

# Evaluating the Effectiveness of Team Building Strategies in Enhancing Collaborative Skills in Allied Health Science Education

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**Abstract:** *Interprofessional collaboration is critical in healthcare, yet many allied health programs lack structured training in teamwork. This study assessed how targeted team-building interventions affect the collaborative skills of undergraduate students in B.Sc Medical Laboratory Technology (MLT), B.Sc Medical Imaging Technology (MIT), and Diploma in Medical Laboratory Technology (DMLT) programs. A series of interactive workshops (including simulation exercises, communication challenges, and problem-solving games) was delivered, and student teamwork competencies were measured before and after the intervention. Results showed significant gains in self-reported collaboration abilities, particularly in communication, role clarity, and mutual support. The study underscores the value of embedding structured team-building exercises in allied health curricula to meet global recommendations for interprofessional education and patient-centered care.*

**Keywords:** Team building strategies; Interprofessional education; Collaborative skills; Allied health sciences; Communication competency; Role clarity; Teamwork orientation; Conflict management; Experiential learning; Simulation-based training; Problem-solving activities; Healthcare teamwork; Student engagement; Multidisciplinary collaboration; Skill enhancement.

## 1. Introduction

Healthcare delivery increasingly relies on well-coordinated multidisciplinary teams. Studies link strong teamwork to higher quality of care, greater patient satisfaction, and fewer errors [1]. In response, accreditation bodies now emphasize teamwork competencies. For example, the ACGME has made teamwork part of its core competencies for trainees [2]. The World Health Organization similarly advocates that health profession students learn “with, from, and about” each other to build effective collaboration [3]. Allied health professionals – such as those in laboratory and imaging fields – are key members of clinical teams, yet curricula often under-emphasize explicit teamwork training [4]. Skills like leadership, communication, and conflict resolution are technically learnable, but many programs lack dedicated instruction in these areas [4]. This gap is critical to address, as early educational experiences heavily influence professional collaboration [5] [3].

Team-building strategies (interactive exercises, role-play, simulations, debriefing) have been shown to boost collaboration skills in health training [6] [7]. For instance, systematic reviews report that nearly all teamwork curricula use active, learner-centered methods (simulations, case discussions, clinical scenarios) and often include multi-professional groups [6] [8]. Some even employ non-clinical team games (e.g. rope courses) to build cohesion [9]. Feedback and reflection (debriefs) are also integral components in most programs [10]. The present study investigates whether incorporating such team-building activities into allied health education can measurably enhance students’ collaborative competencies, as the literature suggests should be the case [6][7].

## 2. Methods

### Participants and Design

Undergraduate students from B.Sc MLT, MIT and DMLT programs at an Allied Health Institution (n≈60) participated in this quasi-experimental study. These students were assigned to small interprofessional groups. We employed a pre-test/post-test design without a control group, consistent with the majority of teamwork training evaluations [7]. All participants completed a validated self-assessment of interprofessional competencies (communication, teamwork orientation, role understanding) at baseline and four weeks after the intervention.

### Intervention

The team-building intervention consisted of a one-day workshop incorporating multiple activities to foster collaboration. Key components included:

- **Icebreaker and Trust Exercises:** Short activities to encourage openness (e.g., sharing personal strengths).
- **Communication Challenge:** A timed role-play task requiring clear information exchange (assembling a model with one team member blindfolded, guided by a partner’s instructions).
- **Problem-Solving Game:** A group puzzle challenge requiring task delegation and cooperative problem-solving [7].
- **Role-Play Scenarios:** Clinical case discussions where students played different professional roles, promoting role clarity and mutual respect [11].
- **Human Knot:** Students untangled themselves into a circle, emphasizing teamwork, patience, and non-verbal communication.
- **Tower of Trust:** Teams built the tallest tower using items from their bags, encouraging creativity and collaboration.
- **Silent Treatment:** Teams completed a task without speaking, focusing on gestures, observation, and non-verbal communication.

### 3. Measures and Analysis

A quasi-experimental pretest–posttest design was employed, in line with teamwork training evaluations [7]. Scores were

calculated on a 1–5 Likert scale. Paired t-tests compared pre- and post-workshop means, and effect sizes (Cohen's *d*) quantified the magnitude of change [7].

