experiences, reflections, and feedback, enabling continuous refinement in alignment with contextual realities (37, 41, 49).

Each iteration functioned not only as an implementation phase but also as an opportunity for systematic reflection and knowledge generation. In this respect, Kolb's ELT offers a conceptual lens for understanding how experiential engagement, reflection and conceptualisation contribute to the development of both practice-based improvements and theoretical insights (36, 37). The integration of DBR and experiential learning thus enabled the study to examine how NTS can be developed through structured, context-sensitive educational design.

## **2.2 Kolb's experiential learning theory**

Kolb's ELT conceptualises learning as 'the process whereby knowledge is created through the transformation of experience' (36, 37). Knowledge emerges through the dynamic interplay between grasping and transforming experience, structured in a cyclical process of concrete experience, reflective observation, abstract conceptualisation, and active experimentation. ELT draws on Dewey's pragmatism, Piaget's cognitive development theory, and Lewin's work on experiential and group-based learning (37), positioning learning as a continuous and contextually embedded process.

In this study, knowledge developed as participants engaged with new concepts related to NTS, reflected on these concepts in relation to their prior professional experiences, formed abstract understandings, and tested new approaches in their clinical practice. The model was applied not only at the individual level but also at the team level (74), emphasising that learning occurs through shared interpretation and collaborative meaning-making. From this perspective, teams collectively reconstruct experience and develop shared mental models that are essential for effective interprofessional collaboration and patient care (75).

ELT has informed educational approaches, such as simulation-based training, interprofessional learning, and structured reflective practice (76, 77), all of which have demonstrated effectiveness in developing NTS, including communication, teamwork, leadership, and decision-making. In this research, ELT was applied across individual, team, and organisational levels (65). At the individual level, reflective activities support self-awareness and situational understanding (72, 76, 77). At the team level, collective reflection contributed to the development of shared mental models and improved coordination (75). At the organisational level, insights generated through individual and team learning informed routines, practices, and training structures, thereby supporting broader organisational development.

While ELT offers important strengths, particularly its learner-centred and practice-oriented approaches, certain limitations emerged. Not all participants in the studies were equally comfortable with reflective processes, and completing the full experiential cycle required institutional support and protected time. To address these challenges, the model was applied flexibly, accommodating contextual constraints and diverse learning preferences. Despite these limitations, ELT provided a valuable framework for fostering continuous learning within dynamic, multiprofessional healthcare environments.

### **2.3 Non-technical skills in healthcare**

Medical education in the twentyfirst century has increasingly adopted competency-based approaches to training healthcare professionals (79). As outlined in Frank et al. (80), competency-based medical

education emphasises clearly defined competencies, observable performance, and outcome-based training. The Royal College of Physicians and Surgeons of Canada played an important role in an international consensus initiative to advance competency-based medical education (80). Within this framework, NTSs—such as communication, teamwork, leadership, and situational awareness—are recognised as essential components of professional competence. However, within the literature, the terms ‘competency’ and ‘skill’ are often used interchangeably, which may lead to conceptual ambiguity (79, 81). Dictionary definitions illustrate this overlap, as both terms are associated with the ability to perform tasks successfully and effectively. Nevertheless, important distinctions remain (69, 79, 82).

Competencies are typically understood as integrated constructs comprising the knowledge, skills, and attitudes required for effective professional performance (79, 82). A skill, in contrast, represents a narrower component, often referring to the execution of specific actions. The effective performance of even a discrete skill presupposes relevant knowledge and appropriate professional attitudes (80, 82). Thus, competencies encompass broader capacities that enable safe and contextually appropriate practices. Concerns regarding the imbalance between theoretical knowledge and competence in medical education are longstanding. Miller (83) placed knowledge as the basis of clinical competence but cautioned that excessive emphasis on factual knowledge may produce practitioners who are academically proficient yet insufficiently prepared for interpersonal and clinical practice.

Within this broader competency discourse, NTSs refer to the cognitive and social capabilities that complement technical expertise and enable effective collaboration in complex healthcare environments (18, 19). NTSs concern how healthcare professionals think, interact, and coordinate in practice. They include communication, teamwork, leadership, situational awareness, and task management. These competencies are highly interdependent: Situational awareness supports coordinated teamwork, communication enables collaboration, and leadership integrates team processes at the clinical and organisational levels (18, 19).

The terminology surrounding NTSs has evolved over time. The term has been debated in relation to its scope and connotations (18, 19, 69). Because healthcare training has traditionally prioritised technical knowledge and procedural performance, NTSs have sometimes been described as ‘behavioural skills’ or colloquially as ‘soft skills’ (82). Such terminology may inadvertently diminish their perceived importance. Increasingly, scholars emphasise that NTSs are foundational to patient safety and healthcare quality (18, 80).

The significance of NTSs gained prominence following patient safety research and influential reports on medical errors in the late 1990s, particularly one by the Institute of Medicine (84), which highlighted the high incidence of preventable medical errors and spurred patient safety initiatives globally. Drawing on parallels with aviation safety, healthcare systems—particularly in surgery, anaesthesiology and emergency medicine—developed structured NTS frameworks and training programmes (15, 16). Empirical evidence has demonstrated that deficiencies in NTS contribute substantially to adverse events, whereas structured training improves teamwork, communication and patient outcomes (12, 20, 21). Consequently, many healthcare systems in Europe and North America have incorporated NTS training into professional development curricula, often through simulation-based education and team-based learning approaches (85-88). In many HICs, structured NTS training has become increasingly integrated into healthcare education through simulation-based programmes and curriculum innovations that emphasise teamwork, communication, and decision-making competencies (89).

Despite these advances, the integration of NTSs into medical curricula remains challenging, particularly where technical competencies have traditionally dominated (21, 38). These challenges are particularly pronounced in LMIC contexts, where training programmes often focus primarily on clinical skills while relational and organisational dimensions of care receive limited attention (50). In resource-constrained environments characterised by staff shortages, hierarchical structures and evolving protocols, effective teamwork, situational awareness and adaptive coordination are essential for safe patient care (49, 90). Importantly, NTSs are culturally embedded.

Communication norms, leadership practices, and team dynamics are shaped by organisational hierarchies and broader sociocultural contexts (91-94). The development of NTSs therefore requires approaches that are sensitive to local cultural and institutional conditions.

A critical initial step in such settings is strengthening awareness and a shared understanding of NTSs among healthcare professionals. This project therefore prioritised fostering dialogue, reflection, and collaborative engagement around NTS concepts and their practical relevance. To achieve sustainable improvement and performance in healthcare, systems require a readiness for change at the individual and organisational levels, as well as a culture that supports reflection, shared learning, and continuous adaptation (95, 96).

## **2.4 Core NTS addressed in this study**

Although NTS encompass a broad range of competencies, this research focuses primarily on the following:

Effective communication underpins patient safety and interprofessional collaboration. It involves clear information exchange, active listening, appropriate assertiveness, and empathy. Communication breakdowns are among the most frequent contributors to adverse events, particularly in complex or hierarchical healthcare environments (19, 97). In multicultural and multilingual settings, respectful and transparent communication is essential for safe care delivery (52).

Teamwork refers to coordinated action among healthcare professionals to deliver safe and comprehensive care. High-performing teams develop shared mental models, mutual trust, and adaptive capacity (98). Effective collaboration requires clearly defined roles and psychological safety, enabling all members to contribute regardless of professional hierarchy (94, 98, 99). In many LMIC contexts, rigid hierarchies and limited interprofessional training may hinder collaborative practice.

Leadership is central to effective team functioning and organisational development (67, 98). However, leadership development remains

underemphasised in many healthcare systems, particularly in LMIC contexts. Edmonstone (51) argued that leadership models must be adapted to local realities. Action-learning approaches have demonstrated potential in post-conflict healthcare systems such as Bosnia and Herzegovina, where limited formal leadership training contributes to hierarchical rigidity and inconsistent practice (53). Similar challenges were identified within the present research context.

Situational awareness involves perceiving environmental elements, understanding their significance, and anticipating future developments (78). Maintaining an overarching understanding of clinical contexts enables healthcare professionals to detect emerging risks and respond proactively. In LMIC healthcare settings, loss of situational awareness, compounded by limited resources and hierarchical communication challenges, has been shown to increase the risk of clinical error, while human factors training aimed at improving awareness and team interaction can enhance performance and patient safety (99).

Task management includes prioritisation, delegation, and coordination of activities under dynamic conditions (18, 97). In resource-constrained settings, effective task management enables teams to anticipate challenges and strategically allocate responsibilities (97).

## **2.5 Interprofessional competencies in healthcare practice**

In 2010, the World Health Organization released the Framework for Action on Interprofessional Education and Collaborative Practice, calling for interprofessional education to be embedded across all health profession curricula (12). Similarly, in North America, the Interprofessional Education Collaborative (IPEC) developed a set of core competencies to guide interprofessional collaborative practice. Since the first publication in 2011 (26) and an updated version in 2016 (27), these competencies have provided a common framework for preparing learners and practitioners for interprofessional practice. The most recent revision, IPEC Core Competencies for Interprofessional Collaborative Practice: Version 3 (28), refined the competency language and reduced the number of sub-competencies from 38 to 33. IPEC competencies are organised under four core domains: Values and Ethics, Roles and Responsibilities, Interprofessional

Communication, and Teams and Teamwork (26, 27, 28). Together, these domains provide a structured guide for healthcare professionals to engage in effective interprofessional collaboration and deliver patient-centred care.

Although interprofessional competencies are not formally labelled NTS within most frameworks, they are conceptually and practically closely aligned with NTS. Both interprofessional competencies and NTS are foundational to the effective functioning of healthcare teams. In practice, high-performing interprofessional teams consistently demonstrate strong NTS: they communicate openly and clearly, understand and value each member's contributions, show mutual respect, and collaboratively manage workload and decision-making processes. These behavioural competencies enable the type of teamwork that interprofessional collaboration frameworks aim to foster.

Interprofessional collaboration is defined as 'when multiple healthcare workers from different professional backgrounds provide comprehensive services by working with patients, their families, caregivers, and communities to deliver the highest quality of care across settings' (12, 26, 27, 28). Interprofessional collaboration gained prominence in many high-income countries as a strategic response to fragmented care delivery and communication failures. For example, the U.S. Institute of Medicine's (84) report 'To Err is Human' highlighted how isolated practice models and rigid professional hierarchies contribute to patient safety risks. In this context, strengthening collaboration across professional boundaries was identified as a key strategy for improving care coordination and reducing preventable errors.

