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Evaluating Competency-Based Learning Outcomes of Public Health Graduates Using BNSP-Defined Competency Dimensions in Indonesia: A Case Study at Diponegoro University

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Abstract

Background: Public health graduates are increasingly expected to possess not only theoretical knowledge but also practical competencies such as task execution, adaptability, and effective communication. In Indonesia, however, assessment practices predominantly focus on cognitive domains, often overlooking essential workforce competencies.
Methods: This study employs a descriptive case study approach at the Faculty of Public Health, Diponegoro University, analyzing 18 group reports from the 2024 Field Learning Practice 2 (FLP_2) program. Assessment focuses on five competency dimensions defined by The National Professional Certification Agency (BNSP): Task Skills (TS), Task Management Skills (TMS), Contingency Management Skills (CMS), Transfer Skills (TRS), and Job/Role Environment Skills (JRES).
Results: Students demonstrated TS through systematic problem identification using the Multiple Criteria Utility Analysis (MCUA) with the score varies from 2.1/4 min to 3.9/4 max.. TMS was evident in the planning and management of community interventions varies of 3 till 5 activities . CMS was reflected in effective responses to health crises, such as dengue outbreaks or high prevalence of tuberculosis. TRS was noted for its ability to adopt to different socio-cultural environments. JRES was demonstrated through professional conduct in diverse institutional contexts in coordination to adopt stakeholder and community needs. Authentic learning activities fostered readiness for complex public health roles.
Conclusion: FLP_2 effectively evaluates comprehensive public health competencies. A shift towards performance-based, contextual assessment frameworks is essential for aligning education with workforce needs. Embedding such frameworks into curricula will enhance the quality and preparedness of graduates for addressing real-world challenges.

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INTRODUCTION

Graduates with a Bachelor of Public Health play a pivotal role in strengthening the healthcare system through promotive, preventive, curative, and rehabilitative efforts. Beyond mastering theoretical knowledge and professional ethics, these graduates are expected to possess practical, context-sensitive, and measurable work skills that are applicable in real-world settings. They must engage in interdisciplinary and multisectoral collaborations, employing data-driven solutions and evidence-based policies to address complex public health problems (Thalia, 2024).

However, in Indonesia, a notable gap remains between graduate learning outcomes and workforce expectations. Traditional assessment methods primarily emphasize cognitive understanding, general skills, and attitudes while neglecting specific competencies required in actual job settings (Gallardo, 2020; Dankner et al., 2018). As a result, graduates often face limited readiness to meet the nuanced demands of public health work.

Globally, competency-based education (CBE) has emerged as a critical framework in health education. CBE focuses on equipping students with observable and quantifiable job-related skills that are directly applicable in real-world contexts (Chan, 2023; Olu et al., 2018). It prioritizes outcome-driven and practice-oriented learning where authentic assessments grounded in real-life applications are essential (Gallardo, 2020; Chan, 2023; Axiak et al., 2024).

Evidence from scoping reviews indicates that most public health programs lack comprehensive frameworks for evaluating competencies, leading to inconsistencies and limited comparability between institutions (Krasna et al., 2021). In the UK, the Public Health Skills and Knowledge Framework (PHSKF) evaluation also emphasized the importance of aligning assessment with professional realities, including the need for clear institutional objectives and support structures (Bornioli et al., 2020).

In the Indonesian context, graduates must not only grasp theoretical principles and epidemiological data but also apply skills that ensure successful transitions into evolving professional roles. This includes executing interventions, fostering effective communication, and navigating socio-cultural diversity (Chan and Luo, 2020). Competency assessment, therefore, must encompass five critical dimensions established by the Indonesian National Professional Certification Agency (BNSP): Task Skills (TS), Task Management Skills (TMS), Contingency Management Skills (CMS), Transfer Skills (TRS), and Job/Role Environment Skills (JRES) (National Professional Certification Agency, 2024).

Current evaluation systems are overly reliant on written examinations, limiting the ability to measure work-related competencies holistically. Essential skills such as advocacy are often embedded implicitly in curricula and rarely evaluated using authentic assessments. The absence of defined competency standards and performance indicators hampers the validity of outcome assessments. Thus, a comprehensive revision of curriculum design and assessment strategies is necessary to prepare graduates for the real-world demands of public health (Van Staden and Duma, 2022; Axiak et al., 2024).

