

# Effects of the project on enhancement of teaching skills in gerontic nursing practice of Indonesian nursing lecturer and clinical nurse preceptor

Kyoko Sudo<sup>1,\*</sup>, Shigeaki Watanuki<sup>2</sup>, Hikaru Matsuoka<sup>2</sup>, Eriko Otake<sup>2</sup>, Yumiko Yatomi<sup>2</sup>, Namiko Nagaoka<sup>2</sup>, Keiko Iino<sup>2</sup>

<sup>1</sup>Bureau of International Health Cooperation, National Center for Global Health and Medicine, Tokyo, Japan;

<sup>2</sup>National College of Nursing Japan, Tokyo, Japan.

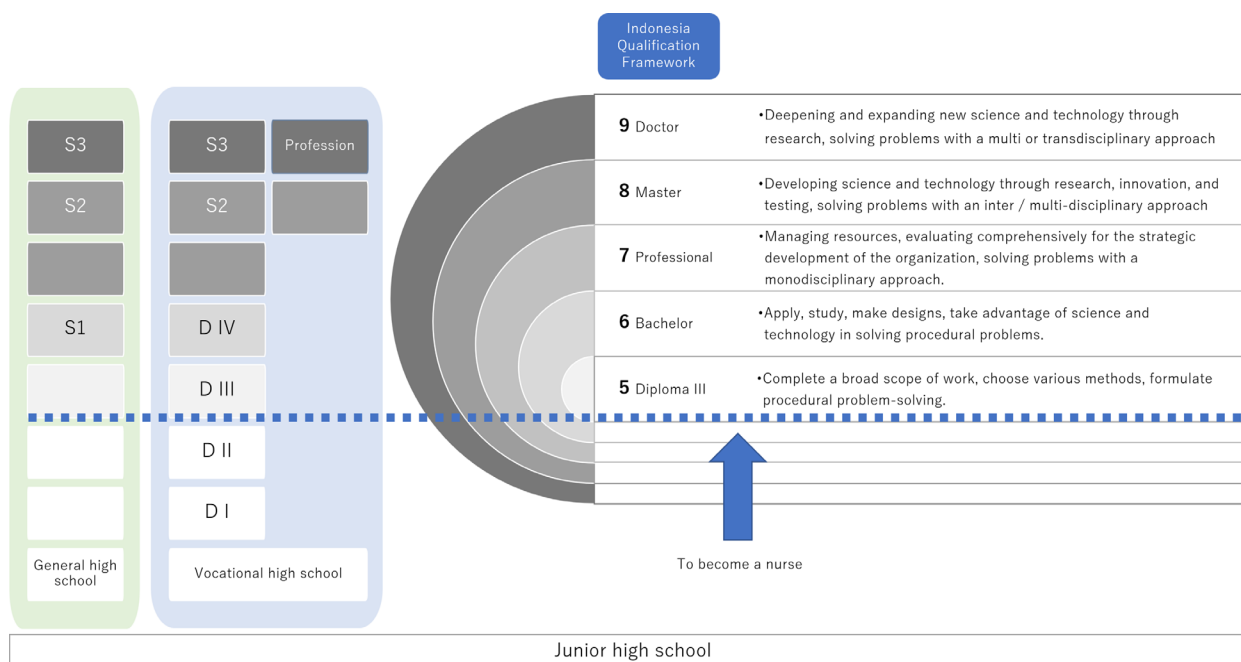
**Abstract:** The Indonesia health care services require knowledgeable and skilled nurses as professional service providers, especially in a gerontic nursing area. Moreover, widening the gap between academic and clinical practice is also an issue, which affects the care service quality. In these circumstances, the project to enhance the educational skills of nursing lecturers and clinical nurse preceptors in gerontic nursing practice was started in 2020. Japanese nursing education experts provided guidance on the principle theory of nursing practice in basic nursing education and conducted workshops to develop nursing practice materials for 10 Indonesian trainees. The project provided 3 webinars for more than 100 Indonesian nursing lecturers and preceptors each time, 18 workshops and developed 2 virtual reality (VR) materials, 8 supervisions of the trial class and 5 lectures onsite and online. This study aimed to clarify the effects of the project evaluated in the process and its impact using a questionnaire survey and interviews conducted. The results of the questionnaire survey for students showed that 20% of their knowledge and skills in gerontic nursing, increased and the extent of understanding and satisfaction was high. Lecturers and preceptors perceived improvement in their teaching skills, especially in theoretical thinking and evidence-based teaching methods. Notably, "the evaluation from others" would be a facilitating factor of the project. The project effects were clarified and achieved the goal and objectives of the project.