The literature distinguishes several terms related to collaboration among healthcare practitioners, and these nuances are important (100). A multidisciplinary team refers to professionals from different disciplines who work in parallel, each contributing independently to patient care (82). A multiprofessional team similarly involves multiple professions but does not necessarily imply deep interaction or integration among team members. In contrast, an interprofessional team is characterised by a high level of collaboration, shared decision-making, and collective responsibility for patient outcomes. In interprofessional practice, diverse professional perspectives are actively

integrated into a unified approach rather than remaining confined to separate professional silos. While multidisciplinary teams may coordinate to some extent, truly interprofessional teams pursue continuous collaboration and mutual learning across traditional professional boundaries (12, 13, 68, 70).

Structured interprofessional collaboration initiatives were largely pioneered in high-income countries, but their relevance may be even greater in LMICs. Health systems in many LMICs are often characterised by strict hierarchies and limited communication across professions. Interprofessional collaboration efforts in these settings aim to break down those hierarchies by fostering mutual respect, shared accountability, and collaborative problem-solving. Another major challenge in LMIC contexts is the chronic shortage of healthcare workers and resources. In such environments, maximising the effectiveness of the available workforce through better collaboration is essential. Despite structural and resource-related barriers, there is growing recognition of the value of IPC in LMICs. Emerging evidence from diverse settings, including Brazil and parts of sub-Saharan Africa, suggests that strengthening interprofessional collaboration can improve care processes and patient outcomes (30, 49).

In summary, interprofessional collaboration involves forming cohesive healthcare teams that transcend traditional professional boundaries. NTS provide the essential behavioural and cognitive foundation for effective collaboration, while frameworks like the IPEC competencies offer a structured, profession-specific guide for applying these collaborative skills in practice. In this way, NTS and IPEC frameworks are complementary: NTS provide the fundamental capabilities required for effective teamwork, and IPEC competencies outline how those capabilities should be applied across professions.

## **2.6 Cultural competence in healthcare contexts**

The growing cultural diversity of patient populations, combined with global migration trends, has brought increased attention to the importance of cultural competence among healthcare professionals (54). Cultural competence is commonly defined as the ability of healthcare providers to recognise and integrate the cultural beliefs, values, and

practices of diverse populations into effective care (54). Culture in this context refers to the shared knowledge, beliefs, values, assumptions, and norms learned within a group or society (96). Cultural competence frameworks emphasize that culture shapes how patients perceive illness, express symptoms, and interact with healthcare systems, while also influencing how healthcare professionals communicate and collaborate within teams. Some scholars highlighted (101, 102) the importance of cultural awareness, knowledge, and skills for effective professional practice, and recent evidence from Wahlström et al. (103) demonstrated that healthcare professionals' understanding of culture directly affects interactions and engagement in clinical encounters, even in resource-constrained or diverse settings.

In this thesis, cultural competence is examined not only in terms of provider–patient relationships but also as an essential skill for effective teamwork in international and interprofessional settings. Participants in the study emphasised that cultural background influences how individuals approach collaboration, suggesting that educators and practitioners should adapt strategies to specific cultural contexts. As Stier (104, 105) noted, intercultural communication and competence shape how people interpret and engage in professional interactions, highlighting the need to understand cultural assumptions and communication patterns when working in diverse teams. Recognising the complexity of cultural learning, Balcazar et al. (101) proposed a cultural competence model that underscores the importance of critical self-reflection, practical skills, and organisational support. The findings from the present research indicate that developing cultural competence involves increasing cultural sensitivity, engaging in continuous reflection, becoming aware of one's own biases, and effectively navigating cultural differences (106). Together, these perspectives suggest that both theoretical frameworks and practical experiences are essential for cultivating cultural competence that supports collaborative, adaptive, and context-sensitive professional practice (107).

Empirical evidence suggests that cultural competence training can enhance healthcare professionals' communication skills, cultural awareness, and patient satisfaction (101, 103). According to Hodges and

Lingard (79), stepping back from one's own cultural perspective can reveal the constructed nature of practices often assumed to be natural or universal. Indeed, practices considered routine in one cultural context may appear unfamiliar or inappropriate in another. Strengthening cultural competence requires ongoing attention to shifts in cultural norms at both the individual and institutional levels, and remaining aware of these evolving trends is essential for effective performance in multicultural healthcare settings (54, 104).

The teaching model developed in this project emphasises the cognitive understanding and appreciation of cultural differences as a means of reducing personal and cultural biases in interpretation and practice. This approach is built on iterative cycles of experience, reflection, conceptualisation, and application, providing a robust pedagogical framework for cultural learning. Despite challenges arising from the context-dependent nature of cultural competence and from hierarchical structures within healthcare systems, integrating cultural competence alongside NTSs into educational frameworks can address gaps in traditional training, enabling providers to work effectively across diverse cultural contexts.

### 3 Methods

This study employed a design-based research methodology. DBR is an iterative methodology in which interventions are designed, implemented, and continuously refined through collaboration between researchers and participants, with the purpose of improving practical outcomes and generating insights into the underlying approach (41). It supports the iterative development and evaluation of approaches in real-world, complex settings, enabling researchers and participants to collaboratively design, implement, and improve the intervention over successive cycles.

The intervention was theoretically grounded in Kolb's experiential learning theory (34). ELT provided a framework for structuring learning cycles across the individual, team, and organisational levels, emphasising reflection as a central for professional insight (65). In practice, learning activities were designed to move participants through the stages of experience, reflection, conceptualisation, and active experimentation, allowing the intervention to simultaneously support knowledge acquisition, skill development, and reflective practice. Applying ELT within a DBR framework facilitated a continuous alignment between observed learning processes and the iterative refinement of the educational design.

Multiple data sources were incorporated to capture the complexity of learning and collaboration in clinical contexts (108). Qualitative materials, including observations, participant reflections, focus groups (109), and interviews (110), provided rich, contextualised insights into how participants engaged with the intervention and applied learning in practice. Combining DBR with ELT, the methodology allowed for both the co-creation of the intervention and the systematic examination of the participants' experiences within their professional and cultural contexts.

The integration of DBR and ELT ensured that the research explored both what participants learned and how learning and collaboration emerged. Iterative cycles of design, implementation, and reflection enabled the intervention to be adapted to participants' professional

and organisational contexts, while ELT provided a theoretical ground to understand how learning occurred. This methodological approach facilitated collaboration, a deep understanding of learning processes and the development of cultural competence within interprofessional healthcare teams and ensured that the intervention was contextually relevant, flexible, and sustainable.

In summary, across all studies, data collection followed a design-based, experientially driven and collaborative approach, engaging healthcare professionals and researchers in cocreating knowledge and adapting training to local contexts. This methodological diversity situates the research within established scientific traditions while supporting the participatory orientation of DBR and its grounding in Kolb's ELT (36). The integration of these varied methods reflects the complexity of educational research in healthcare—particularly in international and interprofessional environments.

### **3.1 Data collection**

The data for this research project were collected in two primary contexts: the Balkans and Sweden. Data were generated across multiple workshop occasions, three workshops in the Balkan context ( Study I, III and IV) and two workshops in Sweden (Study II). Each study contributed different types of data depending on its specific aims and methodological design.

#### **Study I**

This study was grounded in DBR methodology and conducted through iterative workshop cycles in the Balkan context. Data were collected before, during, and after each workshop to capture changes in participants' understanding and engagement over time.

Before each workshop, meetings were held between participants and the research team to discuss the workshop structure, specific NTS to be focused on, and the potential surveys addressing NTS concepts (see Table 1). Participants were also asked to provide written reflections on their expectations for the workshop.

During the workshops, the participants completed a survey following the introduction of NTS concepts, first engaging in individual self-reflection before discussing their responses in small and subsequently in large group formats. These discussions yielded qualitative insights into how NTS were understood, interpreted and integrated into daily professional practice. Throughout the workshop cycles, the researchers documented group dynamics through observation notes and captured the participants' verbal and written reflections.

After each workshop, the research team collaboratively analysed the discussion outcomes with the participants. Survey responses and group reflections informed refinements to the subsequent intervention cycle. The generated dataset workshop observations, reflective survey entries, and researchers' field notes formed an iterative process and continuous feedback crucial to developing the survey-based experiential learning (SBEL) approach. This iterative data collection ensured that the emerging method remained contextually grounded, participatory, and responsive to participants' needs.

Table 1. Background of the workshop participants, Studies I, III and IV (reproduced with permission;, Hodza-Beganovic et al., 2025)

<b>Workshop participants</b>	<b>WS1</b>	<b>WS2</b>	<b>WS3</b>
<b>Number of participants</b>	15	29	17
<b>Age (years), mean (SD)</b>	47.8 (8.5)	47.4 (8.9)	51.4 (9.4)
<b>Gender</b>	Male, <i>n</i> = 7 Female, <i>n</i> = 8	Male, <i>n</i> = 11 Female, <i>n</i> = 18	Male, <i>n</i> = 8 Female, <i>n</i> = 9
<b>Professional background</b>	Physicians, <i>n</i> = 8* Nurses, <i>n</i> = 7	Physicians, <i>n</i> = 14* Nurses, <i>n</i> = 15	Physicians, <i>n</i> = 9* Nurses, <i>n</i> = 8

\*Healthcare leaders are included in the physician group.

## Study II

Data for Study II were collected through two half-day workshops conducted in Sweden in June 2024 and January 2025 (see Table 2). The workshops were designed using a co-creative DBR approach and implemented as an SBEL intervention. Consistent with DBR principles, multiple data sources were used to evaluate and refine the educational design. Several weeks prior to each workshop, meetings were held with the participants. These meetings aimed to include participants in the planning and design of the workshop and the themes to be tackled.

During Workshop 2, two independent observers collected detailed field notes capturing interaction patterns, discussion dynamics, and noteworthy participant comments and reflections. As in Study I, the participants engaged in structured small-group and large-group reflections on NTS and cultural competence, providing additional qualitative insights into how they interpreted these concepts within professional contexts.

Following the workshops, the research team conducted focus groups to elicit deeper reflections on the learning experience. Two focus groups of eight participants each were held after Workshop 2. A moderator facilitated the sessions using open-ended questions addressing the learning experience, and perceptions of the SBEL approach. All sessions were audio-recorded and transcribed verbatim.

Written data were also collected through surveys embedded in the workshops. In Workshop 1, participants completed a condensed version of the IPEC competency instrument (27) and a cultural competence self-assessment instrument (111). In Workshop 2, participants revisited the cultural competence questionnaire and completed a Johari Window (112). Due to the small sample sizes, these responses were not subjected to statistical analysis but were used as qualitative prompts to support reflection and discussion.

The integration of field observations, focus group transcripts, and written reflections provided a triangulated understanding of the intervention's impact. The reflective structure of the workshops aligns

with Kolb’s experiential learning cycle, in which concrete experiences are followed by reflective observation and abstract conceptualisation facilitated through guided discussion and feedback.