So far, student competency assessments have been carried out based on graduate learning outcomes formulated in the curriculum. Meanwhile, the job market needs graduates who have competencies in accordance with the needs of the workforce. The competencies of the world of work in Indonesia use five dimensions of competence set by the National Professional Certification Agency (BNSP). So that this competency-based assessment is a challenge for public health education, which has never been done so far.

Therefore, this study aims to fill the gap by examining how learning outcomes can be evaluated using a multi-dimensional competency framework. Faculty of Public Health Dponegoro University is one of the 5 pioneer health faculties in Indonesia that has implemented field learning practices, but no one has conducted an assessment of the competency output referring to the competencies formulated by the National Professional Certification Agency. Through an analysis of the Field Learning Practice 2 (FLP 2) program at Diponegoro University, this

study will able to provide insights that support the development of coherent, practical, and contextually relevant assessment models for future public health graduates.

METHOD

This study adopted a descriptive case study approach conducted at the Faculty of Public Health, Diponegoro University. The population of this sudy is all group of student which conducted FLP_2 in 2024, namely 18 groups. The study used 18 reports produced by student groups related to the Field Learning Practice 2 (FLP_2) activities conducted by seventh-semester students in 2024. Some of the courses related to FLP 2 are the basis of public health. epidemiological investigation, Health planning and evaluation. Community empowerment, health communication, Development of health promotion media, and public health leadership. FLP_2 is designed as an experiential learning program in which students address community-based health problems through real-world interventions. The program aims to provide students with hands-on experiences that foster the development of multidimensional competencies necessary for the public health workforce.

This research evaluates the outcomes of the FLP_2 program using five nationally recognized competency dimensions: Task Skills (TS), Task Management Skills (TMS), Contingency Management Skills (CMS), Transfer Skills (TRS), and Job/Role Environment Skills (JRES). These dimensions adhere to the guidelines outlined in the Decree of the National Professional Certification Agency No. 140/BNSP/I/2024 and are integral components of Indonesia's national competency certification framework. TS is the skill of carrying out tasks, TMS is the skill of managing multiple tasks, CMS is the skill of solving problems, TRS is the skill of adopting new knowledge or skills that have never been done before, and JRES is the skill of meeting and or adjusting to the needs of the environment.

The data analysis was conducted descriptively by categorizing and synthesizing student achievements within each of the five competency dimensions. Each report was examined to identify evidence of how students demonstrated these skills in community settings. The aim of this synthesis was to determine the extent to which public health graduates exhibit the competencies required to perform effectively in real-world professional environments. The data was analyzed descriptively with narative and word cloud visualization to describe the five dimensions of competence.

RESULTS AND DISCUSSION

This study utilized data from 18 reports related to the Field Learning Practice 2 (FLP_2) activities conducted by seventh-semester students at the Faculty of Public Health, Diponegoro University. The research aims to evaluate the competencies acquired by students across five dimensions of competence. The findings are outlined as follows:

Task Skills (TS)

Task Skills refer to the individual's ability to perform specific tasks according to predefined procedures and standards. In FLP_2, this is reflected in students' abilities to carry out structured public health interventions, starting from data collection to problem prioritization using evidence-based methods. The incorporation of a Multiple Criteria Utility Analysis (MCUA) framework requiring evaluation through urgency, seriousness, and trend dimensions provides a structured, quantitative approach to problem ranking, essential for community-based public health practice (see an example Table 1).

Table 1. Results of Issue Priority Using the MCUA Method

Criterion	Weight (W)	Disease							
		Diabetes Mellitus		Hypertension		Acute Nasopharyngitis		Dyspepsia	
		Score (S)	Score x Wight (W)	Score (S)	Score x Wight (W)	Score (S)	Score x Wight (W)	Score (S)	Score x Wight (W)
The magnitude of the problem	35%	3.2	1.1	4.0	1.4	1.9	0.7	2.2	0.8
Urgency	45%	3.2	1.5	3.8	1.7	1.7	0.8	1.9	0.9
Trend	20%	1.0	0.2	4.0	0.8	4.0	0.8	2.0	0.4
Total			**2.8**		**3.9**		**2.3**		**2.1**
Priority			**II**		**I**		**III**		**IV**

Table 1 presents the results of the identification and prioritization for four major diseases:Diabetes Mellitus, Hypertension, Acute Nasopharyngitis, and Dyspepsia. This prioritization is based on three criteria: magnitude of the problem, urgency, and trend. Each criterion is assigned a different weight, with urgency receiving the highest weight at 45%, followed by the magnitude of the problem at 35%, and trend at 20%. The score for each disease is multiplied by its corresponding weight to generate a total score, which determines the priority of the intervention. The results of problem priority carried out by 18 groups of students in FLP_2 as seen in table 2. Based on table 1, most of the groups determined Diabetes Mellitus as a disease that was prioritized to find a solution.