**Keywords:** basic nursing education, Unification between academic and clinical settings, virtual reality

## Introduction

In order to achieve Universal Health Coverage (UHC) in Indonesia, securing with proper allocation of healthcare professionals especially nurses is urgent. The density of health personnel in the latest available data in Indonesia is doctors at 7.0, and nurses and midwives at 11.2 per 10,000 population (1). These figures indicate this is not always sufficient for the population in Indonesia. Moreover, Indonesia is struggling with the maldistribution of health personnel due to remote areas like other island countries. Both the quantity and the quality of nurses are required to maintain the needed healthcare services (2). Nursing education is characterized by providing nursing students with the education that is necessary to provide high-quality care to clients. Investment in nursing education includes an effort to improve and maintain the quality of care. The health care services in Indonesia also require knowledgeable and skilled nurses as professional service providers. In a specific Indonesian context, there are two main considerations to improve the quality of nursing. The first is a high need for the acquisition of

educational skills in gerontic nursing to address more complex health problems including care for older individuals. Indonesia is facing an ageing society (3). In Indonesia, the nursing education curriculum has been amended since 2019 under the Indonesian Qualification Framework, which compares balances and integrates education and training sectors, as well as job experiences, in a scheme of competence acknowledgement for specific occupational requirements (4). Nurse professionals require a qualification of diploma III at the equivalent of Indonesian Qualification Framework 5 and above (Figure 1). This means that a nurse's competency is based on a certain basic educational level stipulated by the framework and is guaranteed. However, in this educational system, gerontic nursing education is still new, for instance, the master course in gerontic nursing has just been introduced. Nursing faculty members who could teach gerontic nursing are too little even though there is a huge demand for elderly care by qualified nurses. The second is the gap between academic and clinical practice, which has been well documented (5-7). Education always needs to respond to the rapidly



**Figure 1. Nursing professional in the Indonesia Qualification Framework.** A mutual equivalence toward IQF qualification levels between education pathways both formal and non-formal and occupational/career pathways. To become a nurse is required a qualification of diploma III at the equivalent of Indonesian Qualification Framework 5 and above. The figure has been modified from the Indonesian Qualification Framework (4) and produced originally by the authors.

changing needs of clinical practice and advanced clinical care, however, the real clinical setting is not the same as in the textbook. It has been reported that nursing teachers, nursing students and clinical nurse preceptors experience a theory-practice gap and their mutual concerns as such are insufficient clinical placements, sequencing of theory and practice, lack of collaboration between clinical practice settings and educational institutions and unclear links to teacher roles (8).

Considering these circumstances and issues of nursing education in Indonesia, the researchers started the "Enhancing educational skills in basic nursing education in Indonesia (focus on gerontic nursing)" in 2020 (9). It was conducted in the Projects for Growth of Medical Technologies (TENKAI Project), which is implemented by the Bureau of International Health Cooperation, National Center for Global Health and Medicine (NCGM). The TENKAI project is designed to share Japan's knowledge and experience in the medical field and promote international deployment of Japanese technology to meet the needs of low and middle-income countries, and is being implemented in more than 30 countries. Our Indonesia nursing education project aimed to improve the gerontic nursing education skills of Indonesian nursing lecturers and clinical nurse preceptors. By improving their education skills through this project, nursing students and novis clinical nurse preceptors could receive better instruction from trainees of our project, who are nursing lecturers and clinical nurse preceptors. Therefore, the project would contribute to improving the quality of elderly care in Indonesia in order to provide care by nurses who have obtained high-quality gerontic

nursing education. Furthermore, by responding to Indonesia's need for training nursing lecturers and clinical nurse preceptors in gerontic nursing education, the project would be Japan's international contribution toward the achievement of UHC in that country.

The study aimed to clarify the effects of the project "Enhancing educational skills in basic nursing education in Indonesia (focus on gerontic nursing)". In previous studies, no studies on improving the educational skills of Indonesian nurse lecturers or clinical nurse preceptors were found in English. A qualitative study reported individual, organizational and systematic efforts to maintain and improve the competency of Indonesian clinical nurses (10). Another study involving physiotherapy clinicians and students revealed the improvement of their educational skills through a simulation learning intervention by randomized controlled trial (RCT) (11). The study using the data from the planned project with a specific target population and intervention methods would be beneficial for the improvement of Indonesian nursing education. Moreover, integrating and synthesising the findings of multiple evaluations of a particular type of program can inform policy-making and program planning (12). Evidence of project effects is meaningful and would be expected to be utilized in several countries with similar contexts.