Table 2. Background of the workshop participants, Study II

<b>Workshop participants</b>	<b>WS1</b>	<b>WS2</b>
<b>Number of participants</b>	24	18
<b>Age (years), mean (SD)</b>	48.5 (8.1)	48.7 (7.9)
<b>Gender</b>	Male, <i>n</i> = 11 Female, <i>n</i> = 13	Male, <i>n</i> = 8 Female, <i>n</i> = 10
<b>Professional background</b>	Physicians, <i>n</i> = 7 Nurses, <i>n</i> = 10 Other*, <i>n</i> = 7	Physicians, <i>n</i> = 6 Nurses, <i>n</i> = 8 Other*, <i>n</i> = 4

### Study III

This study employed a convergent mixed-methods (113, 114) design to contextualise the IPEC competencies across three Balkan countries (see Figure 1). Qualitative and quantitative data were collected through two sequential workshops, followed by an online survey.

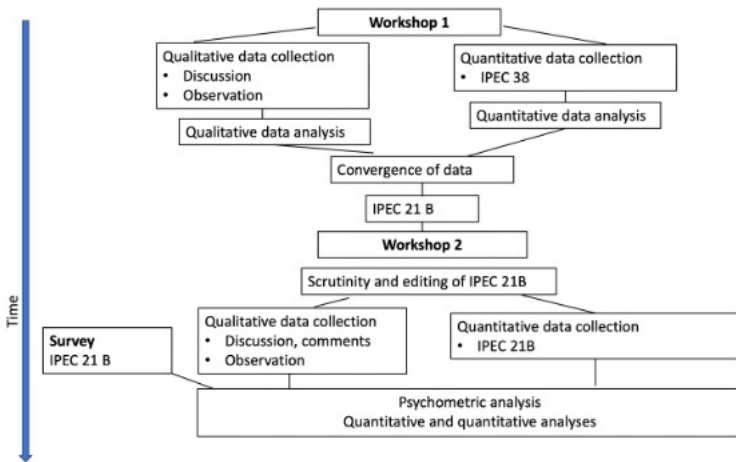
In Workshop 1, participants reviewed 38 IPEC core competencies and rated each competency’s relevance using a 5-point Likert scale. These ratings provided quantitative data, while parallel small-group discussions offered qualitative insights. Discussion notes captured contextual interpretations and implementation challenges.

Using combined feedback from Workshop 1, the research team developed a condensed 21-item competency instrument, the IPEC-21B, tailored to the regional context. In Workshop 2, participants reviewed and refined the draft instrument through facilitated discussions, generating additional qualitative data on Balkan competency needs.

After iterative refinement, the final IPEC-21B survey was distributed online through professional networks across Kosovo. The survey remained open for 3 weeks and yielded 32 complete responses, providing quantitative data on the perceived clarity and relevance of each competency item.

In summary, Study III's data collection combined workshop-based reflection, competency ratings, instrument development activities, and an online survey illustrating a participatory adaptation process that also served as an educational intervention.

Figure 1. Illustration of the mixed-methods approach (reproduced with permission; Hodza-Beganovic et al., 2025)



## Study IV

Used a qualitative design to examine the impact of the educational approach implemented through participatory workshops and to explore how leadership shapes the understanding of NTS and collaborative practices. Data were collected between 2018 and 2022 from multi-professional healthcare teams.

Multiple qualitative techniques were used. During the workshops, the researchers conducted observations and produced detailed field notes

capturing team interactions and group dynamics. These data offered real-time insights into how the participants engaged with the training and with one another.

Additionally, semi-structured focus groups and individual interviews with leaders were conducted (110). Focus groups explored shared experiences and reflections on workshop content, while individual interviews provided deeper insights into leadership perspectives and contextual challenges. By combining observations, focus groups, and interviews, the study created a credible understanding of how the intervention influenced NTS development (see Table 3).

In summary, across all studies, data collection followed a design-based, experientially driven, and collaborative approach, engaging healthcare professionals and researchers in co-creating knowledge and adapting training to local contexts. This methodological diversity situates the research within established scientific traditions while supporting the participatory orientation of DBR and its grounding in Kolb's ELT (37). The integration of these varied methods reflects the complexity of educational research in healthcare—particularly in international and interprofessional environments

Table 3. Overview of studies

	<b>Study I</b>	<b>Study II</b>	<b>Study III</b>	<b>Study IV</b>
<b>Design</b>	Qualitative explorative	Qualitative study	Mixed method design, psychometric evaluation study	Qualitative study
<b>Data collection</b>	Surveys, observation notes, field notes. WS1/15 and WS2/29 participants	Observation notes, focus group. WS1s/25 and WS2s/15 participants	Mokken analyses, reduced IPEC, psychometric analyses IPEC-38 and IPEC-21. WS1/15 and WS2/29 participants	Observation notes, focus groups, interviews with leaders. WS1/15 and WS2/29 participants
<b>Study data</b>	Surveys, workshop participants	Surveys, workshop participants	Surveys, workshop participants and survey participants	Surveys, workshop participants, interviews and survey participants
<b>Data analyses</b>	Descriptive analyses by using deductive perspective	Reflective thematic analyses, inductive guided	Descriptive analyses, Cronbach's analyses, ANOVA, Mokken analyses,	Reflective thematic analyses, inductive-deductive approach guided by Braun and Clark

### 3.2 Empirical context and recruitment of participants

The participants in Studies I, III, and IV were recruited from three university hospital clinics in the Balkans: Sarajevo (Bosnia and Herzegovina), Pristina (Kosovo), and Podgorica (Montenegro) (see Table 1). They were invited to participate in a series of three interactive workshops conducted between 2018 and 2022 at shared regional locations. The two additional workshops formed the basis of Study II and were conducted in Sweden between 2024 and 2025 with healthcare professionals from Region Östergötland (see Table 2).

All studies presented in this thesis were conducted within the framework of an international partnership project, supported by the International Medical Program at Region Östergötland, Sweden (38). The author of the thesis, jointly with the other members of the research team, oversaw the study design, data collection strategy, and development of the educational content. The research team included four members with diverse academic and professional backgrounds: medicine, nursing, cognitive science, and education. One team member with a nursing background contributed to Study I but left the project before the subsequent studies began.

To ensure inclusive participation across linguistic contexts, four translators provided simultaneous interpretation during the Balkan workshops. This enabled fluid communication between participants and researchers and supported the integrity and accuracy of the discussions.

The participants in Studies I, III, and IV were recruited from an international healthcare partnership project initially focused on strengthening surgical skills among paediatric surgeons caring for children with urological disorders requiring urodynamic support. As patient needs grew more complex, the project expanded to include paediatricians, nurses, and urotherapists, forming a multi-professional team working to ensure continuity of care and adequate follow-up. Over time, the number of team members increased, and so did the complexity of their responsibilities. This evolution underscored the importance of developing effective collaboration, communication, and leadership skills, particularly adapted to the realities of the local context.

The participants in Study II were healthcare professionals employed within Region Östergötland and involved in international healthcare partnership projects. They represented a broad range of healthcare professionals from the following fields: mother and child healthcare, infectious diseases healthcare, prevention of hospital-acquired infections and primary healthcare.

### **3.3 Ethical considerations**

All studies were conducted in accordance with ethical, legal, and regulatory standards for research involving human participants, following both national and international norms, including the principles of the Declaration of Helsinki. Across all studies, participation was voluntary, participants were fully informed about the purpose and procedures of the research, and written informed consent was obtained. No study involved physical or psychological intervention, and confidentiality was strictly maintained through the anonymisation of the data. Ethical approval was obtained from both the University of Pristina Ethics Committee (Ref. No. 4963) and the University Clinical Centre of Montenegro Ethics Committee (Ref. No. 03/01-24369/1).

**Study I** adhered to applicable ethical and regulatory standards in the host country as well as to international guidelines. Participants were informed about the study's aims, any potential conflicts of interest, and their right to withdraw at any time before providing informed consent.

**Study II:** The Swedish Ethical Review Authority provided an advisory opinion (Case No. 2024-00623-01-540148), determining that a full ethical review was not required, as the study did not involve intervention or processing of sensitive personal data. Nevertheless, the research was conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent and were assured of confidentiality. Quotations included in reports or publications were anonymised to prevent identification.

**Study III** was conducted in accordance with national and international ethical standards governing research with human subjects. Participants received oral and written information about the study in their native languages, including details on aims, voluntary participation, and confidentiality. They were also informed of the absence of any conflicts of interest. All participants provided informed consent prior to participation.

**Study IV** followed established ethical standards for research involving human participants. Participation was voluntary, and informed

consent was obtained after the participants were fully briefed on the study's objectives and procedures. To ensure confidentiality, personal identifiers were removed, and all data were reported in anonymised form.

### **3.4 Materials and instruments**

All surveys used in this research were based on established and validated instruments (see Table 4). Where required, the survey instruments were translated by professional translators working independently to ensure both linguistic accuracy and conceptual equivalence.

The surveys were used primarily as facilitative and reflective tools rather than as stand-alone measurement instruments. Specifically, they addressed aspects of NTS, Interprofessional collaboration, and cultural competence in order to provide a shared conceptual reference point for participants. By introducing structured terminology and prompts, the surveys supported guided reflection and discussion while allowing participants to elaborate beyond predefined response categories. This approach enabled open dialogue without constraining participants' interpretations, while simultaneously generating structured qualitative input for both participants and the research team.

Table 4. Categorisation of teaching content in the workshop. Surveys used in the workshops

<b>Survey</b>	<b>Workshop (used in)</b>	<b>Reference</b>
<b>The Johari Window model</b>	WS1, WS2s*	(112)
<b>Learning Style Questionnaire (LSQ)</b>	WS1	(115)
<b>Individual Development Plan (IDP)</b>	WS1 and WS2	Specifically designed for the study
<b>Team Performance Observation Tool (TeamSTEPPS)</b>	WS1	(116)
<b>Team member exchange quality scale (TMX)</b>	WS1	(117)
<b>Interprofessional education collaborative (IPEC)</b>	WS1 and WS2	(27)
<b>Kolb’s lemon exercise, experiencing and thinking</b>	WS1	(37)
<b>Evaluation of the teamwork workshop</b>	WS1,WS2,WS3, WS1s and WS2s*	Specifically designed for the study
<b>Interprofessional education collaborative IPEC 21</b>	WS2, WS1s* and,WS2s*	Evaluated and contextualised in Study III
<b>Cultural competence assessment tool</b>	WS1s* and WS2s*	(111)

\*WS1s and WS2s are the workshops in Study II, corresponding to WS1 and WS2.

## **4 Results**

The following chapter outlines the analytical process and reports the study's main results.

### **4.1 Data analyses**

For this research project, multiple analytical approaches were undertaken, with each study's analysis presented separately. In the following sections, the data analysis for each study is detailed, highlighting the specific methods and frameworks employed in alignment with each study's objectives. This structure allows for clarity in demonstrating how qualitative, quantitative, and mixed-methods techniques were applied across the four studies.