Table 2. Kinds of Diseases Identified and Priority Problems by 18 groups

Diseases	No. of Group
Diabetis Melitus	16
Hypertension	14
Tuberculosis	12
Stunted Children	7
Dengue Haemorragic Fever	7
Diarrhea	4
Luck of Chronical Energy in pregnance mother	3
Heavy mental disorder	2
Dengue Fever	2
Pneumonia	1

Chong et al. (2022) emphasized that embedding experiential learning in undergraduate health promotion curricula bridges theory and practice. In their study, students engaged in problem identification, community engagement, project design, and priority setting using tools like the Integrated Health Promotion (IHP) Resource Kit and structured planning templates, closely aligning with FLP_2's MCUA framework (Chong et al, 2022).

Rojo et al. (2025) further highlighted that real-world environments, such as Community Health Fairs (CHFs), enable students to perform tasks like blood pressure screening and patient communication, reinforcing classroom knowledge through hands-on exposure. These activities mirror FLP_2's real-world data collection and analysis phases, which use analytical models like MCUA to foster critical thinking and structured judgment (Rojo et al, 2025).

In the MCUA analysis, all group members evaluate three criteria: urgency, seriousness, and trend, each rated on a scale from 1 to 4. Problems are then prioritized in ranked order. An example of problem prioritization outcomes from FLP_2 activities is illustrated in a word cloud (Figure 1).

Figure 1. Problem priority results in word cloud

According to the word cloud analysis in Figure 1, Diabetes Mellitus and Hypertension are the most critical health issues, indicated by their prominent word size. Tuberculosis and stunting also emerge as key concerns. Dengue Hemorrhagic Fever, chronic energy deficiency in pregnant women, and Dengue Fever are of moderate importance, while Diarrhea and Pneumonia are depicted as lesser priorities. Overall, Diabetes and Hypertension are the foremost health priorities identified in FLP_2.

The use of structured assessment tools like problem prioritization matrices and evidence-based evaluation indicators aligns with Axiak et al. (2024), who argue for authentic, performance-based assessments (Axiak et al, 2024), who argue for authentic, performance-based assessments. Such approaches offer more reliable measures of students' readiness for health practice, emphasizing professional capabilities beyond cognitive knowledge.

Task Management Skills (TMS)

Task Management Skills are essential competencies enabling individuals to manage multiple tasks concurrently in a structured and goal-oriented manner. This concept aligns with experiential and service-based learning paradigms where learners must plan, implement, evaluate, and adapt activities in real-world contexts.

In the FLP_2 framework, students plan activities, coordinate with stakeholders, monitor outcomes, and adapt strategies, mirroring professional responsibilities. Anderson et al. (2022) described similar models in the Health Promotion Evaluation (HPE) subject, where students conduct needs assessments, literature reviews, and intervention plans. These activities foster TMS through the simultaneous execution of project elements like data collection, community engagement, and ethical compliance (Anderson et al, 2022).

Community-based interventions, such as group gymnastics for hypertension risk groups, exemplify the necessity of TMS. Students navigate logistical planning, stakeholder communication, and resource coordination. Anderson noted that managing such multifaceted projects enhances health promotion competencies, including leadership, planning, and communication all facets of TMS and aligned with the IUHPE Core Competencies (Anderson et al, 2022).

Emrani et al. (2024) reinforced the effectiveness of service-based learning in cultivating health education competencies overlapping with TMS. Their study found that students involved in structured, community-driven projects showed significant improvements in planning, leadership, communication, and professional preparation.

These activities reflect the FLP_2 model, where students identify community needs, design programs, and manage implementation (Emrani et al, 2024). The convergence of authentic assessment and service-based learning frameworks confirms that TMS is embedded within complex, community-centric educational experiences. These require students to balance planning, execution, real-time feedback, and problem-solving. Both Anderson and Emrani validate the assertion that managing complex interventions reflects the presence and development of TMS in health education domains.