**Materials and Methods**

*Overview of the project*

The project "Enhancing educational skills in basic

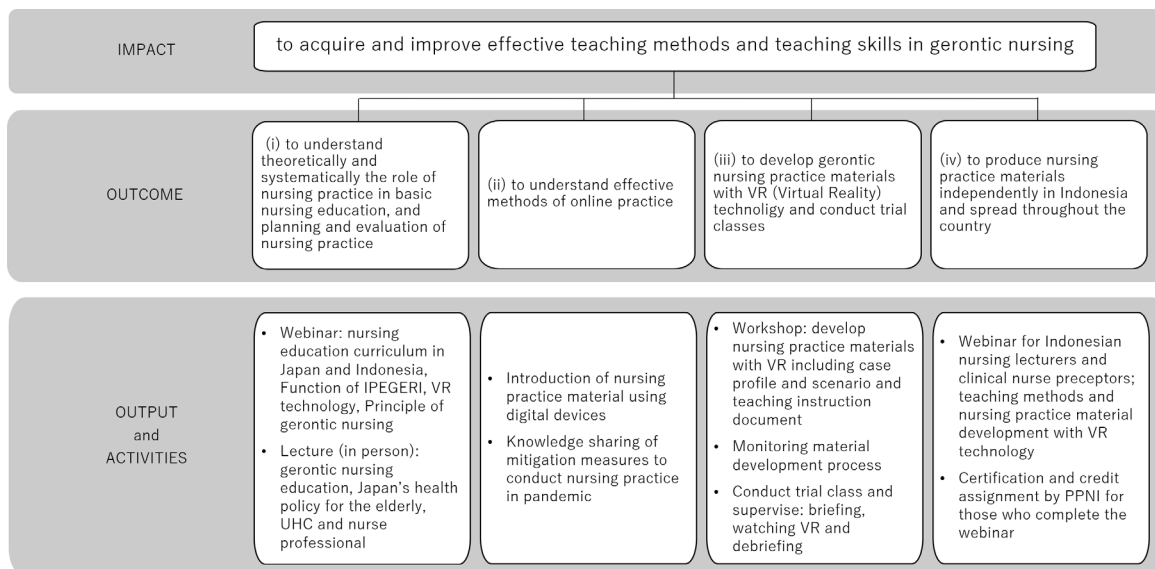
nursing education courses in Indonesia (focus on gerontic nursing)" was conducted by the National College of Nursing, Japan (NCNJ) and the National Center for Global Medicine (NCGM) including seven nursing educators. The project manager and two sub-managers had experience in nursing education for around 20 years, and the project manager was an expert in the gerontic nursing area. The NCNJ was established by the Ministry of Health, Labour and Welfare, Japan in 2000, and has been one of the departments of NCGM. The NCNJ provides both undergraduate and graduate education in nursing science and is assigned to provide training for nurses with continuous professional development as well.

The project started in April 2020 and finished in March 2023, as a three-year project. The project goal was to acquire and enhance effective teaching methods and skills in gerontic nursing for Indonesian nursing lecturers and clinical nurse preceptors, with the following four specific objectives: *i*) to understand theoretically and systematically the role of nursing practice in basic nursing education, and planning and evaluation of nursing practice; *ii*) to understand effective methods of online practice; *iii*) to develop gerontic nursing practice materials with VR technology and conduct trial classes; and *iv*) to produce nursing practice materials independently in Indonesia and wider spread use throughout the country (Figure 2).

In 2020, first we conducted a needs assessment and explored the most adequate project provision. During the pandemic, trainees had needs to find out better nursing practice methods, it should be conducted not only online but also onsite or in a blended style after becoming

the new normal. After discussion among project team members, we conducted a two-day webinar focusing on the significance and situations of nursing practice in the clinical setting and gerontic nursing in basic nursing education, teaching and evaluation methods of nursing practice, as well as effective online practice. We also invited guest lectures from directors of Ikatan Perawat Gerontik Indonesia (IPEGGERI, Indonesian gerontic nurse association) and Asosiasi Institusi Pendidikan Ners Indonesia (AIPNI, Association of Indonesian Nurses Education Center) to understand the gerontic nursing education situation in Indonesia sharing their experiences. These lectures were an opportunity to learn about the medical care environment for the elderly and the characteristics of gerontic nursing education in Indonesia from sources with a wider scope. The webinar promoted the improvement of basic knowledge of elderly nursing in basic nursing education for the participants. Moreover, the direction of the project was confirmed to be acceptable at the end of 2020.

In 2021, based on the knowledge acquired through the 2020 training, online teaching materials were developed in collaboration with trainees, and specific lesson plans and teaching points were taught in the workshop. The teaching materials utilised VR technology, which enables a more realistic immersion and presense in nursing practice experience, even online. Trainees selected two cases that incorporated the reality of life in Indonesia (Case1: repositioning an older patient with bedsores and reduced level of consciousness; Case 2: discharge education for family member about transferring and moving an older patient with right-sided hemiplegia with a wheelchair). In January 2022, a webinar was held to



**Figure 2. Logic model of the project "Enhancing educational skills in basic nursing education courses in Indonesia (Gerontic nursing)".** The final outcome as an impact of the project was determined first based on the dialogue with participants in the needs assessment phase. After the project's direction, the project outcome was discussed with trainees and other stakeholders including a Japanese company that partially joined in activities developing nursing practice materials with VR technology. Activities were also discussed rationalised with the outcomes and revised after confirming achievability and reality in the mid and end of the fiscal year. VR: virtual reality.

disseminate the developed nursing practice materials to Indonesia overall.

In 2022, the possibility of introducing nursing practice classes using VR materials into the curriculum of Indonesian basic nursing education institutions and their spill-over potential are being examined. So, the class was called the trial class. The trial classes were initiated for 20 students at each institution supported by other nursing lecturers involved except a trainee. VR goggles were supplied with the project budget. Japanese project members supervised, mainly just observing the class with an interpreter. A total of five institutions conducted the trial class, one institution in June, two institutions in July and two institutions in September. Before and after the trial class, the questionnaire survey to the students who participated in the class, which was set as one of the project evaluation indicators, was conducted by the project members. In January 2023, the final webinar was held involving deans of the trainees' institutions. In February 2023, the integration meeting with PPNI and AIPNI was conducted to discuss mutual support to enhance teaching skills in nursing education.

