

Exploration of Interprofessional Education Learning Methods in Achieving Collaborative Competencies During COVID-19 Pandemic



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Abstract The existence of Interprofessional Education (IPE) is crucial for health-care students because it is a platform for them to learn how to interact and collaborate with each other. However, the emergence of the COVID-19 pandemic caused some major changes, including the shifting of IPE learning methods into online learning, which also changed how the students learn and interact with each other. This qualitative phenomenology study was conducted with content analysis technique and aimed to explore medical, pharmacy, and midwifery students' experiences in learning interprofessional collaboration skills through online learning for three months at Universitas Sebelas Maret. The data were collected using focus group discussions by dividing the respondents into six groups of 6–8 monoprofession students in each. The findings showed that the students learned all the four IPE's core competencies through community-based, case-based, and reflective learning used in the online IPE learning. They stated that each learning method has its own portion in helping them learn the competencies. Still, they felt the experience would have been better if the learning was conducted offline since they encountered many engagement difficulties through online learning. The study provides evidence that the online course can support the achievement of IPE competencies. Future studies are needed to explore strategies for improving student engagement in online IPE learning.

Keywords Interprofessional education · Online platform · Learning method · COVID-19 · Core competencies

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List of Abbreviations

B1	Group of Midwifery Students
CC	Interprofessional Communication
CHP	Community Health Project
COVID-19	Coronavirus Disease - 2019
F1	Group of Pharmacy Students
FGD	Focus Group Discussion
IPE	Interprofessional Education
K1-K4	Group 1–4 of Medical Students
RR	Roles and Responsibilities
SGD	Small Group Discussion
TT	Teams and Teamwork
UNS	Universitas Sebelas Maret
VE	Value and Ethics

1 Introduction

Interprofessional Education (IPE) is a learning process in which two or more students from different health professions study and interact with each other to learn interprofessional collaboration skills [1]. This learning is important because health workers who are able to collaborate can improve the quality of health services [2, 3], and this IPE is a place for them to learn and get used to the practice of collaboration.

To conceptualize the individual-level of interprofessional collaboration skills, The Interprofessional Education Collaboration (IPEC) in 2016 formulated the IPE core competencies [1], which consist of four core competencies: Values and Ethics (VE), Roles and Responsibilities (RR), Teams and Teamwork (TT), and Interprofessional Communication (CC). These core competencies can be used by institutions as the learning objectives of IPE.

Each educational institution has its own way of designing IPE learning to deliver the learning objectives by aligning the learning methods used with the expected learning outcomes [4, 5]. Learning methods that can be used by the institutions in IPE are varied, including case-based learning, problem-based learning, experiential learning, reflective learning, and community-based learning [4]. These various choices of learning methods can enable a wide variety of IPE learning designs. This versatility can be seen through the variety of IPE learning designs in foreign countries [5, 6].

However, the emergence of the Coronavirus Disease-2019 (COVID-19) and the declaration of a pandemic by the World Health Organization (WHO) on March 11, 2020, caused all activities, including education, to be unable to be conducted face-to-face to avoid the spread of this disease [7]. This was no exception for IPE learning.

This sudden change made institutions have to look for alternatives to still provide IPE training for their students, one of which is through online learning [3, 7].

The change of IPE learning methods that were originally offline to online certainly brought new challenges. One of these challenges is the limited interaction between interprofessional students [8, 9]. Another challenge found was to ensure that each profession can participate actively in the learning [10, 11]. These challenges can adversely affect how the students learn IPE's core competencies [8]. Online IPE learning also challenges facilitators to assess the practical practice of students' IPE core competencies because facilitators cannot observe the students directly [8].

This unique situation is what underlies the authors' interest in conducting these exploratory studies to explore:

- (1) How are students' interprofessional collaboration abilities after participating in online IPE learning?
- (2) How is the learning method that can support the achievement of interprofessional collaboration abilities in online IPE learning?

2 Methods

2.1 Setting

The setting of this study was the online IPE learning at Universitas Sebelas Maret (UNS), Surakarta, Central Java, Indonesia. The learning was conducted from September to December 2021 and involved 305 participants from medical, pharmacy, and midwifery students. This learning was the online modification of previous IPE learning, named course 5 (Community Health Project-Interprofessional Education) [5, 12]. The purpose of this online IPE learning was to provide students the experience of giving health interventions to the community with an interprofessional collaboration approach. This learning used community-based, case-based, experiential, and reflective learning methods.