Contingency Management Skills (CMS)

Contingency management skills refer to an individual's ability to tackle problems effectively. The assessment of these skills focuses on one's problem-solving capabilities. The core principle involves making decisions both accurately and swiftly, as well as implementing effective and efficient solutions. This ensures health issues are addressed appropriately and measurably. During the implementation of FLP_2, an unexpected outbreak of dengue hemorrhagic fever (DHF) occurred. Students, grouped in teams, were tasked with managing the outbreak. They had to make immediate, accurate decisions on appropriate actions. The simulation of the outbreak highlighted the importance of problem-solving, decision-making, and adaptive leadership, particularly in uncertain conditions. Dopelt et al. (2024) found that simulation-based pedagogical models enhance student readiness for real-life public health crises. Students reported improved confidence, communication, and the ability to resolve dilemmas through teamwork and reflection (Dopelt et al, 2024).

In FLP_2, student-led epidemiological investigation (EI), field data collection, risk factor analysis, and community engagement reflect core competencies (Bhandari et al, 2020). These include "assessment and analysis," "partnership and collaboration," and "policy and program management." These skills are critical in resource-constrained environments. Structured actions like fogging and the Mosquito Nest Eradication (MNE) movement represent evidence-based interventions, emphasizing technical knowledge, local leadership mobilization, and behavioral change. These elements correspond to the "leadership" and "communication" domains in Bhandari's framework (Bhandari et al, 2020). Dopelt et al. (2024) affirmed that simulations provide a safe environment for students to engage in leadership, decision-making, and reflection, reinforcing learning through cycles of experience and feedback (Dopelt et al, 2024). Similarly, Wenzel et al. (2025) found that applied learning environments significantly enhance leadership competencies. Their evaluation showed gains in problem-solving, negotiation, and collaboration, suggesting FLP_2's structure prepares students for workforce challenges (Wenzel et al, 2025).

Transfer Skills (TRS)

Transfer skills refer to an individual's ability to adapt, apply, and transfer skills across various environments, objects, or contexts. Assessment of these skills involves facing novel challenges. In FLP_2, transfer skills involve adapting competencies to complex, unfamiliar contexts like resolving community health issues beyond the standard 5 M resources. By examining various environmental characteristics and conditions in the community, the student group formulated various interventions that could be carried out by adjusting the conditions and situations of the community that would be the target of the intervention. Most of the group determine community empowerment as the first priority in tackling the health problem in the community. Various intervention variables are as seen in Table 3.

Table 3. A wide variety of interventions formulated by 18 groups

Kinds of intevenstions	No. of Group
Community empowerment	13
Fasilitation	6
Health Training	4
Health Advocacy	4
Formation of The Peduli Group	3
Tuberculosis Compaign	2
Providing PPE and Tensimeter	2
Aerobic and Sport activity	2
Health Check-up	1

This aligns with the Learning Collaboratory (LC) model, which immerses students in real-world challenges to build critical thinking and collaboration (Horigian et al., 2023). Both FLP_2 and LC emphasize cultural awareness and stakeholder engagement. FLP_2 incorporates cultural barrier identification and team-based planning, mirroring the LC's interprofessional collaboration and "teach-back" methods. Students in FLP_2 take three critical steps: (1) identifying cultural supports and barriers through observation and interviews; (2) determining cross-sector involvement for community problem-solving; and (3) allocating roles among team members for activity implementation.

These practices reflect principles found in the Afya Bora Consortium Fellowship, which emphasizes context-based intervention design (Omar et al, 2020), the STAR program's cross-sector collaboration (Schleiff, M.J, 2021), and the Global Health Corps' strategic mentorship and role placement (Sillat, L.H., 2021).

These elements challenge students to identify optimal community health solutions while promoting leadership, mentorship, and collaboration. Figure 2 illustrates student-devised public health solutions.

Figure 2. Variations of Public Health Problem Solving Solutions in Word Cloud

Figure 2 shows "empowering communities" as a central theme, achieved via education, advocacy, and health campaigns. Facilitated implementation of programs, PPE distribution, and the formation of care groups for diabetes and hypertension are highlighted. Regular screenings and promoting physical activities also contribute to proactive health strategies.

Job/Roles Environment Skills (JRES)

Job/role environment skills encompass the capacity to navigate the organizational, social, and cultural terrains of professional settings. These include understanding roles, adhering to norms, interacting with diverse colleagues, and responding to workplace dynamics.

In FLP_2, students operate in public health centers, villages, and communities, engaging with varied socio-cultural settings. Tasks such as punctuality, dress code compliance, and stakeholder coordination reflect professionalism and adaptability. These align with domains in the Global Health Competency Model, including ethical reasoning, sociocultural awareness, and collaboration (Ablah et al., 2014).