*Participants of the project*

The trainees of the project were 10 Indonesian nursing lecturers and clinical nurse preceptors. Some of them were called based on the Japan International Cooperation Agency (JICA) project "Enhancement of the nursing competency through in-service training" 2012–2017 and participated in the project, the others were recruited using personal connections. They joined the project through their free will but with permission from their affiliated institutions. Both academic and clinical institutions intended to be involved in the project due to strengthening unification between educational and clinical practice settings in the development of nursing

personnel. Therefore, their affiliations were from faculty of nursing in universities, polytechnics and top referral hospitals. Notably, Trainee 1 was also a director of the IPEGRI, which has duties and responsibilities of developing the knowledge and practice of gerontic nursing. The Central Board of the IPEGRI is the Board of the Persatuan Perawat Nasional Indonesia (PPNI, Indonesian National Nurses Association) complementary body that supports the development of gerontic nursing science and practice in Indonesia, which is collective in nature and subject to and obedient to PPNI organizational Decrees and Regulations (13).

Nursing students and nurses in a clinical setting who participated in the trial class to demonstrate using nursing practice materials developed in the project were ancillary participants. Around 20 students or nurses joined the trial class on a voluntary basis.

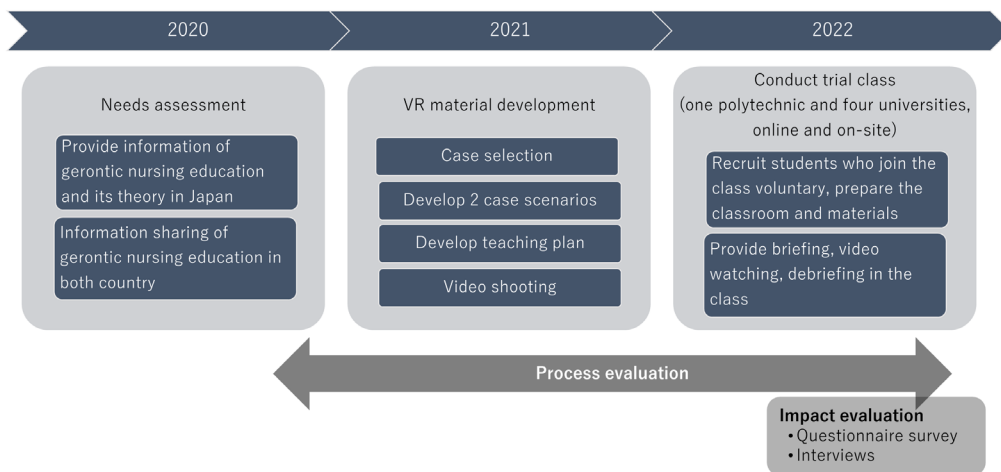
The project team obtained cooperation from a Japanese company, which is an educational manufacturer and a leading company in developing medical simulators, to develop nursing practice materials with virtual reality (VR) technology.

*Research Concept*

The project was evaluated in the process and its impact (Figure 3).

*Process evaluation*

Process evaluation examined what a program was, the activities undertaken, who and how received training or other benefits, and the consistency with which it is implemented in terms of its design and across sites (12). The project process was evaluated according to Six Components of Comprehensive Process Evaluation (14), but there is no established evaluation methodology so far. The list of components includes fidelity, does delivered,



**Figure 3. The project flow and the research concept.** This is a schematic diagram of the flow of the project implementation and the research concept. The project was implemented to achieve set outcomes and evaluation was done based on the concept of process and impact. A questionnaire survey and interviews were conducted to evaluate the project's impact in the impact evaluation. VR: virtual reality.

does received, satisfaction, reach and recruitment.

Fidelity means the extent to which the programme was implemented consistently with underlying theory design and philosophy. Does delivered is measured amounts or number of intended to deliver are planned by the programme staff. Does received is evaluated in the extent to which participants actively engage with, interact with, are receptive to and/or use materials or resources including initial use and continued use. Satisfaction means participants, both direct and indirect, satisfaction with the programme and interactions with staff. Reach means proportion of the priority intended beneficiaries who participated in the programme. And, recruitment means procedures used to approach and attract programme participants at the individual or organization level.

#### *Impact evaluation*

The project impact was to improve trainees' teaching skills in gerontic nursing practice, and was evaluated using mixed methods with a concurrent triangulation design (15). In order to clarify the project impact, the data from the project were used including: pre and post-test results of nursing students in the trial class using developed practice materials with VR technology, and interviews with trainees.

#### *Methods of impact evaluation*

##### *Questionnaire survey*

Five nursing lecturers out of ten project trainees including both nursing lecturers and clinical nurse preceptors conducted the trial classes using developed nursing practice materials with VR technology at one polytechnic and four nursing faculties between June and September 2022.