Qualitative analyses drew on reflexive thematic analysis to explore participants' experiences, perceptions, and meaning-making processes (118-120). Quantitative analyses included psychometric evaluation and validation procedures to assess the reliability and construct validity of the survey instruments (121-123). In addition, one study employed a mixed-methods cross-sectional design in which qualitative and quantitative data were collected concurrently and integrated during interpretation, following principles of methodological integration described by Fetters, Curry, and Creswell (113, 114).

The use of multiple analytical approaches reflects the different aims of the four studies and the varied types of data collected. Each method was chosen to match the specific research questions and study design. In the mixed-methods study, qualitative and quantitative findings were integrated, allowing results from both strands to be considered together within a cross-sectional framework. This approach enabled a coherent interpretation of participants' experiences alongside the evaluation of measurement outcomes, ensuring consistency across the overall research design.



Figure 2. Participants in Workshop 2 in Montenegro, group work

## Study I

Data analysis drew on multiple qualitative sources, including observation notes, group reflections and field notes. Survey responses were not statistically analysed, as these questionnaires served primarily as reflective prompts rather than quantitative instruments. The analyses, therefore, remained grounded in the participants' observed experiences and reflections. The DBR methodology provided both the design logic and the analytical framework, guiding the iterative interpretation of the findings.

To ensure theoretical coherence, the analyses were also informed by Kolb's ELT, aligning the interpretation of data with the four stages of learning: concrete experience, reflective observation, abstract conceptualisation and active experimentation (36, 37). This qualitative, cyclical approach allowed the research team to iteratively refine and improve the workshop design after each session. Furthermore, emerging insights were structured across multiple individual, team and

organisational levels to ensure a comprehensive perspective. In practice, three key dimensions of learning emerged from the analysis: the individual, the team and the organisation. Adopting this multi-level analytical perspective helped demonstrate that developments at the individual, team and organisational levels aligned with the broader research goal of fostering NTS through experiential learning. By staying closely tied to Kolb's cycle and incorporating the individual, team and organisational dimensions, the analysis supported continuous evaluation of the intervention and maintained clear alignment with the educational objectives.

## **Study II**

Building on Study I's introduction of the SBEL approach, this study utilised reflexive thematic analysis, following Braun and Clarke's six-step framework to examine qualitative data from focus group transcripts, observer notes and written questionnaire responses. Given the small sample size, formal statistical tests were not suitable; instead, a qualitative approach was chosen to yield in-depth insights. The team conducted systematic coding and theme development through iterative phases of familiarisation, coding, theme searching, reviewing and defining. The analysis was further guided by conceptual frameworks. Kolb's experiential learning cycle informed the participants' learning processes, while the Johari window model provided a lens for examining self-awareness and feedback dynamics. Using the Johari window model in conjunction with questionnaires on cultural competence and understanding helped delineate what was known to oneself and others. This combination promoted deeper insights into communication and cultural competence. This reflexive approach was well suited for evaluating the outcomes of the SBEL method and for facilitating a deep exploration of NTS development within the context of an international healthcare partnership.

## **Study III**

This study employed a mixed-methods approach that integrated quantitative and qualitative analyses to validate and adapt the IPEC-21B instrument. On the quantitative side, survey data were analysed using descriptive statistics to summarise participant responses, and

Cronbach’s alpha was calculated to assess internal consistency and reliability. The instrument’s dimensionality and scalability were further examined via Mokken scale analysis, a non-parametric item response method that evaluates items from a unidimensional scale. This involved calculating Loewinger’s H coefficients to measure item homogeneity and overall scale strength. The quantitative analyses identified the psychometric properties of the instrument, while qualitative data from group discussions (see Figure 3) and reflection sessions provided context and insight into how participants interpreted the competency items. The qualitative insights were triangulated with the statistical findings to pinpoint any misaligned or unclear survey items, thereby informing modifications to the IPEC-21B.

This integration of qualitative and quantitative findings ensured that instrument refinements were grounded both in reliable empirical evidence and in the lived experiences of the respondents. Such a comprehensive approach was well suited to the study’s objectives, allowing the analysis to align with the broader goal of developing a robust, contextually valid NTS measurement tool.

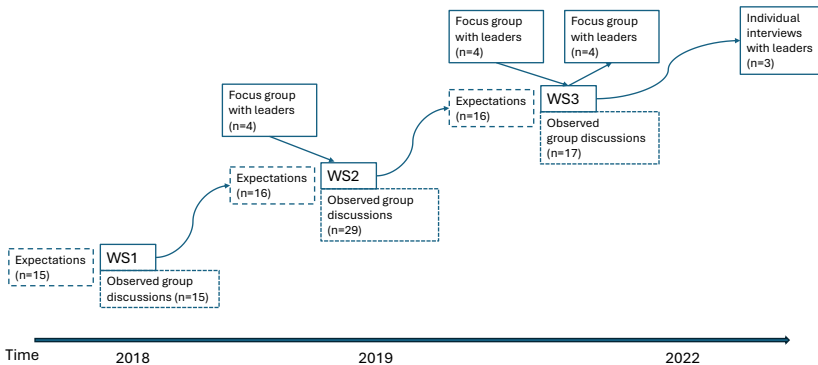


Figure 3. Overview of the data collection and analysis (Study IV)

## Study IV

This study utilised reflexive thematic analysis (118, 119) to examine data from interviews, focus groups, observation notes, and written reflections (see Figure 4). Grounded in the philosophy of the constructivist interpretivist paradigm, the analysis was based on the understanding that meaning and knowledge are not objective or fixed but are contextually situated and co-constructed through the interaction between participants and researchers.

The research team followed Braun and Clarke's reflexive analyses six-phase process: familiarising themselves with the data, generating initial codes, searching for themes, reviewing and refining them, and defining and naming the overarching themes (118). Throughout the process, particular attention was paid to reflexivity. The research team continually examined how their professional backgrounds in cognition, education, and healthcare might shape their interpretations. In accordance with the reflexive approach, subjectivity was treated as a valuable analytic resource rather than a source of bias. The team engaged in ongoing dialogue to challenge assumptions and co-develop interpretations. Reflexive thematic analysis was especially suited for this study, as it enabled the identification of nuanced patterns within complex NTS learning experiences, capturing both the participants' perspectives and the research team's interpretive insights. The alignment of this analytical approach with the study's interpretive and developmental aims ensured a coherent and credible contribution to the overall research project.

Across the four interrelated studies, a novel SBEL approach was developed and evaluated to strengthen NTSs among healthcare professionals. Study I established the SBEL framework through iterative workshops, and Study II demonstrated its effectiveness in enhancing participants' NTS competencies in another context. Study III captured the participants' experiences, in IPC, indicating sustained benefits and practical challenges in applying the knowledge. Finally, Study IV highlighted the role of leadership in facilitating NTS development. The results are presented below for each study, focusing on core empirical findings and omitting broader interpretations.

## **4.2 Results of the studies**

The findings of these studies support the overall aim of exploring how healthcare professionals in the Balkans and Sweden perceive NTS and how these skills can be developed. The results highlight the potential of iterative learning approaches, such as SBEL, as innovative and contextually methods for strengthening NTSs and interprofessional collaboration in healthcare settings. SBEL proved effective in introducing and operationalising the concept of NTSs, while enabling participants to identify competencies most relevant to organisational practice.

Following implementation in two distinct regional contexts, SBEL was well received, indicating its applicability across different healthcare systems. The use of structured surveys and assessment instruments to initiate dialogue facilitated reflection and made implicit competencies more explicit. In particular, communication, leadership, and cultural competence were consistently recognised as central skills for safe and effective collaboration. Collectively, the findings suggest that structured experiential approaches such as SBEL can enhance both awareness and development of NTSs across diverse healthcare contexts (see Table 5).

Table 5. Aims and results of the studies

Study	Aims	Results
I	To explore an educational approach to increase NTS awareness among health care professionals in an LMIC setting. To investigate how healthcare professionals understand and experience NTS learning when delivered through an experiential and interactive educational approach.	The findings indicate that the SBEL approach effectively supports understanding of NTSs in LMIC settings. It fosters experiential learning, enhancing awareness and skills at the individual, team, and organisational levels.
II	To examine how survey-based experiential learning functions within an international partnership collaboration context, and to explore its potential transferability across healthcare settings.	The SBEL approach, was perceived as a relevant and engaging method. Participants valued the interactive and reflective workshop format, which promoted contextual understanding, adaptability, and open communication across cultural and organisational boundaries.
III	To explore how interprofessional collaboration competencies IP-ECs are understood, interpreted, and contextualised within the Balkan healthcare context.	The findings indicate that contextualising interprofessional collaboration through the IPEC framework enhances healthcare professionals' understanding and application of collaborative practices, supporting more effective and equitable healthcare delivery.
IV	To investigate the role of leadership in the development of NTS understanding, including how healthcare leaders perceive and enact their responsibility in facilitating NTS development among their teams.	The findings indicate that leadership plays a critical role in the development of NTSs and in strengthening teamwork, clarifying roles, promoting communication, and fostering shared accountability.

#### 4.2.1 Study I – Development of survey-based experiential learning

Study I entailed the development of an interactive educational method through an iterative design-based process. Through multiple cycles of implementation and refinement, this process yielded an

educational model tailored to the local context that addressed key NTS in the local context.

The participants engaged in iterative cycles of individual reflection, team discussions, and whole-group discussions, with survey instruments serving as catalysts for experiential learning processes (see Figure 4). The analysis focused on the dynamic interplay between individual participants, small groups, and the collective group context, examining how these interactions were shaped by cultural hierarchies and prevailing social norms.

In practice, the participants' reflections and discussions were combined around personal awareness (individual level), teamwork dynamics (team level) and workplace context and culture (organisational level). These findings formed the foundation for the SBEL framework, which was delineated by a series of recurring learning steps and focus areas grounded in the participants' experiences.

These findings indicate that the SBEL approach effectively supports the understanding and development of NTSs in an LMIC setting. The iterative and experiential design fostered learning across multiple levels, forming the foundation of the SBEL framework, which is structured around recurring learning steps and focus areas grounded in participants' experiences.

#### **4.2.2 Study II – Evaluation of the SBEL approach**

Study II evaluated how SBEL functions approach within an international partnership context and explored its potential transferability across healthcare settings. The study was conducted in Sweden with a new cohort of participants (see Figure 4), employing a qualitative approach to assess changes in NTS-related outcomes following SBEL training.

The participants perceived SBEL as a relevant and engaging educational method. The interactive and reflective workshop format promoted contextual understanding, adaptability, and open communication across cultural and organisational boundaries. Focus groups following the workshops indicated increased confidence and

knowledge in teamwork and communication. For instance, the participants reported greater awareness of effective team coordination and a clearer understanding of their roles within teams. They also reflected on challenges in international collaborations, noting mixed experiences with team functioning and highlighting the importance of cultural competence. One participant observed, “I am not sure how to do the right thing in another country’s context. How do I adhere to fundamental ethical principles while respecting local customs and constraints?”