This online IPE learning was divided into two phases. In the first phase, the students received the preparation materials including the basic knowledge of IPE, team building, and public health interventions through lectures, small group discussion (SGD), and learning circles. In the second phase, the students were sent virtually to the community to assess and overcome the community's health problems through promotive and preventive approaches (Community health project). This online IPE learning ended with self-reflection writing by the students.

2.2 Research Design

This study used a qualitative research design with a phenomenological approach to explore the perceptions and experiences of UNS medical, pharmacy, and midwifery students participating in online IPE learning from September to December 2021.

Before collecting the data, KAG compiled a guide for the focus group discussion (FGD) questions, and a coding scheme was adapted to the study's purpose to make it easier for authors to do coding. The coding theme related to interprofessional collaboration capabilities is referenced in the IPE core competency formulation according to IPEC 2016 [1]. The coding scheme was then jointly finalized by AM and BKH.

Data were collected using a FGD technique where 41 medical, pharmacy, and midwifery students were divided into mono-professional groups of 6–8 students [13]. This sample was taken using a purposive sampling technique and the number of the sample was adjusted to the proportion of the number of students participating in the online IPE learning by profession. In the FGD, documentation was done in generating recordings and notes.

The FGD data were then transcribed and analyzed using quantitative content analysis techniques. Information related to the purpose of this study was coded into codes, categories, and themes based on the coding scheme that was made previously. The coding results then were calculated based on the frequency to determine the dominance of the code or category of each theme. All the results of this coding were finalized by the three authors.

3 Results

3.1 Characteristics of Informants

A total of 41 informants spread into six mono-professional groups participated in the FGD of this study with the following characteristics (Table 1).

Based on the analysis results, the authors found two major themes: students' interprofessional collaboration abilities and supportive learning methods.

3.2 Students' Interprofessional Collaboration Ability

Table 2 shows the overall frequency of emergence of IPE core competencies in this study. Based on Table 2, it can be seen that all IPE core competencies have appeared in the FGD, with the dominant competence being Teams and Teamwork (TT). These results were then broken down based on the frequency of each sub-competence through Fig. 1.

Table 1 Characteristics of informants

Study program	FGD group	Gender		Total
		Male	Female	
Bachelor of medicine	K1	1	6	7
	K2	2	5	7
	K3	3	3	6
	K4	2	5	7
Bachelor of pharmacy	F1	1	7	8
Diploma of midwifery	B1	–	6	6
Total		9	32	41
		22%	78%	

Table 2 Frequency of Interprofessional Education (IPE) core competencies based on FGD

Interprofessional collaboration skills (Category)	FGD group						Total	Percentage (%)
	K1	K2	B1	F1	K3	K4		
VE	24	14	21	34	16	22	131	31
RR	12	14	13	14	13	8	74	17
TT	16	21	20	32	24	24	137	32
CC	12	13	17	26	6	12	86	20
Total							428	

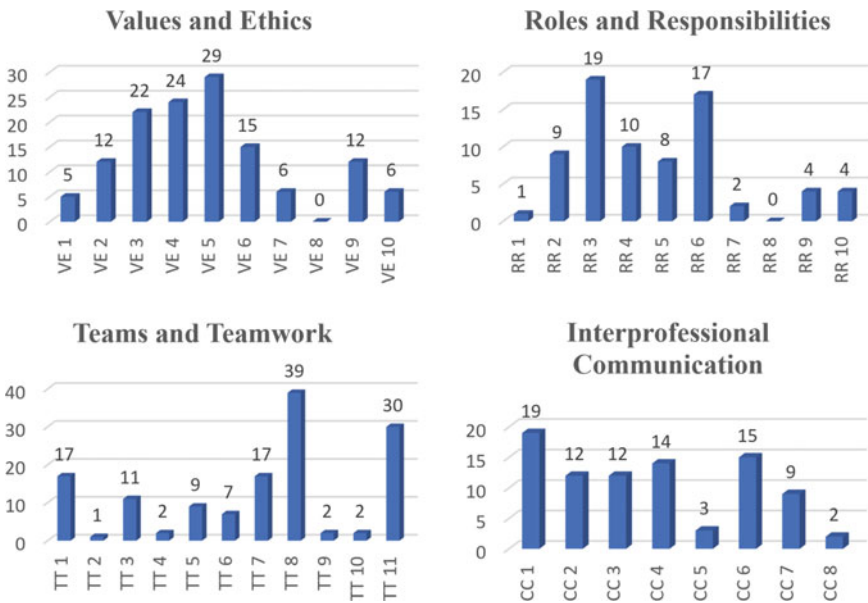


Fig. 1 Frequency of Interprofessional Education (IPE) core sub-competencies based on FGD