The participants of the questionnaire survey were 20 nursing students in five institutions, who had already studied gerontic nursing in their own institution's curriculum. Pre- and post-test contained the same 20 items of knowledge and skills related to the trial class contents and gerontic nursing to identify the changes

before and after the class. The other 10 items were collected only after the class to clarify the extent of students' understanding and satisfaction. Pre- and post-tests scores were calculated from the correct answer rate in percentage. The extent of understanding and satisfaction were evaluated with a five-range Likert scale. The data were analyzed descriptively.

#### *Interviews*

Semi-structured interviews were conducted for the trainee of the project 10 Indonesian nursing lecturers and clinical nurse preceptors (Table 1) in August 2022 and from September 2022 to January 2023. An interview guide was used that was developed based on the Kirkpatrick Model (16). The model originally comprises four levels to evaluate the programme but only Levels 1 and 2 were used in this study for the project evaluation because of limited steps of the project (Table 2). Interview participants were 10 trainees including both nursing teachers and clinical nurse preceptors and were interviewed through a Japanese-Indonesian interpreter. Informed consent in their native language was conducted before being interviewed. All interviews were audio-recorded and verbatim transcriptions were developed in Japanese.

Content analysis (17) was conducted using the qualitative data analysis software MAXQDA Plus2020 (18). Transcribed data was analyzed by three Japanese researchers including the interviewers, who were well experienced with thematic analysis. First, sentences meaningful to reveal the effects of the project were extracted, and then the codes were generated from the sentences. Categories were defined and named based on the codes' similarity. Interpretation in the context and validity of results were confirmed over repeated discussions with analysis team members in the process.

#### *Ethical considerations*

All the research participants, including the project trainees and the students in the trial classes, were given a detailed explanation of the purpose and method of the

**Table 1. Characteristics of trainees (Nursing lecturers and clinical nurse preceptors)**

Trainee	Age*	Educational background**	Affiliation Academic/ Clinical	Vice Dean / Director	Team Leader / Manager	Lecturer / Head Nurse
1	58	S3	Both	✓		
2	60	S3	Academic	✓		
3	47	S2	Clinical		✓	
4	49	S2	Academic		✓	
5	41	S1	Clinical			✓
6	39	S2	Academic			✓
7	42	S1	Clinical			✓
8	42	S2	Academic		✓	
9	39	S2	Academic			✓
10	34	S2	Clinical			✓

\*As of interview date. \*\*S1: Bachelor in Nursing, S2: Master of Nursing Science, S3: Doctor of Philosophy.

**Table 2. Interview guide for of the project trainees (Nursing lecturers and clinical nurse preceptors)**

Level	Questions
Level 1: Reaction	<p>Satisfaction</p> <ul style="list-style-type: none"> <li>• Was the project content information you wanted to know for teaching skills of practice? What information was it?</li> <li>• What was the project content that interested you?</li> <li>• Were you satisfied with the project? What did you find satisfying about it?</li> <li>• What did you expect from this project that didn't work out?</li> <li>• Which projects would you like to be joined in the future?</li> </ul> <p>Engagement</p> <ul style="list-style-type: none"> <li>• Were you able to actively participate in the project? Please specify.</li> </ul> <p>Relevance to your work</p> <ul style="list-style-type: none"> <li>• What have you learnt about your teaching skills in gerontic nursing?</li> <li>• What is the content of the project that could be useful for teaching skills?</li> <li>• What is the project content that you could immediately utilise in your teaching?</li> </ul>
Level 2: Learning	<p>Status of acquisition of knowledge and skills</p> <ul style="list-style-type: none"> <li>• Did you understand the content of the project? What was it?</li> <li>• Have your teaching skills improved through the project? Why do you think so?</li> <li>• What are the difficulties you face when trying to put them into practice?</li> </ul> <p>Confidence</p> <ul style="list-style-type: none"> <li>• Are you confident in using the content of the project in your teaching? What is it?</li> <li>• What are the things you are not confident about?</li> </ul> <p>Commitment</p> <ul style="list-style-type: none"> <li>• What is the project content that you intend to utilise in practice teaching and what are the hiding factors, if any, in doing so?</li> <li>• Do you think the experiences and learnings from this project can be used for nursing education in Indonesia in the future, and why?</li> </ul>

project and the research. They were also assured that the research participation was voluntary, the collected data would be kept secure and confidential, and no identifiable information would be disclosed in the published paper. This study was approved by the Ethical Review Committee of the National Center for Global Health and Medicine (NCGM-S-004473-00).

## Results

### *Implementation of the project*

During the project periods, from April 2020 to February 2023, activities were conducted as follows; 3 times webinars; 18 times workshops for developing nursing practice materials using VR; 2 times VR video shootings in the NCNJ lab and narration recorded by Indonesian trainees; 8 times supervisions of the trial classes; and 5 times educational lectures including basics of gerontic nursing education and Japan's health system. Additionally, technical meetings with project members and/or trainees were held about once a month, attendance of trainees were more than 90%.