Feedback on the SBEL workshops was overwhelmingly positive. Nearly all participants agreed that the workshops were engaging and relevant to their work, often providing examples of applying newly acquired skills. As one participant noted, “This method is good for exchanging experiences and allows everyone to hear from each other”.

The findings indicate that SBEL was well received and contributed to improved self-reported understanding of NTSs among participants, supporting its relevance and potential transferability across different healthcare contexts.

#### **4.2.3 Study III – Contextualisation of interprofessional competence instrument in the LMIC context**

Study III explored how interprofessional collaboration competencies are understood, interpreted, and contextualised within the Balkan healthcare context. The study employed a mixed-methods approach to review and refine items from the original IPEC instrument (see Figure 1).

The participants confirmed the overall relevance of the IPEC framework and prioritised the items most applicable to their work environment, which led to the removal of those with limited contextual relevance. This process resulted in a refined 21-item version of the survey that captured key IPEC domains (such as teamwork, communication, and role understanding) while omitting redundant or less pertinent content. The resulting context-adapted instrument, termed IPEC-21B, thus represents a tailored, reduced form of the IPEC competency survey designed for use within this specific healthcare context.

The psychometric properties of the IPEC-21B instrument were evaluated in the quantitative phase. It demonstrated high internal consistency (Cronbach's  $\alpha = 0.92$ ), indicating excellent reliability. All items exhibited positive item-total correlations, and removing any single item did not improve the overall  $\alpha$ , which shows that each item contributed meaningfully to the scale. A Mokken scale analysis further supported the instrument's robustness. The overall Loevinger's  $H$  coefficient was 0.52, indicating a strong hierarchical scale. Individual item  $H$  coefficients ranged from 0.35 to 0.63, each exceeding the 0.30 threshold for acceptable scalability. Taken together, these results confirmed that the 21 selected items constituted a unidimensional and scalable measure of interprofessional NTSs.

These results indicate that contextualising interprofessional collaboration through the IPEC framework enhances healthcare professionals' understanding and application of collaborative practices. The IPEC-21B instrument demonstrated a concise, contextually adapted, and psychometrically sound tool for assessing NTS within healthcare teams, combining stakeholder input with statistical validation to ensure relevance and reliability.

#### **4.2.4 Study IV – Leadership and the development of NTSs in LMICs**

Study IV investigated the role of leadership in the development of NTSs within the Balkan healthcare context, focusing on how healthcare leaders perceive and enact their responsibility in facilitating NTS development among their teams. Data were drawn from observations, focus groups, and interviews with healthcare leaders (see Figure 3).

The analyses revealed that leadership plays a pivotal role in shaping how teams learn, communicate, and adapt to change. The participants described leadership as a practical, relational competence rather than merely a formal position. A clear definition of roles and responsibilities was identified as essential for coordination and accountability, particularly in contexts where hierarchical structures and unclear expectations can hinder collaboration. As one participant explained, “When we know our role and responsibilities, we function as a

system rather than as isolated individuals. It prevents duplication of tasks and ensures that critical duties do not get overlooked”.

Leaders who communicated openly and inclusively were perceived as building trust and reducing misunderstandings within teams. This relational approach supported psychological safety, enabling team members to share ideas and concerns more freely. Leadership was also related to team readiness for change. Participants noted that when leaders demonstrated openness and provided support during transitions, teams were more willing to engage in new learning processes and adopt innovative practices. In contrast, overly directive leadership tended to increase resistance. One leader observed, “We must balance tradition with innovation. If we push too hard, we create resistance; if we do nothing, we stagnate”.

Taken together, the findings illustrate that effective leadership practices, characterised by dialogue, collaboration, and shared reflection, were closely associated with the development of NTSs and overall team performance. Leadership thus emerged not only as a facilitator of NTSs but also as a sustaining force that amplifies the long-term impact of educational interventions, such as SBEL, within resource-constrained healthcare systems.



## 5 Discussion

This research set out to explore how healthcare professionals in the Balkans and Sweden perceive NTS, how these skills can be developed, and how they shape understanding with local and international healthcare partnership contexts. To introduce NTS, it is important to take into consideration the specifics of the context and leadership culture, particularly as continuing education in many healthcare settings, especially in LMICs (3, 4), has largely neglected structured NTS development (30). A structured learning approach was therefore developed to provide a coherent framework in which NTS can be learned (37, 64).

To achieve this aim, this project was guided by specific research questions that spanned the design, implementation and impact of the SBEL model. Throughout the four constituent studies, these questions were explored in an integrated manner. The studies yielded an iterative educational framework and rich qualitative insights, allowing us to achieve the overall aim of demonstrating that an SBEL model can be co-developed with healthcare professionals and successfully embedded into healthcare team approach to strengthen NTS, while also generating new knowledge about how NTS are learned in context.

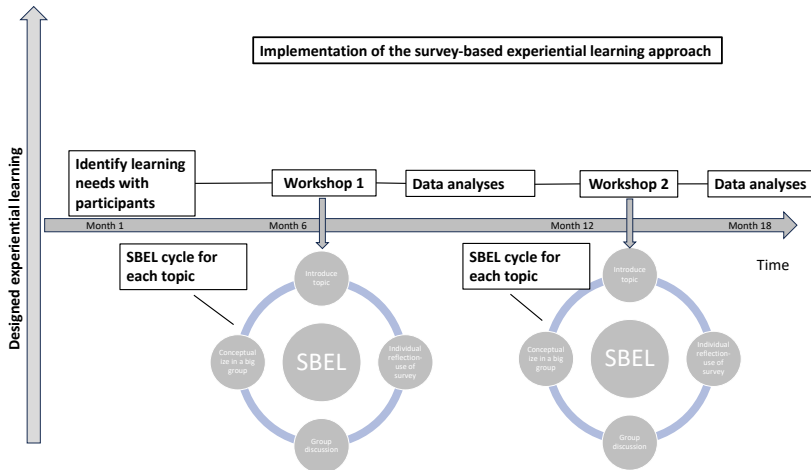
Grounded in the DBR methodology, this thesis explored how iterative, context-driven educational design can be used to strengthen NTS among healthcare professionals in LMIC settings. In the following sections, the discussion situates these findings in relation to the research aim and questions, offering reflections on the methodological approach, highlighting advances in understanding NTS and IPC and examining the contribution of the DBR approach to individual, team and organisational learning (65). The section concludes with implications for practice, theory, and future research.

### 5.1 Reflecting on the methodological approach

The DBR methodology was fundamental to this approach, and it proved to be both a strength and a challenge. DBR was chosen because it explicitly contributes to improving practice and theory through iterative, collaborative cycles of design and analysis (41, 42).

This meant that the SBEL educational approach was not a fixed experiment but an evolving design, refined through continuous feedback and the involvement of participants (48). Working closely with healthcare practitioners in line with the DBR, interventions were developed jointly by researchers and participants in iterative and cyclic processes (36, 37). Concretely, each workshop was planned in collaboration with local participants, adapting the content to the participants' expressed needs and the local organisational culture (78). After each of the workshops in the Balkans, participant feedback were analysed and the design was adjusted before the next cycle (64). This responsive, iterative process was a major strength ensuring that contextual relevance was in place, planned in accordance with the SBEL model and as the training activities were continually aligned with participants' real-world experiences and the health system context. The approach thus helped ground the intervention in the local reality, addressing even the criticism that educational interventions developed in high-income settings may not translate to LMIC contexts (49, 50), increasing the likelihood of sustained applicability. Additionally, the collaborative DBR model fostered the symbolic of engaging leaders and healthcare professionals from a broad range of professions as partners in the process, which is considered important for building professional skills and contributing to interprofessional collaboration (99, 103) (see Figure 4).

Figure 4. Implementation of the survey-based experiential learning cycle (Study II)



Despite these strengths, DBR has its own challenges and limitations. The flexibility and responsiveness that make DBR a strong model might present complexity. The iterative modifications, while beneficial, made the research process time-consuming and logistically demanding that the project unfold over several years with multiple sessions, requiring sustained coordination among international partners. Maintaining methodological rigour in a changing design is challenging, because changes introduced between iterations mean that each study phase is unique, complicating the comparison of results across cycles. The context-specific nature of the DBR outcome also means that generalisability is not straightforward, since the SBEL model was fine-tuned for the Balkan context, and evaluated in international collaborative partnership in Sweden thus its direct transfer to other settings may require further adaptation. Further cycles of testing in new contexts will need to examine which elements of the SBEL approach are general principles and which are context-dependent to assess and evaluate SBEL generalisability. Another challenge was the dual role of the researchers as facilitators of the intervention and the researchers as a potential source of bias. This was managed through careful reflexive

practices, such as team debriefings and documentation after workshops and by incorporating participant voices at every stage to keep the interpretation grounded in the participants' perspectives.

In addition to DBR, across the studies, data were gathered through direct observation of workshops, facilitation of focus group (109) and semi-structured interviews (110) with participants and healthcare leaders. The use of multiple qualitative data sources allowed for the triangulation of findings where, for example, a theme such as 'improved communication and teamwork' could be observed in real-time workshop interactions and later captured in interview reflections, lending credibility to our interpretations (97). The richness of the qualitative data provided deep insight into how participants were making sense of NTS concepts and applied them in practice. It was particularly valuable given our approach was new and exploratory qualitative feedback guided our iterative design adjustments more effectively than any single quantitative metric could have. An important methodological decision was that surveys were not used in SBEL as data collection instruments for statistical analysis. The surveys changed their purpose as educational tools to trigger reflection rather than being used as pre- or post-measured surveys. Consequently, the evaluation of learning relied on the participants' discussions, written reflections and follow-up interviews rather than numerical scores.

This qualitative emphasis aligns with the experiential learning philosophy but also implies certain limitations (34, 35). Without pre-and post-intervention test scores or control groups, improvement in NTS cannot be quantified showing changes to the intervention with statistical confidence. The findings are based on self-reported changes, observed behaviours in training scenarios, and participants' reported intentions to change practice. These forms of evidence, while compelling and appropriate for a developmental study, are inherently subjective. This was mitigated by incorporating multiple perspectives, such as including independent observers and the participants themselves, and by conducting a reflexive thematic analysis that systematically looked for patterns across the data (118, 119). Still, one must be cautious about generalising the magnitude of the impact beyond our

study sample. Future research could complement our approach with more quantitative assessments, such as measuring error rates or patient outcomes before and after implementing SBEL approach, to provide additional evidence of effectiveness. In summary, the combination of DBR and qualitative methods was a methodological strength that enabled the development of a nuanced, contextually grounded teaching model. At the same time, it requires balancing practical relevance with academic rigour, and it calls for ongoing evaluation to strengthen the evidence base for the SBEL approach.