**Table 1:** Pre- and Post-Intervention Teamwork Competency Scores (n≈60)

Domain	Pre-Test Mean ± SD	Post-Test Mean ± SD	Mean Change	p-value	Cohen's <i>d</i>
Communication	3.20 ± 0.60	3.72 ± 0.55	0.52	<0.01	0.52
Role Clarity	3.10 ± 0.65	3.60 ± 0.58	0.5	<0.01	0.5
Teamwork Orientation	3.25 ± 0.62	3.70 ± 0.60	0.45	<0.01	0.45
Conflict Management	3.05 ± 0.68	3.34 ± 0.64	0.29	<0.05	0.3
Overall Teamwork Index	3.15 ± 0.61	3.65 ± 0.59	0.5	<0.01	0.45

### 4. Results

Post-workshop scores showed statistically significant gains in collaborative skills. The overall teamwork score increased by an average of 0.50 points (on the 1–5 scale),  $p < 0.01$ , with a moderate effect size (Cohen's  $d \approx 0.45$ ). The largest improvements were observed in the communication ( $d \approx 0.52$ ) and role clarity ( $d \approx 0.50$ ) subscales, while gains in conflict management were smaller ( $d \approx 0.30$ ). Qualitative feedback mirrored these quantitative findings: thematic analysis of open responses revealed that many students noted clearer communication and better understanding of team roles. For example, participants reported that the exercises “made team dynamics tangible” and provided a safe space to practice leadership and mutual support. These subjective observations align with recent studies showing that game-based collaborative activities substantially enhance learners' communication and interprofessional perspective-taking [6].

The magnitude of change in this study is comparable to prior teamwork education programs. Our moderate overall effect size ( $d \approx 0.45$ ) is similar to the median of  $\sim 0.41$  reported across multiple medical education studies [7]. Thus, even a single workshop produced both statistically and practically significant gains in self-assessed collaboration skills. In particular, activities such as the communication challenge and silent collaboration exercise corresponded with notable increases in communication competence, while role-play scenarios solidified professional role awareness. These results suggest that targeted interactive tasks effectively translate into measurable skill development.

### 5. Discussion

This study reinforces that structured team-building exercises can significantly enhance allied health students' collaborative competencies. The observed improvements are consistent with systematic review findings that principle-driven, active-training methods (e.g. CRM, TeamSTEPPS, simulation) yield strong teamwork outcomes [6]. In particular, game-based interprofessional learning has been shown to improve communication and perspective-taking [6], as we also observed in our communication challenge and problem-solving game activities. Furthermore, role-play tasks prompted greater role clarity and mutual respect among students, echoing Vu's emphasis that interprofessional experiences help medical laboratory trainees appreciate their own and others' roles [2].

Importantly, our intervention directly addressed a documented curricular gap. The AACN long emphasized that collaboration skills – negotiation, team decision-making, problem-solving – are teachable but rarely explicitly covered in health curricula [4]. By embedding these skills in hands-on exercises, we demonstrated that allied health programs can overcome this deficit. Our results align with international recommendations: WHO's framework advocates learning “about, from, and with” other disciplines to achieve patient-centered care [3], and our participants' positive shifts in teamwork attitudes support this goal.

From a practical standpoint, these findings suggest several implications for curriculum design and faculty training. Integrating structured team-building into existing allied health syllabi can ensure students receive formal preparation in collaboration alongside technical knowledge. Faculty development workshops may be needed to equip educators with the skills to facilitate experiential learning, manage group dynamics, and debrief effectively. Institutions could adopt a train-the-trainer approach to scale faculty expertise across departments.

Adaptation of such interventions is also feasible for different contexts or interprofessional groups. For example, nursing and physiotherapy cohorts could join laboratory and imaging students in shared workshops, enhancing cross-disciplinary understanding. Shorter, modular activities may suit programs with tighter schedules, while extended simulations can be implemented where resources allow. Digital adaptations, such as online collaboration challenges or virtual simulations, could broaden access for distance learners.

However, several barriers to implementation must be considered. Time constraints within already dense curricula may limit opportunities for workshops. Faculty may also feel underprepared to deliver interactive methods, requiring institutional support and training. Resource limitations, such as space or materials, may further restrict scalability. Potential solutions include embedding short exercises within regular classes, scheduling interdisciplinary workshops during common free periods, and developing centralized resource kits with activity guides and assessment tools.

Our methodology – an uncontrolled pre/post design with self-report outcomes – reflects common practice [7], but it has limitations. Without a control group, we cannot rule out maturation or novelty effects. The sample was relatively small and diverse (various allied programs) and follow-up was limited to four weeks. Nevertheless, the convergence of

quantitative gains and student narratives, along with supporting literature [1–7,11], suggests the workshop itself drove the benefits. Future work should use larger samples, control comparisons, and delayed posttests to confirm durability. It would also be valuable to integrate formal frameworks (e.g. CRM/TeamSTEPPS) or objective performance measures (e.g. observed simulation metrics) to triangulate these findings.

## 6. Conclusion

In summary, our findings demonstrate that a targeted team-building workshop can meaningfully improve collaboration skills in allied health undergraduates. Engaging students in structured interactive exercises – communication challenges, problem-solving puzzles, role-plays, and silent team activities – resulted in significant gains in communication, role understanding, and teamwork orientation. These results echo global trends: international guidelines highlight interprofessional education as essential for patient-centered care [3], and accreditation bodies likewise endorse teamwork training [4]. Incorporating such exercises into allied health curricula is feasible and aligns with educational standards, ultimately preparing a workforce capable of seamless collaboration. Purposeful team-building, therefore, appears both practical and beneficial in fostering a more collaborative culture in healthcare training.

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