The webinar were conducted for Indonesian nursing lecturers and clinical nurse preceptors to share experiences of the project. The webinar participants in 2021, 2022 and 2023 were 179, 100 and 239, respectively. The webinar was approved as one of the PPNI-accredited training courses that are required for the renewal of nursing licences. The participants in the webinar were issued a certificate of PPNI continuing education credit points. The participants expressed high

satisfaction with each webinar, especially the developed VR materials for nursing practice were positively evaluated in terms of usefulness and feasibility in their institutions in Indonesia.

In the process of developing VR materials, all the project members spent 18 times in workshops with the trainees to achieve it. The trainees were split into two groups by case and used their time to discuss developing case profiles and case scenarios within the groups. The Japanese company, which was a leading company in medical educational manufacturers, shot the VR video following their expertized experiences. It was left for nursing lecturers to decide how to actually prepare and develop the classes based on their lesson plans. Therefore, we could learn how they had devised ways to facilitate the students to learn and understand the cases better by distributing handouts of the two cases in advance, and how students fully understood the teaching points described in the lesson plans from the supervision of the trial classes.

Conducting the trial classes by trainees themselves meant good opportunities that they felt accomplished one goal after having a hard time in developing VR materials and lesson plans with significant teaching points in gerontic nursing. The details of the questionnaire survey conducted before and after the trial classes are explained in the next section.

### *Questionnaire survey*

The results of the questionnaire survey are shown in Table 3. A total of 100 students participated in the

trial class using nursing practice materials with VR technology. The overall percentage of correct answers to the questionnaire related to the contents of the class and knowledge and skills of gerontic nursing, was 55% on pre-test and 66% on post-test. The maximum and minimum percentages of items answered correctly were 18% and 94% on pre-test and 14% and 99% on post-test, respectively.

The extent of students' understanding and satisfaction with the trial class conducted showed an average of more than 4.5 points in the 5-point Likert scale from strongly disagree (1) to strongly agree (5).

*Interview*

In total, 82 segments regarding the effects of the project perceived by the trainee were extracted from the descriptive data interviewed (as shown in Table 1). The segments were categorized into 10 codes (Table 4); having the confidence to utilise the skills learned from the project; knowing attractive teaching methods using VR; improving the teaching skills in gerontic nursing practice; finding a new and or advanced theme to learn; understanding the necessity to provide rationales for the care process; exploring the way for students to think about and obtain new ideas; updating the knowledge regarding gerontology; sharing teaching points in written documents; making an opportunity to be evaluated by others officially; and being a trigger to fill the gap between the clinical and academic.

**Discussion**

The purpose of this study was to clarify the effects of the project "Enhancing educational skills in basic nursing

education in Indonesia (focus on gerontic nursing)". The main findings of this study were that the project was implemented theoretically, and simultaneously, trainees' contributions and active participation were conspicuous. Consequently, the project achieved the effect of enhancing the teaching skills in gerontic nursing practice, as evidenced by both results of the questionnaire survey by students and interviews by trainees.

First, the project was evaluated in the scope of process evaluation. The goal of this project is to enhance gerontic nursing education skills for Indonesian nursing lecturers and clinical nurse preceptors. To achieve this goal, the project implementors provided the webinars, workshops and lectures, supported developing nursing practice materials and conducted the trial classes. These inputs were done in a consistent manner. All project activities were delivered to the intended persons, and all students and trainees were supplied with goggles to watch the VR video properly. Both the trainees and the nursing students who joined the trial class expressed high satisfaction in trainees' interview as well as the students' narrative data of the questionnaire survey. Therefore, the project has been completed with fidelity.

Second, the impact of the project was evaluated quantitatively and qualitatively. Students' scores in gerontic nursing knowledge and skill partially reflected the competency of the lecturers who provided the class. The students who took the class would get a good score if the lecturer taught the students with sufficient teaching skills. In this study, the score on the post-test increased 20% from the score on the pre-test. This suggests that the nursing lecturer, who is a trainee of the project, conducts attractive, interactive, and an understandable class. As the results of the interviews show, the trainees perceived their enhancement of teaching skills during the project,

**Table 3. Demographic data of nursing students who joined the trial class (n =100)**

Items		n	%
Sex	female	88	88.0
Semester in completing gerontic nursing education	5 <sup>th</sup>	22	22.0
	6 <sup>th</sup>	30	30.0
	7 <sup>th</sup>	29	29.0
	8 <sup>th</sup>	19	19.0
Age, years		Mean (SD)	
		20.8 ( 0.69)	
Correct answer rate	pre-test	55.3 (21.95)	
	post-tests	66.1 (27.36)	
Understanding and satisfactio (range:0-5)			
(1) I was able to understand the content of the class well		4.6 (0.51)	
(2) Satisfied with the content of the class		4.7 (0.52)	
(3) I was able to understand nursing care for the elderly well		4.7 (0.52)	
(4) The case patient situation was easy to understand		4.8 (0.53)	
(5) This class is effective as an alternative nursing practice in hospital or lab		4.9 (0.53)	
(6) VR will be supplementary practice materials in hospital or lab training		4.9 (0.53)	
(7) I understood the actual care procedures well by using the VR		4.5 (0.56)	
(8) It was easy to use the VR		4.5 (0.61)	
(9) Internet connection was stable and I was able to watch videos and audio without interruption		4.4 (0.70)	
(10) VR videos made me dizzy and sick		3.2 (1.08)	

VR: virtual reality.