Fleckman et al. (2015) advocate for a shift from static "cultural competence" to dynamic intercultural competence, emphasizing self-reflection, adaptability, and mutual engagement. These are vital as FLP_2 students coordinate activities and adjust to community-specific values (Fleckman et al., 2015).

Pham et al. (2023) emphasize applied practice experiences for shaping professional identity. Their study revealed how students adapted to stakeholder needs and navigated institutional dynamics, similar to FLP_2 students who engage with diverse health stakeholders (Pham et al., 2023).

FLP_2 thus assesses JRES by challenging students to operate across institutional levels. Exposure to diverse operational cultures promotes professional adaptability and interpersonal growth. Figure 3 showcases field interventions executed by students.

Figure 3. Various field interventions executed by students in FLP_2

Figure 3's word cloud shows "Community Empowerment" as the most frequent intervention, reflecting participatory public health approaches. Supporting roles like "Facilitation," "Health Training," and "Health Advocacy" underscore students' roles as educators and facilitators (Ablah et al., 2014). These align with Pham et al.'s findings on skill development through real-world engagement (Pham et al. (2023). While "Health Check-up" appeared less frequently, its continued use illustrates students' ethical commitment to

genuine community needs (Fleckman et al., 2015).

CONCLUSION

This study emphasizes the significance of assessing public health graduates' competencies within a multidimensional framework that encompasses Task Skills (TS), Task Management Skills (TMS), Contingency Management Skills (CMS), Transfer Skills (TRS), and Job/ Role Environment Skills (JRES). Through the Field Learning Practice 2 (FLP 2) program at Diponegoro University, students effectively applied theoretical knowledge to real-world challenges, managed complex tasks, solved unforeseen issues, transferred skills across various contexts, and adapted to professional environments.

The integration of experiential learning and authentic assessments within FLP_2 enhanced students' work-readiness and practical competencies. These outcomes underscore the critical need for curriculum reform focused on contextual, performance-based evaluation. By embedding such competency assessments into public health education, institutions can better prepare graduates to meet the evolving challenges of the health sector in Indonesia.

REFERENCES

Ablah, E., Biberman, D.A., Weist, E.M., Buekens, P., Bentley, M.E., Burke, D.S., Finnegan, J.R., Flahault, A., Frenk, J., Gotsch, A.R., Klag, M.J., Rodriguez Lopez, M.H., Nasca, P., Shortell, S. and Spencer, H.C. (2014) 'Improving Global Health Education: Development of a Global Health Competency Model', *American Journal of Tropical Medicine and Hygiene,* 90(3), pp. 560–565. https://doi.org/10.4269/ajtmh.13-0537.

Anderson, K., Gupta, S., Nava Buenfil, F. and Verrinder, G., 2022. Using experiential learning and authentic assessments to support students to become competent health promotion practitioners. Health Promotion *Journal of Australia,* 33(S1), pp.27–34. https://doi.org/10.1002/hpja.654

Axiak, G., Mamo, J. & Muscat, C., 2024. The importance of Competency Assessment in Practice: A Literature Review. *Global Research Journal of Public Health and Epidemiology,* 12(5), pp.25–32. https://doi.org/10.54978.

Bhandari, S., Wahl, B., Bennett, S., Engineer, C.Y., Pandey, P. and Peters, D.H., 2020. Identifying core competencies for practicing public health professionals: results from a Delphi exercise in Uttar Pradesh, India. *BMC Public Health,* 20(1737). https://doi.org/10.1186/s12889-020-09711-4.

Bornioli, A., Parkhurst, Evans, Cotter, C., 2020. The Public Health Skills and Knowledge Framework (PHSKF): implications for international competency frameworks. *BMC Public Health* (2020) 20(956): 2-8. https://doi.org/10.1186/s12889-020-09024-6

Chan, CKY. & Luo, J., 2020. A four-dimensional conceptual framework for student assessment literacy in holistic competency development. A*ssessment & Evaluation in Higher Education* • June 2020, 46(3):1-16. https://doi.org/10.1080/02602938.2020.1777388

Chan, CKY., 2023. *Assesment for experimental learning.* London: Rouledge Taylor & Francis Group.