## **5.2 Understanding of non-technical skills in LMIC context**

A key outcome of this project is an enriched understanding of NTS in healthcare, particularly regarding how these skills can be fostered and sustained in practice. In this research, NTS is advanced and recognised as critical for supporting technical skills when performing complex tasks in healthcare in LMICs (15, 16). The research expanded the focus of NTS development to healthcare teams in resource-limited settings. This broader lens has yielded several insights that advance the conceptualisation of NTS and their role in healthcare improvement (31).

Research findings underscore that NTS are not supplementary competencies but foundational to professional development and patient safety across all levels of healthcare (1, 12, 18). Participants in the SBEL intervention clearly recognised that strengthening skills like communication, teamwork, leadership and situational awareness is integral to improving clinical outcomes and organisational performance. The studies demonstrated that when given the opportunity to engage deeply with NTS concepts, healthcare workers readily see their value in sustainable quality healthcare. The results of the intervention helped professionals identify and plan ways to introduce NTS practices into their daily workflows and local organisations. This reinforces the idea that cultivating NTS should be a core component of continuing professional education, especially in contexts aiming for long-term system strengthening (4, 67). It also aligns with broader evidence that many healthcare errors and inefficiencies can be traced to non-technical factors such as communication breakdowns, poor

teamwork, and faulty decision processes rather than lack of technical knowledge (19, 20). By explicitly addressing these factors, the project adds empirical ground to call for more holistic training related to technical and NTS development (67, 77).

Additionally, the thesis contributes a multi-dimensional perspective on NTS. We found it useful to frame NTS learning and application across individual, team, and organisational levels, and this framing proved both analytically and pedagogically powerful. Introducing the learning content into these three dimensions provided a meaningful structure for workshop discussions and reflections (36, 37). At the individual level, participants engaged in self-reflection activities, such as using the Johari Window (112) and learning style surveys (115) that heightened their self-awareness about personal communication styles, leadership tendencies, and cognitive biases. This individual awareness often served as a catalyst for further learning; for instance, recognising one's own strengths and limitations made participants more open to adjusting their behaviour and more appreciative of complementary skills in colleagues. At the team level, the intervention facilitated cross-disciplinary dialogue, helping team members understand each other's roles and viewpoints (52). Many participants reported that discussing scenarios and survey prompts in small multi-professional groups exposed 'different perspectives' and brought new insights into how teamwork could be improved in their settings.

At the organisational level, the SBEL approach encouraged participants, managers and senior clinicians to reflect on their workplace culture and systems. By comparing notes across institutions, for example, the hospitals in Bosnia and Herzegovina, Kosovo, and Montenegro, they became more aware of how institutional factors such as hierarchy, policies, and resource allocation impact NTS in practice. An important observation was that having leadership involved in the training sessions enriched the conversation when managers participated alongside front-line staff, it deepened the discussion and dialogue about needed improvements, as the managers could both provide a broader context and actively hear the concerns of their teams (93, 94). This finding resonates with prior research highlighting that

leadership engagement is pivotal for driving team learning and change in NTS initiatives (95, 100).

Moreover, one of the important contributions of the project is determining the role of leadership in NTS development within a collaborative learning framework. Study IV identified how specific leadership practices support or hinder the cultivation of NTS. The qualitative analysis in a Balkan context revealed four key thematic areas where leadership makes a difference: ensuring a clear definition of team roles, fostering open communication, promoting readiness for change, and mentoring for skills development (94, 99). Effective leaders in these settings were those who established role clarity and 'shared accountability', thereby reducing confusion and conflict in teams. They also encouraged inclusive communication, for example, inviting input from nurses, and urotherapists, which participants said helped break down hierarchical barriers and improve mutual understanding (99, 100). Moreover, leaders who showed support for new ideas and modelled adaptability helped teams become more change-ready, an important NTS when trying to improve practices or implement innovations (94). These insights advance understanding by linking leadership behaviour to the NTS features of a team. While leadership itself is often listed as a NTS, our findings drill deeper into what aspects of leadership are most salient for nurturing other NTS in low-resource, traditionally hierarchical healthcare environments. They highlight that in LMIC contexts, where formal management training is often lacking and old hierarchies persist, introducing participatory leadership styles can significantly enhance team cohesion and performance (53). In short, the project demonstrates that developing NTS is not just about training individuals in communication or decision-making techniques in isolation, it is equally about fostering supportive leadership and organisational conditions that allow those individual skills to be exercised. This system view of NTS, such as spanning personal competencies, team processes, and institutional culture, is a valuable conceptual contribution.

The findings suggest that NTS development is a continuous, experiential process rather than a one-time achievement. The participants' learning did not cease at the end of the workshops; many reported

that they continued to reflect on and experiment with NTS concepts in their daily work afterwards, for example, trying out new communication strategies during team meetings, or being more aware of team coordination during emergencies. The SBEL model, by design, incorporated mechanisms to encourage this ongoing learning, such as iterative workshops spaced over time, and prompting participants to share follow-up experiences in subsequent sessions. This approach is consistent with Kolb's ELT, which posits that knowledge develops through a cyclical process of action and reflection embedded in real contexts. The project provides empirical support for this theory in the realm of NTS, observing and giving professionals space to reflect on concrete experiences and then take those insights back to their workplace, leading to deeper internalisation of NTS concepts. Some participants even initiated changes, such as scheduling regular debrief meetings with their multi-professional teams or setting up peer support groups, as a direct result of ideas sparked during the SBEL workshops. These self-driven initiatives indicate that participants were not only learning passively but were motivated to actively apply NTS principles for long-term improvement (64).

In summary, the project advances the understanding of NTS by providing a holistic view of how these skills can be learned and reinforced through structured yet flexible educational interventions that engage individuals at all levels, leverage the influence of leadership, encourage interprofessional exchange, and treat learning as an iterative, ongoing journey.

Interprofessional competencies were both a means and a competence in our project. From the outset, it was recognised that strengthening NTS in healthcare is inherently tied to improving how different professional groups work together. Therefore, the SBEL model was deliberately implemented in an interprofessional environment: physicians, nurses, allied health professionals, and administrators all participated together in the participative workshops. This diverse participation was not incidental; it was a strategic design choice grounded in evidence that NTS learning is most effective when it involves all members of the healthcare team and promotes a shared vocabulary and understanding across professions (22, 32). In this discussion, we reflect

on how interprofessional competencies were fostered through the studies and what was learned about collaborative practice in the process.

The immediate effect of this interprofessional approach was the creation of a safe space for dialogue among different professionals, who did not often get a chance to reflect together (63, 70). In many clinical settings, especially in the regions with which we worked, strict hierarchies and siloed departments limit open communication between doctors, nurses and other staff. All participants, regardless of role or title, were considered equal contributors in the learning process—a ground rule that was emphasised to establish psychological safety. The environment was structured to be non-judgemental; for instance, mixed-profession small groups meant that junior nurses could speak up in discussions with senior physicians, and everyone's experience was treated as valid and informative. This egalitarian approach was repeatedly highlighted as crucial by the participants themselves. They noted that having a 'trustful learning environment' where they could freely express opinions and admit uncertainties was a refreshing change from their routine work environment. Such an atmosphere results in mutual respect and understanding. The participants' trust in each other grew as they shared personal stories and reflections. By engaging in joint problem-solving and reflection during SBEL activities, the participants practised collaboration in real time. They were not just talking about teamwork, they were doing teamwork to tackle the workshop tasks. Several teams reported that after attending the workshops, they started communicating more openly during daily rounds or meetings, as the personal connections and common reference points established in the training translated into greater collegiality on the job.

The studies also highlighted the core competencies by which interprofessional collaboration can be enhanced. One such core competence is the clarification of roles and responsibilities. A recurring theme was that confusion or misconceptions about each other's roles often impeded effective collaboration. During the SBEL sessions, especially when working with surveys like the IPEC competency framework, participants had to articulate what their role would be in a

given situation and what they expected of others. These conversations brought out differing assumptions; for example, doctors sometimes were unaware of the full scope of nurses' expertise, or nurses were unclear about who should take charge in certain scenarios. By incorporating these details into a learning context, the teams achieved more role clarity, which participants linked to smoother teamwork and patient safety. This finding resonates with the broader literature that role ambiguity is a common barrier to interprofessional collaboration, and that deliberate clarification can improve team function (52). The contribution here is to provide a concrete example of how role clarification can be built into a teaching intervention and how enthusiastic practitioners themselves respond to it. Many participants expressed relief and satisfaction at finally 'understanding what my colleagues expect of me and what I can expect of them', which eased tensions and fostered a sense of shared accountability for team outcomes (5, 65).

Another insight from the project is the importance of communication and shared language in interprofessional work (6, 97). Through iterative discussions, the participants gradually developed a common terminology for interprofessional competencies. The evidence on inclusion in the study progressed, quieter individuals became more vocal and assertive in group discussions, while traditionally dominant persons became better at active listening, indicating a shift towards more balanced, respectful communication patterns.

The interprofessional nature of the research project also meant that the researchers, gained insights into collaboration challenges and facilitators that might have been overlooked in a single-profession study. In some workshop discussions, participants pointed out that entrenched hierarchical structures and even cultural norms were significant obstacles to implementing teamwork and open communication (92, 96). Acknowledging these realities was an important step, as it allowed the group to strategise how to address them. This included getting buy-in from hospital management or setting ground rules that encouraged junior staff to speak. The presence of participants from various levels of the hierarchy proved advantageous in this regard; those leaders could hear these concerns directly and were prompted

by the forum to respond supportively. Indeed, one of the promising outcomes was that leadership and frontline staff developed a better mutual understanding leaders realised the daily communication barriers their teams faced, and staff appreciated that supportive leaders could champion the changes needed. This mutual understanding is a prerequisite for sustained interprofessional collaboration because it aligns bottom-up initiatives with top-down support (70, 100)

In conclusion, interprofessional collaboration was both a targeted focus and an emergent benefit of the SBEL project. By designing the learning experience to be interprofessional, improvements in teamwork and communication were directly targeted across professional boundaries. The studies showed that professionals are eager to collaborate when given the right environment and tools: they embrace shared learning, break down silos, clarify expectations and collectively devise strategies. The research project confirms that any effort to enhance NTS in healthcare must engage the entire team, and it provides a viable model for doing so. It highlights that IPC is not just an abstract ideal but a tangible practice that can be taught, practised and reinforced through well-designed educational interventions. Moreover, fostering such collaboration produces dividends in the learning process itself, creating more reflective, cohesive teams that can identify and address patient safety issues together.

### **5.3 Survey-based experiential learning**

Adopting iterative, reflexive learning in this research yielded distinct outcomes that merit reflection. Such an approach served not only as our methodological backbone in developing SBEL but also as a philosophy of enquiry that shaped the relationship with the field and the type of knowledge we generated (37). Unlike conventional experimental designs that test a static intervention, SBEL allowed the processes of design, implementation and evaluation to be merged into a single, evolving process with a few important outcomes.