**Table 4. Effects of the project "Enhancing educational skills in basic nursing education courses in Indonesia (Gerontic nursing)" perceived by trainees (n =82)**

Codes	Related segments	# of segments
Having the confidence to utilise the skills learned from the project	<ul style="list-style-type: none"> <li>• In promoting education using VR nursing practice materials at our school, we have already conducted training twice this year.</li> <li>• I would have the training that I learned in this project with my colleague due to the limited specialized knowledge of elderly care of more experienced nurses.</li> </ul>	12
Knowing attractive teaching methods using VR	<ul style="list-style-type: none"> <li>• I was able to develop an effective learning method that can be used not only during the pandemic.</li> <li>• I learned what kind of learning method is necessary for the present age, and I was able to think about it by myself although the latest technology has not been done so far.</li> </ul>	11
Improving the teaching skills in gerontic nursing practice	<ul style="list-style-type: none"> <li>• I am very confident. ... I think I reached the point where I can do it naturally without looking at or thinking of your guide.</li> <li>• I was able to teach clearly with a teaching point, and the students understood very well what the point was, which made me happy...</li> </ul>	11
Finding a new and/or advanced theme to learn	<ul style="list-style-type: none"> <li>• (The VR material was useful because) In clinical practice, high care (needing high level physical or nursing care), or especially for the terminal phase, includes patients with several comorbidities and are no longer conscious.</li> <li>• (The VR material included) The scene where the patient is taken care of by the family after being discharged from the hospital.</li> </ul>	11
Understanding the necessity to provide rationales for the care process	<ul style="list-style-type: none"> <li>• I have come to realize that I have not been able to properly communicate the reasons for my technique and it is so important to convey the teaching points behind teaching students.</li> <li>• We had no doubts to do this (assuming "this" method is the only way and is "given" without reasons), but Japanese and Indonesian members pointed out, "Why do we have to do that?" I believe that this interaction gave me the opportunity to think more deeply.</li> </ul>	9
Exploring the way for students to think about and obtain new idea	<ul style="list-style-type: none"> <li>• I believe I need to improve my own teaching skills by encouraging students to think spontaneously and interactively based on case studies, instead of just simply teaching one-sidedly from lecturer to students.</li> <li>• I think I was able to make the students "think" or "open their horizons," after they understood why the patient was in such a condition, and they confirmed it by themselves using VR.</li> </ul>	9
Updating the knowledge regarding gerontic nursing	<ul style="list-style-type: none"> <li>• I was able to update my knowledge of gerontic nursing by reading the textbook again and investigating why this is so.</li> <li>• There is a lot of information in the textbooks, but it is very difficult for me to learn concretely, so it was very useful for me to have that kind of information step by step.</li> </ul>	8
Sharing teaching points in written documents	<ul style="list-style-type: none"> <li>• I usually didn't write down the teaching points, instead, I had it only in my head. However, when I made the scenario in the project, it was important for me to share it with other teachers and review and give guidance to students. In the trial class, I was able to have a good briefing with other teachers and to do well thanks to these teaching points.</li> </ul>	4
Making an opportunity to be evaluated by others officially	<ul style="list-style-type: none"> <li>• The Department of Training and Education in my institution thanked the nurses (who attended the class) and us (nursing lectures and clinical nurse preceptors) for providing a trial class. This new VR material-based training and clinical practice will greatly contribute or help hospital certification.</li> </ul>	4
Being a trigger to fill the gap between the clinical and academic	<ul style="list-style-type: none"> <li>• I have been working in cooperation with several universities and hospitals. Therefore, I believe that we can raise the quality of education by making it a base and spreading it nationwide.</li> <li>• During the discussion, it was pointed out that we, who work at a hospital, and the professors of the faculty of nursing do not always have the same up-to-date information but have different views.</li> </ul>	3

VR: virtual reality.

especially in the process of developing nursing practice materials using VR technology. Several discussions on choosing a case, making a case profile and case scenario, and revising them based on the rationale were also opportunities to form a rapport between the trainees and the project implementers. The matured relationship suggests leading to the success of the project.

Since nursing practice often encompass complex clinical judgement and technics, in nursing education, it is very important to use reality-based simulations and tools, and to have students' reflection and feedback as well (19). VR are rich in reality and reproducibility and can be used effectively in the learning and acquisition of nursing skills. Educators in health professional education

are suggested to have specified training in the method of simulation and briefing (20). The current study findings, the students' questionnaire survey data and the trainees' interview data from the trial class teaching, provides one source of evidence on improving nursing education skills.