Figure 1 shows that all the core sub-competencies of Teams and Teamwork (TT) and Interprofessional Communication (CC) emerged in the FGD session. However, in the Values and Ethics (VE) and Roles and Responsibilities (RR) competencies, one competency did not appear, namely the VE8 and RR8 sub-competencies. Examples of quotations from each dominant sub-competency are described in Table 3.

Based on Fig. 1 and Table 3, there are characteristics of the collaboration abilities of students who take IPE learning online. In the Values and Ethics (VE) competency, the dominant character is being able to work together and understand other people. In the Roles and Responsibilities (RR) competence, the chief character is being able to share responsibilities and fill in the shortcomings of each health profession. In the Teams and Teamwork (TT) competency, the dominant character is being able to work effectively reflecting on team performance. In Interprofessional Communication (CC) competence, the chief character is being able to choose effective communication media and being able to use polite language.

3.3 Supportive Learning Methods

In this theme, the authors grouped the codes based on the learning methods and the core competencies of the supported IPE. The details of the grouping of these categories and codes, along with their frequency of occurrence in the FGDs, are described in Table 4.

Based on Table 4, it can be seen that online IPE learning methods in the form of Community Health Projects (CHP), Small Group Discussions (SGD), and lectures can support the achievement of all IPE core competencies where the learning method that has the highest frequency is CHP with a percentage of 74%. Meanwhile, learning circles and reflection learning methods can support one or two core competencies of IPE.

From Table 4, it can also be seen that the core competencies are supported by each learning method. For example, CHP and Learning Circles greatly support Values and Ethics (VE). On the other hand, SGD and lectures support the ability of Roles and Responsibilities (RR). This is different from reflection, which supports Teams and Teamwork (TT). The examples of quotations from each learning method are presented in Table 5.

Although the informants stated that these learning methods could support them in learning the IPE core competencies, they also mentioned that the learning experience was not maximal since they encountered many engagement difficulties throughout the learning.

Table 3 Analysis of dominant IPE core sub-competencies based on FGD results

Core sub-competencies (Code)	Code description	Informant quotation
VE 5	Work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevention and health services and programs	<i>"...we asked the head of Puskesmas if there is a phone number that can we access to contact the family..." (K2)</i>
VE 4	Respect the unique cultures, values, roles/responsibilities, and expertise of other health professions and the impact these factors can have on health outcomes	<i>"... in my opinion, it's more about understanding different professions. You see, so far, we've only studied midwifery. So, we can understand, 'Oh, this is how the medical doctor and pharmacy works..." (B1)</i>
RR 3	Engage diverse professionals who complement one's own professional expertise, as well as associated resources, to develop strategies to meet specific health and healthcare needs of patients and populations	<i>"Well, when we gather the materials or maybe when we compile reports, and so on, the division of tasks is more in line with each educational background." (K1)</i>
RR 6	Communicate with team members to clarify each member's responsibility in executing components of a treatment plan or public health intervention	<i>"Well, after we found the health problem, later we discussed the division of tasks...for example yesterday there was something like an educational poster... we decide who will make the poster" (B1)</i>
TT 8	Reflect on individual and team performance for individual, as well as team performance improvement	<i>"Well, I feel the communication between medical, midwifery, and pharmacy was often...yes...it wasn't effective. Sometimes the information is incomplete or something." (K2)</i>
TT 11	Perform effectively on teams and in different team roles in a variety of settings	<i>"...because this is a team. So, if, for example, it's his job and it turns out he can't do it. But this is also what the team's performance looks like, so maybe we can...back him up as much as possible." (K1)</i>

(continued)

Table 3 (continued)

Core sub-competencies (Code)	Code description	Informant quotation
CC 1	Choose effective communication tools and techniques, including information systems and communication technologies, to facilitate discussions and interactions that enhance team function	<i>“...For the discussion, we used chat...WhatsApp chat. Then sometimes we use zoom too. Because why is it better to use zoom? Because if we talk like this (in Zoom), the delivery is better than the WhatsApp chat because it will pile up like that.” (B1)</i>
CC 6	Use respectful language appropriate for a given difficult situation, crucial conversation, or conflict	<i>“Well, maybe we can also learn about how to speak politely. As... politely in Javanese, namely the language of manners.” (K3)</i>