The result of using DBR is the SBEL model itself, a concrete learning innovation that emerged through iterative refinement. By treating the intervention as an object of design and continuous development, it progressively improved its components in light of participant

feedback and observed efficacy. For example, after the workshops, the format of the small-group discussions and the translation of survey instruments were adjusted to better fit the local language nuances. These adjustments, made between cycles, improved the intervention in real time. Thus, by the end of the SBEL process, a well-designed educational framework with clearly defined steps was developed. This framework is a direct product of SBEL cycles and stands as a tested prototype for NTS training (see Figure 4). In many ways, the SBEL approach can be seen as a design model produced by the research. The collaborative, context-driven nature of its development suggests that it could be tailored to new environments, following the same principles we employed, which is another benefit of the DBR strategy. This process-oriented knowledge is valuable for educators and researchers facing similar complex, context-dependent problems in healthcare education.

Another significant outcome of the SBEL approach is the generation of practical design principles and theoretical insights. DBR is often described as yielding two levels of results: specific designs and design principles. In our case, beyond the specific SBEL workshop series, several principles were conceptualised that guided its success. One of the principles is the importance of integrating existing theoretical knowledge with local practice needs, considering established theories such as Kolb's ELT, and NTS frameworks from high-income contexts but did not apply them rigidly instead, adapted to fit the cultural and organisational realities of the Balkan healthcare context. This led to an intervention that was theoretically informed yet practically relevant, fulfilling the dual aim of DBR to improve practice and contribute to theory (41, 48). The ability to balance these two aims shows that theory can place the work in real practice and, conversely, that practical challenges can inform theory by revealing how concepts play out on the ground. For example, the use of surveys as experiential learning tools is an innovative pedagogical strategy that emerges through design development. Traditionally, surveys are used to collect data, but in this study, the purpose was changed and validated survey instruments were used as triggers for reflection and dialogue. This approach presented participants with research-based concepts in a familiar format but for an unfamiliar purpose, not measurement

but shared learning. It was found to be effective in triggering engagement and providing concrete reference points for discussion. This strategy brings a new perspective to educational design and moves over the line between assessment and learning, suggesting that tools usually reserved for evaluation can be part of the instructional process. More broadly, the SBEL process allowed us to identify such principles and ensure multi-level engagement linking individual self-reflection to team and organisational learning, contributing to the theoretical discourse on how best to teach complex skills like NTS. The principles refined in this project can inform future interventions, thereby extending the impact of our specific studies.

Using DBR contributes to building a strong researcher–practitioner partnership, which is a legacy that endures the project timeline (42, 47). Through iterative engagement, the healthcare professionals involved became co-creators of knowledge rather than mere subjects. This empowered them to carry forward the NTS agenda independently. From an academic standpoint, this partnership generated richer insights because the participants were honest about the challenges, they considered that the research process was there to help them, not to judge them. It is worth noting that the research was embedded in a bilateral capacity building programme (61). The SBEL approach thus naturally aligned with the mutual learning in that programme. In terms of outcomes, this means that the project resulted in increased awareness and capability among the participating organisations. DBR, by design, treats intervention development and knowledge generation as intertwined outcomes and the project exemplifies that. In summary, the use of DBR was instrumental in yielding a contextually attuned SBEL model and in advancing design theory for healthcare education. The approach demonstrates how iterative collaborative design can tackle complex educational challenges and produce solutions that are both actionable and accompanied by transferable insights (37). It highlights the value of embracing the messiness of real-world contexts in research, rather than avoiding it, to generate knowledge that is rigorous and relevant.

## **5.4 Practical and theoretical contributions of the project**

This DBR project yields a range of contributions, both practical and theoretical, to the field of healthcare education and workforce development. In line with the dual aims of DBR, we discuss the practical implications of our findings here as well as the theoretical contributions that advance scholarly understanding.

Foremost among the practical outcomes is the SBEL educational model itself, a ready-to-use framework for strengthening NTS in healthcare teams. The SBEL approach provides educators and institutions with a structured yet flexible method for integrating NTS training into continuing professional development. It is characterised by its low-resource requirements and adaptability, which are crucial benefits for settings with limited training infrastructure. Our experience demonstrated that meaningful NTS education can be conducted by using facilitated workshops and paper-based or digital surveys; one can engage staff in deep learning experiences. This makes the approach feasible for LMIC hospitals or any healthcare context where traditional simulation-based training is too costly. Indeed, our study suggests that many obstacles to implementing NTS practices, such as a lack of funding or shortages of specialised personnel, can be overcome through relatively inexpensive NTS practices and training. We anticipate that other healthcare organisations can replicate the SBEL model or its elements. The approach has been disseminated among partners in the Western Balkans, and early indications show interest in scaling it up within those countries' continuing education programmes.

Another practical contribution is our identification of leadership development needs as part of NTS strengthening. The project highlighted that equipping formal leaders with skills in facilitating teamwork and communication is critical. As a result, one recommendation was considered for further discussion, such as structured mentorship and leadership training programmes to sustain the collaborative culture fostered by SBEL. This aligns with the conclusion that leadership plays a key role in NTS and that training leaders can have trickle-down benefits for team performance. Ultimately, if leadership mentorship is adopted broadly, these contributions can help healthcare organisations build a stronger safety culture (30). By making

NTS training accessible and demonstrating its value, one can move closer to the ideal of holistic healthcare education that produces not only technically proficient but also communicatively adept and team-oriented professionals.

Alongside the practical outputs, the project offers several contributions to theory and research on learning in healthcare. First, it introduces and elaborates on the concept of SBEL as a novel educational model. This model enriches Kolb's ELT (37) by illustrating a creative way to blend quantitative instruments with qualitative, experiential learning processes. The surveys typically used for data collection can be transformed into learning triggers that immerse participants in self-assessment followed by group reflection. The theory behind this is an extension of experiential learning: the survey provides a concrete experience, which then becomes the basis for reflective observation and abstract conceptualisation during discussions, followed by active experimentation as participants consider applying insights to their work. SBEL thus stands as a concrete instantiation of ELT in action, contributing to theoretical discourse by detailing how Kolb's learning cycle can be operationalised in a healthcare training context (36). Moreover, our work addresses a noted gap in the literature: the lack of documented, context-specific strategies for teaching NTS in LMICs. Theoretically, this approach begins to fill that gap by providing a framework that has been empirically tested in one context and could inform theory-driven adaptations in others. It contributes to the global understanding of how generic NTS frameworks often developed in high-income settings can be reconciled with local cultural and organisational realities to achieve sustainable validity.

Additionally, through the project, we derived evidence supporting the idea that interprofessional learning interventions can change team dynamics and attitudes. The project also produced a set of implicit design principles for effective NTS training, that serve a theoretical role by guiding future designs and being tested in future research. Another is the inclusion of all team members in training to maximise the diversity of perspectives and learning opportunities. The importance of dedicating time for reflection at both the individual and group levels was highlighted, including time gaps between sessions to

allow concepts to protect. These principles, drawn from experience and supported by participant feedback, enrich the understanding of what conditions foster the development of NTS. They resonate with and add empirical support to concepts in organisational learning theory.

DBR, initially developed in the learning sciences, can be effectively applied in a clinical education context. Given that DBR is still relatively novel in medical education research, this research helps theorise its value and limitations in this domain. Similar to McKenney and Reeves (42), this study designs educational research simultaneously, solving a practical problem and refining theoretical insights. In summary, the theoretical contributions span the introduction of a new educational model, SBEL, with its underlying pedagogical rationale, evidence-based insights into interprofessional team learning and leadership in healthcare, and contributions to the methodology of design research.

In closing, this discussion has revisited the research questions and synthesised how the project's four studies addressed them. Reflecting on the strengths and limitations of a DBR-informed, qualitatively reach approach, it enabled a contextually grounded intervention while presenting challenges of scope and generalisability. The study examined the concept of NTS through the lens of the findings, showing how this work advances the understanding of NTS as multi-level, leadership-infused and essential for sustainable health systems development. The research highlighted the role of the design-based approach in achieving a practical SBEL outcome and generating theoretical knowledge and discussed how interprofessional collaboration was both cultivated and illuminated by the project. The practical contributions include an implementable training framework and actionable recommendations for healthcare teams and organisations, whereas the theoretical contributions enrich the literature on experiential learning, teamwork training and educational design in healthcare. Together, these contributions fulfil the aim of the research: to strengthen NTS in healthcare through a novel, evidence-based educational intervention and to broadly share the insights and lessons learned. By doing so, this work could inform both future practice in making healthcare teams more resilient, communicative, and safe.

## 6 Conclusions

In summary, this research demonstrates that sustainable healthcare development in LMICs requires as much attention to NTS as to technical expertise. The project, which was both development- and research-oriented, was carried out in a cross-cultural context and demanded a strong understanding of the local environment to ensure respect for cultural and professional differences. An inclusive research design—actively involving local participants and researchers—ensured that the interventions were culturally appropriate and relevant to the needs.

The findings from the four interrelated studies underscore three key insights into NTS in global health. First, the contextual adaptation of NTS frameworks is essential. Approaches to teamwork, communication, and other competencies that were originally developed in HIC settings cannot be directly transferred into LMIC contexts without modification. Through participatory adaptation, the core principles of these frameworks can be preserved while tailoring their application to fit local realities. Second, teamwork, communication, leadership and interprofessional competencies are confirmed as critical NTS for healthcare improvement. Third, SBEL is a promising educational innovation for building NTS, introduced in this research as both an enhancement and a learning method.

Bringing these insights together, the thesis argues that developing professional awareness through experiential learning can significantly strengthen local health systems while enriching international partnerships. By embedding practices of reflection, dialogue, and cultural sensitivity into health education improvements, empowering communication amplified through strong teamwork and cross-cultural understanding can be achieved.

### 6.1 Limitations and future directions

While the outcomes of this project are encouraging, it is important to acknowledge several limitations of the research. One limitation is the scope and scale of the participant group. The SBEL approach was developed and tested with a relatively small cohort of healthcare

professionals, primarily focusing on their educational experiences. Because of this limited sample, it remains uncertain how well the observed improvements in NTS translate to larger populations or different contexts. Another limitation involves the breadth of perspectives captured during the evaluation. The study gathered rich feedback from the participants who underwent SBEL training, but it did not simultaneously incorporate the viewpoints of their home institutions or partnering organisations. As a result, it created an incomplete picture of how NTS development was perceived at the organisational level or by colleagues and leadership in partner HIC and LMIC institutions. Finally, the context-specific nature of the project must be considered. Factors such as local organisational culture, healthcare infrastructure, and resource availability in the environments where SBEL was implemented may have significantly shaped the results. These contextual factors could differ in other hospitals, regions, or countries. Therefore, the success of the SBEL approach and the specific NTS outcomes observed here may not be fully generalisable to all other settings without careful adaptation.