Notably, one of the results of the interview showed "Making an opportunity to be evaluated by others officially", which was not initially expected to be extracted from the interview. The evaluation from others could facilitate project management and would be a key factor in the project evaluation. A qualitative study has reported that nurses in Indonesia have been making an effort to maintain their competence through



"credentialing by a career ladder system" as well as "having hopes that managers support efforts to maintain their competence through continuing professional development" (10). This study indicated that a supportive environment to develop competencies such as a small honor by managers resides on the person who is willing to step-up themselves was essential regardless of the credential activities.

The limitation of the study was that baseline data has been missing from this study. The comparative study could be robust for clearer evidence of the project effectiveness.

Finally, the reported project is aiming for further scale-up cooperation with PPNI and AIPNI due to the significant effects that have emerged in the process of the project. To expand and sustain the project, it is suggested that the active involvement of key stakeholders such as the PPNI and AIPNI needs to be considered.

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### References

- World Health Organization. The global health observatory. <https://www.who.int/data/gho> (accessed March 10, 2023).
- World Health Organization. State of the world's nursing 2020: investing in education, jobs and leadership. <https://www.who.int/publications/i/item/9789240003279> (accessed March 10, 2023).
- Badan Pusat Statistik (BPS - Statistics Indonesia). Welfare statistics 2019. <https://www.bps.go.id/publication/2019/1/22/1df4ad6cb598cd011b500f7/statistik-kesejahteraan-rakyat-2019.html> (accessed March 10, 2023).
- Directorate General of Higher Education, Ministry of Education and Culture, Republic of Indonesia. Indonesian qualification framework (*Kerangka Kualifikasi Nasional Indonesia*): Presidential Decree No. 8/2012: Implication and implementation strategies. [http://kkni.ristekdikti.go.id/asset/pdf/iqf\\_booklet\\_\(english\).pdf](http://kkni.ristekdikti.go.id/asset/pdf/iqf_booklet_(english).pdf) (accessed March 10, 2023).
- Huston CL, Phillips B, Jeffries P, Todero C, Rich J, Knecht P, Sommer S, Lewis MP. The academic-practice gap: Strategies for an enduring problem. *Nurs Forum*. 2018; 53:27-34.
- Hatlevik IK. The theory-practice relationship: Reflective skills and theoretical knowledge as key factors in bridging the gap between theory and practice in initial nursing education. *J Adv Nurs*. 2012; 68:868-877.
- Scully NJ. The theory-practice gap and skill acquisition: An issue for nursing education. *Collegian*. 2011; 18:93-98.
- Corlett J. The perceptions of nurse teachers, student nurses and preceptors of the theory-practice gap in nurse education. *Nurse Educ Today*. 2000; 20:499-505.
- Bureau of international health cooperation, national center for global health and medicine. Report on the Projects for Global Extension of Medical Technologies (TENKAI Project) 2021. [http://kyokuhp.ncgm.go.jp/activity/open/R2pdf/2020\\_32\\_i15n.pdf](http://kyokuhp.ncgm.go.jp/activity/open/R2pdf/2020_32_i15n.pdf) (accessed March 10, 2023). (in Japanese)
- Rahmah NM, Hariyati TS, Sahar J. Nurses' efforts to maintain competence: A qualitative study. *J Public Health Res*. 2021; 11:2736.
- Holdsworth C, Skinner EH, Delany CM. Using simulation pedagogy to teach clinical education skills: A randomized trial. *Physiother Theory Pract*. 2016; 32:284-295.
- Rossi PH, Lipsey MW, Henry GT. Chapter 1 What is program evaluation and why is it needed? In: evaluation a systematic approach eighth edition. Sage publications, CA, USA. 2019: 6-28.
- IPEGARI (Ikatan Perawat Gerontik Indonesia). <https://ipegeri.org/> (accessed March 10, 2023).
- Saunders RP. Implementation monitoring and process evaluation. Sage publications, CA, USA. 2016.
- Knoll T, Neri M. Designs for mixed methods research. In: mixed methods research for nursing and the health science (Andrew S, Halcomb, eds.). Willey-black well, Oxford, UK. 2009: 31-49.
- The Kirkpatrick model. Kirkpatrick partners, LLC. <https://www.kirkpatrickpartners.com/the-kirkpatrick-model/> (accessed March 10, 2023).
- Krippendorff K. Content analysis: An introduction to its methodology. Sage publications, CA, USA. 2018.
- VERBI software gmbH. MAXQDA2022. <https://www.maxqda.com/> (accessed March 10, 2023).
- Solheim E, Plathe H S, Eide H. Nursing students' evaluation of a new feedback and reflection tool for use in high-fidelity simulation - Formative assessment of clinical skills. A descriptive quantitative research design. *Nurs Educ Pract*. 2017; 27:114-120.
- Nyoni CN, van der Merwe A, Botha BS, Fourie C, Botma Y, Labuschagne MJ, van Wyk R. Health sciences educator's simulation debriefing practice needs: A mixed methods study. *J Educ Health Promot*. 2023; 12:55.

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*\*Address correspondence to:*

Kyoko Sudo, Bureau of International Health Cooperation, National Center for Global Health and Medicine, 1-21-1 Toyama, Shinjuku-ku, Tokyo 162-8655, Japan.  
E-mail: ksudo@it.ncgm.go.jp