Chong, S.C.S. et al., 2022. Embedding experiential learning in undergraduate health promotion curriculum. *Health Promotion Journal of Australia,* 33(S1), pp.9–16. https://doi.org/10.1002/hpja.629

Dankner, R., et al., 2018. Implementation of a competency-based medical education approach in public health and epidemiology training of medical students. *Israel Journal of Health Policy Research* (2018) 7:13. https://doi.org/ 10.1186/s13584-017-0194-8

Dopelt, K., Shevach, I., Vardimon, O.E., Czabanowska, K., De Nooijer, J., Otok, R., Leighton, L., Bashkin, O., Duplaga, M., Levine, H., MacLeod, F., Malowany, M., Okenwa-Emegwa, L., Zelber-Sagi, S., Davidovitch, N. and Barach, P., 2024. Simulation as a key training method for inculcating public health leadership skills: a mixed methods study. *Frontiers in Public Health*, 11:1202598. Available at: https://doi.org/10.3389/fpubh.2023.1202598.

Emrani, M., Khoshnood, Z., Farokhzadian, J. and Sadeghi, M., 2024. The effect of service-based learning on health education competencies of students in community health nursing internships. *BMC Nursing,* 23(138). https://doi.org/10.1186/s12912-024-01799-y.

Fleckman, J.M., Dal Corso, M., Ramirez, S., Begalieva, M. and Johnson, C.C. (2015) 'Intercultural competency in public health: a call for action to incorporate training into public health education', *Frontiers in Public Health,* 3, p. 210. https://doi. Org/10.3389/fpubh.2015.00210.

Gallardo, R., 2020. Outcome-based Assessment for Public Health Students: A Case Study. *Health Education and Practice,* 37(1), pp.44–52. https://doi.org/10.33225/pec/20.78.61

Horigian, V.E., Perrino, T., Kornfeld, J., Schmidt, R.D. and Gonzalez, S.T., 2023. The Learning Collaboratory: developing and evaluating public health students' skills while promoting community health. *Frontiers in Public Health,* 11, p.1269840. https://doi.org/10.3389/fpubh.2023.1269840

Krasna, H., et al., 2021. Postgraduate Employment Outcomes of Undergraduate and Graduate Public Health Students: A Scoping Review. *Public Health Reports 2021,* Vol. 136(6) 795-804. https://doi.org/10.1177/0033354920976565

National Professional Certification Agency, 2024. *Indonesia's National Competency Framework for Workforce Readiness.* Jakarta: BNSP.

Olu, O., et al., 2018. What should the African health workforce know about disasters? Proposed competencies for strengthening public health disaster risk management education in Africa. *BMC Medical Education* (2018) 18:60. https://doi.org/10.1186/s12909-018-1163-9

Omar, M.K., Mat Rashid, A., & Puad, H. (2020). Knowledge, skills, and attitudes as predictors in determining teachers' competency in Malaysian TVET institutions. *Universal Journal of Educational Research,* 8(3C), 95-104. DOI: https://doi.org/10.13189/ujer.2020.081612.

Pham, C.N., Cunningham, S.D. and Humphries, D.L. (2023) 'Action learning and public health pedagogy: Student reflections from an experiential public health course', *Frontiers in Public Health,* 11, p. 1128705. http://doi:10.3389/fpubh.2023.1128705

Rojo, M. et al., 2025. Community health fairs as experiential learning: a qualitative exploration of benefits and challenges. *BMC Medical Education,* 25:508. https://doi.org/10.1186/s12909-025-07071-4

Schleiff, M.J., Mburugu, P.M., Cape, J., Mwenesi, R., Sirili, N., Tackett, S., Urassa, D.P., Hansoti, B., & Mashalla, Y. (2021). Training curriculum, skills, and competencies for global health leaders: Good practices and lessons learned. *Annals of Global Health,* 87(1), 64, 1–16. https://doi.org/10.5334/aogh.3212.

Sillat, L.H., Tammets, K., & Laanpere, M. (2021). Digital competence assessment methods in higher education: A systematic literature review. *Educ. Sci*., 11(8), 402. DOI: https://doi.org/10.3390/educsci11080402

Thalia, OP., 2024. The role of public health in reducung health risks.Eurasian Experiment *Journal of Scientific and Applied Research,* 5(3): 23-26. https://www.eejournals.org (No doi)

Van Staden, D. and Duma, S., 2022. The teaching, learning and assessment of health advocacy in a South African college of health sciences. *South African Journal of Higher Education*, 36(5), pp.276-290. http://orcid.org/0000-0003-2028-1711

Wenzel, S.G., Ky, P., Holt, N. and Austin, E.L., 2025. Building leadership skills through applied learning in an MPH program. *Frontiers in Public Health,* 13:1610306. https://doi.org/10.3389/fpubh.2025.1610306.