Table 4 Frequency of the emergence of online IPE learning methods that support the achievement of interprofessional collaboration skills in FGD

Learning methods (category)	Interprofessional collaboration ability				Total	Percentage (%)
	VE	RR	TT	CC		
Community Health Project (CHP)	71	32	51	48	202	74
Small-Group Discussion (SGD)	2	24	3	9	38	14
Lectures (LCTR)	4	8	1	2	15	5
Learning Circles (LC)	12	–	–	–	12	4
Reflection (RL)	–	–	6	1	7	3

4 Discussions

4.1 Students’ Interprofessional Collaboration Ability

Based on the study’s results in the form of the frequency of emergence of IPE core competencies in FGDs, it is known that the informants stated that all IPE core competencies had been learned through online IPE learning. This result is in line with several previous studies which also involved online IPE learning [2, 14, 15]. This shows that online IPE learning can accommodate the achievement of interprofessional collaboration abilities.

The interprofessional collaboration ability of informants participating in online IPE learning has its own character. The character of being able to work together and understand other people can be because online IPE learning has many meetings and mentoring sessions. This is in line with the research of McElfish [16], where various activities in online IPE learning can provide opportunities for interprofessional teams to get to know other professions. Evans et al. [17] mentioned that mentoring sessions

Table 5 Analysis of learning methods that support the achievement of interprofessional collaboration skills based on the results of the FGD

Learning method-interprofessional collaboration ability (Code)	Code description	Informant quotation
CHP-VE	Community health project supports the collaboration capabilities of values and ethics	<i>"...Because we were directly sent to the field, we also get to know our friends better from there. So, it's like, for example, how does this person communicate...is there anything we need to back up when we are doing education." (F1)</i>
SGD-RR	Small-Group discussion supports the collaboration capabilities of roles and responsibilities	<i>"But at the SGD, because we discussed it together, we realized , 'Oh, this is the border of pharmacy. This border belongs to midwifery, and this one belongs to medical students' and so on. So, to better understand the roles and the classification of roles, SGD does fit for me." (K4)</i>
LCTR-RR	Lectures support the collaboration capabilities of roles and responsibilities	<i>"Well, yes, I feel that I have learned more things that other professions can do professionally through lectures." (K3)</i>
LC-VE	Learning circles support the collaboration capabilities of values and ethics	<i>"...but actually, it has been helped by the activities in the course (learning circles), such as getting to know each other... describe our family, continue to describe ourselves if I'm not mistaken. It could be bonding for the group. We know each other's background better." (K3)</i>
RL-TT	Reflection supports the collaboration capabilities of teams and teamwork	<i>"...for self-reflection, I feel that if I use reflection, I know what I'm lacking and then know what can I improve." (K1)</i>

could encourage discussion and coordination between interprofessional teams and facilitators.

The character of being able to share roles and responsibilities and fill the shortcomings of their respective professions can be caused because the interprofessional team is faced with many health problems, for example, in the CHP and SGD. This can encourage interprofessional teams to involve each other and share tasks to solve these health problems [3].

On the other hand, the character who can reflect on the team's performance can be triggered by problems or obstacles that arise in learning. Conflicts or issues in the team can trigger members' critical thinking processes to reflect, evaluate, and determine possible solutions [18, 19]. Meanwhile, the character of being able to work effectively can occur because of the harmony between good leadership and an increased sense of responsibility from its members [20, 21].

Characters who can choose effective communication media can be caused by the form of online learning. Raynault [14] explained in his research that online IPE learning could provide opportunities for students to choose communication media that help them discuss and communicate. Finally, the character who can use polite language can be caused by the setting where the learning is done, which was Surakarta, Central Java. The people of Central Java are famous for their polite language [22, 23]. This can be why informants use polite language to adapt to the local culture.

This study found that there were two sub-competencies not mentioned by the informants in the FGD session, namely VE8, "Able to manage specific ethical dilemmas in patient/community-centered care situations", and RR8, "Engage in professional and interprofessional development on an ongoing basis to improve performance and team collaboration".