Building on these insights, the thesis points to clear directions for future research to enhance the evidence base and practical impact of NTS training. First, future studies should test the SBEL approach with larger and more diverse samples. By involving a broader range of participants across multiple hospitals or countries, researchers can assess whether the benefits observed in this project hold true widely, thereby evaluating the transferability and generalisability of SBEL. Second, it is crucial to conduct longitudinal research that includes follow-up assessments months or even years after training. Such studies would help determine whether the improvements in NTS and heightened reflective practice are maintained over time and whether they eventually lead to measurable changes in behaviour, improved clinical teamwork, or better patient and organisational outcomes in the long run. Third, incorporating multiple stakeholder perspectives will enrich our understanding of NTS development. Future research should include feedback not only from the trainees but also from their colleagues, supervisors, and partner organisations in both LMICs and HICs. Such perspectives can provide insight into the mutual learning benefits of LMICs and HICs in NTS.

## 7 Summary in Swedish

Internationellt hälso- och sjukvårdssamarbete har traditionellt fokuserat på teknisk expertis, individuella färdigheter och infrastruktur. Även om dessa kompetenser är nödvändiga, är de i sig inte tillräckliga för att långsiktigt förbättra sjukvården. En fungerande hälso- och sjukvård bygger också på icke-tekniska färdigheter (non-technical skills; NTS) som kommunikation, samarbete, ledarskap, situationsmedvetenhet och beslutsfattande, vilka gör det möjligt för yrkesutövare att samarbeta, hantera utmaningar och optimera begränsade resurser.

En växande förståelse av NTS roll har genom olika ramverk och utbildningsmodeller utvecklats i höginkomstländer. När dessa överförs direkt till låg- och medelinkomstländer (LMIC) misslyckas de ofta med att ta hänsyn till kulturella, organisatoriska och resursmässiga förutsättningar. Dessutom uppmuntras sällan professioner från höginkomstländer att kritiskt reflektera över sina egna NTS eller anpassa dem till andra kontexter.

Lärandet i detta forskningsprojekt grundas på Kolbs teori om erfarenhetsbaserat lärande (experiential learning theory, ELT), som beskriver lärande som en cyklisk process bestående av erfarenhet, reflektion och skapande av nytt förståelse. Forskningen bygger även på individ-teamorganisation lärande som lokaliserar professionell medvetenhet på tre ömsesidigt sammankopplade nivåer. Tillsammans utgör dessa ramverk grunden för utvecklingen av deltagarbaserade och kontextanpassade utbildningsmodeller.

För att möta det identifierade behovet tillämpade avhandlingen en designbaserad forskningsmetodik (design-based research, DBR) för att stegvis utveckla, anpassa och utvärdera utbildningsinsatser för NTS. DBR betonar designiterationer, genomförande och anpassning i nära samarbete med involverade aktörer, vilket gör den särskilt lämpad för att generera både praktiskt relevanta och teoretiskt förankrade resultat. Genom denna metod undersöks hur NTS kan kontextualiseras i LMICs hälso- och sjukvården och hur yrkesverksamma från höginkomstländer kan förberedas bättre för internationellt samarbete.

Det övergripande syftet är att visa hur erfarenhetsbaserade, deltagarorienterade och kontextkänsliga utbildningsformer kan stärka professionell medvetenhet och bidra till hållbar utveckling inom hälso- och sjukvården. Fyra delstudier bidrar till detta syfte.

## **7.1 Översikt av studierna**

### **Studie I – Survey-based experiential learning (SBEL) i låg- och medelinkomstländer**

Den första studien introducerade SBEL-metoden i multiprofessionella team i Balkanregionen. Genom att använda enkäter som reflektionsverktyg snarare än mätinstrument fick deltagarna genomgå individuella reflektioner, gruppdiskussioner och gemensam konceptualisering. I workshops i Bosnien och Hercegovina, Kosovo och Montenegro stimulerades kritiska diskussioner om samarbete, kommunikation, ledarskap och yrkesroller. Analysen visade att NTS kan framställas i flera dimensioner såsom på individ-, team- och organisationsnivå, och att erfarenhetsbaserad reflektion främjar professionell medvetenhet. Studien visade att SBEL är en genomförbar och anpassningsbar pedagogisk insats för fortbildning i LMIC-kontext.

### **Studie II – Utveckling av icke-tekniska färdigheter hos svenska vårdprofessioner inför internationella uppdrag**

Den andra studien tillämpade SBEL-metoden i en svensk kontext, med vårdpersonal som förberedde sig för eller deltog i internationella samarbeten. Workshops hölls med läkare, sjuksköterskor, barnmorskor och medicintekniker, där flera verktyg användes: enkäten IPEC-21B (Interprofessional Education Collaborative [IPEC] Core Competencies Survey), som är psykometriskt validerad (27), en Johari-fönster-enkät som reflektionsstöd (112), samt ett validerat instrument för kulturell förståelse (111) som omfattar nio domäner, inklusive självmedvetenhet om kulturella influenser, kommunikation över språkbarriärer och förståelse för lokala hälsouppfattningar.

Deltagarna betonade att även om NTS är avgörande i internationella samarbeten, är deras tillämpning starkt beroende av kontexten. Fyra

teman framkom efter analys av observation och fokus grupper: (1) NTS måste förstås i relation till kontext, (2) kommunikation och maktdynamik kräver aktiv hantering, (3) kulturella och organisatoriska skillnader kräver kontinuerlig anpassning, och (4) kontinuitet och flexibilitet är nödvändiga för att bygga förtroende. SBEL-metoden uppfattades som engagerande, praktisk och effektiv för att förbereda vårdpersonal för utmaningar i mångkulturella och resursbegränsade miljöer.

### **Studie III – Kontextualisering av interprofessionella kompetenser i Balkanregionen**

Den tredje studien beskriver en fördjupad insats att tillämpa interprofessionella IPEC-instrumentet till Balkan och kontextualisera det. Genom workshops reflekterade vårdpersonal över alla 38 IPEC-kompetenser och värderingen av resultat lede till en reviderad resultat av kontextualiserad 21-items instrument (IPEC-21B) som behöll alla fyra ursprungliga domänerna: värderingar och etik, roller och ansvar, interprofessionell kommunikation och samarbete men justerade samtliga items som värderades irrelevanta för Balkan kontexten.

Psykometrisk testning visade att IPEC-21B var relevant och valid och resultaten korrelerades med fynd på diskussion under workshopen som gav värde till den kvalitativa resultaten av IPEC-21 fynden. Deltagarna betonade vikten av tydliga roller, kommunikation och teamwork i hierarkiska och resursbegränsade miljöer. Anpassningsprocessen i sig fungerade som en katalysator för professionell dialog, främjade och kontextkänslighet, och visade hur globala ramverk kan anpassas meningsfullt till LMIC genom deltagande processer

### **Studie IV – Ledarskapets roll i att stärka icke-tekniska färdigheter i hälso- och sjukvården**

Den kvalitativa studien undersökte ledarskapets roll i att främja NTS bland vårdteam i Bosnien och Hercegovina, Kosovo och Montenegro. Genom observationer, fokusgrupper och intervjuer med ledare identifierades fyra centrala teman i studien: roll- och ansvarsdefinition, kommunikation och samarbete, förändringsberedskap samt utveckling av ledarskapskompetens.

Resultaten visade att effektivt ledarskap i LMIC handlar om att balansera hierarkisk tradition med deltagarorienterade arbetssätt. Ledare som uppmuntrade öppen kommunikation, tydliga roller och inkluderande beslutsfattande förbättrade teamets prestation och professionella utveckling. Avsaknaden av strukturerad ledarskapsutbildning framhävde behovet av mentorskap och kontextanpassad utveckling av ledarskap. Studien visar att ledarskap är avgörande för att introducera NTS i organisationskulturen och främja hållbar utveckling i hälso- och sjukvården.

## **7.2 Slutsatser**

Studien visar att hållbar utveckling inom hälso- och sjukvården i LMIC kräver engagemang för utveckling av NTS vid sidan av teknisk expertis. Avhandlingen bidrar med tre huvudsakliga insikter:

Kontextuell anpassning av NTS är avgörande. Ramverk utvecklade i höginkomstländer kan inte förflyttas direkt, men kan anpassas meningsfullt genom deltagande processer som bevarar kärnprinciper samtidigt som de speglar lokal fakta.

Ledarskap och interprofessionellt samarbete är centrala möjliggörare för anpassning och utveckling av NTS. Effektivt ledarskap främjar kommunikation, teamwork och förändringsberedskap, medan anpassade interprofessionella ramverk ger en grund för gemensamt lärande.

SBEL är en pedagogisk innovation. Som både utvärderings- och lärandemetod stimulerar SBEL reflektion, dialog och professionell medvetenhet på individ-, team- och organisationsnivå, och kan anpassas till både LMIC- och höginkomst länder.

Sammanfattningsvis visar avhandlingen att utveckling av professionell medvetenhet genom erfarenhetsbaserat lärande stärker både lokala hälsosystem och internationella partnerskap. Genom att integrera reflektion, dialog och kulturell medvetenhet i utbildningsdesign kan globala hälsosamarbeten överskrida kortsiktiga tekniska insatser mot långsiktig och hållbar kompetensutveckling.

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## **Supplementary material**

This material provides an introduction for colleagues working in medical education who are interested in understanding and applying SBEL principles. SBEL is a structured learning approach where researchers and participants use surveys as the starting point for reflection, dialogue, and team development. Instead of classical teaching methods, participants learn from their own real experiences, expressed in their own words.

### **SBEL CHECKLIST**

#### **1. Preparation**

- Learning objectives defined (teamwork, communication, role clarity, safety culture, etc.)
- Survey(s) selected or designed to match objectives
- Survey(s) introduced to participants by the research team
- Participants briefed on key concepts (teamwork behaviors and, communication patterns)

#### **2. Introduction phase (workshop)**

- Welcome participants
- Purpose of SBEL explained
- Survey questions linked to real examples
- Present key concepts from the survey
- Participants invited to reflect on survey themes

#### **3. Co-construction phase**

- Selected themes shared
- Group discussion facilitated
- Team defines or refines key concepts together

- Emerging shared themes captured
- Consensus check: Does this interpretation fit how we work?

#### **4. Implementation phase**

- Small-group case-based discussion
- Reflective prompts: Where do we see this? What makes it difficult? What does good performance look like?
- Patterns in teamwork or communication identified
- Shared vocabulary and mental models summarised
- 2–3 behaviors or practices agreed for implementation
- Outcomes documented (definitions + action points)

**Purpose of SBEL:** Transforms individual reflections into shared understanding, strengthening communication and collaboration.