There were no VE8 sub-competencies found, similar to several previous studies which also explored the achievements of students' sub-competencies [12, 20, 24]. Hermasari et al. [12] explained that the absence of these sub-competencies could be due to the lack of ethical dilemmas in IPE learning. Fell [24] then provided support and added other reasons although there is a possibility that ethical dilemmas actually occur. Still, students are unaware of it or hesitant to convey it. Thus, direct questions are needed to explore these sub-competencies.

The absence of RR8 sub-competence was similar to the findings of Hermasari, Rahayu, and Claramita and Rotz's research [12, 20]. Rotz explained that the RR 8 sub-competence is an advanced sub-competency, so its appearance in the FGD session is not something that can be expected from undergraduate student informants.

4.2 Supportive Learning Methods

The findings in this study indicate that the combination of learning methods used in online IPE learning (community health projects, small group discussions, learning circles, reflections, and lectures) support the achievement of interprofessional collaboration abilities. However, the learning method with the largest portion of achieving interprofessional collaboration skills is the Community-based education project. The author finds some supporting information that can be the basis for why community health projects can dominantly support the achievement of interprofessional collaboration capabilities.

The Community Health Project (CHP) is an example of community-based experiential learning (Community-based education). According to several studies, experiential learning can provide a superior learning experience because students get the experience of interacting directly with interprofessional teams and their learning environment. This direct interaction makes the learning process of students' interprofessional collaboration skills actively carried out [25, 26]. The authors also identified supporting research where community-based education could support the achievement of all interprofessional collaboration skills [12, 27].

Although CHP has the highest proportion of interprofessional collaboration capabilities achieved, in this study, the informants also said that other learning methods (lectures, learning circles, SGD, and reflection) and CHP complement each other. This finding is in line with Table 4, which shows that learning methods other than CHP have their respective roles in supporting interprofessional collaboration capabilities in online IPE learning. This finding also supports the statement that no IPE learning method can stand alone [4, 28].

In online IPE learning, lectures help organize study materials for students [29]. Learning circles help the VE competency learning process by encouraging students to get to know each other about the background of the interprofessional team to build intersubjectivity within the team [30]. SGD also helps in initiating communication and division of roles, according to previous research [31, 32]. Finally, reflection can help students to learn TT8 sub-competencies because reflection plays a role in encouraging students to evaluate team and individual performance [33, 34].

Even though IPE online learning methods support the achievement of interprofessional collaboration abilities, it is not denied that online learning still has some limitations, since this study's informants stated that they faced some difficulties in engaging with each other throughout the learning process. These limitations can be a trigger for further research to identify new strategies to increase engagement in IPE online. The development of online IPE is still necessary even after the COVID-19 pandemic since there is still the possibility of IPE being conducted online, for example, IPE which is done remotely by involving students who are geographically in different places [35].

4.3 Study Limitations

Limitations in this study include the time span of data collection with the last time the online IPE learning was conducted, which was about three months. This delay can cause the informants to have to remember their learning experience, and possibly the informant's memory is not as optimal as if the FGD was done closer to the last online IPE learning activity. However, the author also tried during the FGD to add a re-exposure session related to online IPE learning and include activity documentation to help informants remember their learning experiences.

5 Conclusions

Based on the results of this study, it can be concluded that the informants learned all the IPE core competencies through online IPE learning. The informants also stated that the learning method that best supports the achievement of all interprofessional collaboration abilities is the community health project (community-based learning). However, the other learning methods (small group discussions, learning circles, reflections, and lectures) can also support the achievement of interprofessional collaboration abilities according to their respective proportions. Although the informants stated that they have learned all the IPE core competencies through online IPE learning, they still felt that the learning experience would be better if it were done offline, considering they found many obstacles related to engagement. Future studies are needed to explore strategies to increase student engagement in online IPE learning since in the future even after the COVID-19 pandemic there is still possibility of IPE being conducted online.

Ethics Approval and Consent to Participate This study has been declared ethically feasible by the Health Research Ethics Commission of RSUD Dr. Moewardi (No. 278/III/HREC/2022). Informants who participated in this FGD have agreed to participate by filling out an informed consent form.

Competing Interest The authors declare that there are no competing interests related to the study.

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Authors' Contribution *Kevlar Azri Ghurafa*—developing research proposal, collecting data, data analysis, and publication of the manuscript.

Atik Mafuhah—developing research proposal, data analysis, and publication of the manuscript.

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