

## Development of Higher-Level Intellectual Skills through Interactive Group Work: Perspectives between Students and Educators

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### Abstract

Nursing education nurtures students to have adequate competence in managing current patient care with complex and sophisticated technology in healthcare service. Interdisciplinary collaboration is important for maintaining high quality and safe patient care. Small group work is effective for enhancing students' theoretical knowledge and training in various skills. However, there is inadequate knowledge on how students develop higher-level intellectual skills to benefit their sense of collaboration through small group work. The aim of this study was to understand how undergraduate nurse students develop higher-level intellectual skills through small group work based on nurse students and educators' learning and teaching experiences, respectively. This study was the secondary analysis of a qualitative study with 13 students and 10 educators using semi-structured group interviews with digital audio recording at a professional educational institution. Four skills were derived as main themes, including interpersonal communication, critical thinking, problem solving, and creativity, which enhance collaborative abilities. All skills were developed through interactive learning while working in a group. A theoretical framework was developed to illustrate the relationships among these skills through interactive group work. Interpersonal communication is the most important skill to be closely linked with other identified skills to enhance students' interdisciplinary collaboration for a higher quality and more cost-effective care. The results will increase educators' awareness in facilitating the development of these skills through interactive group activities.

**Keywords:** Skill Development, Small Group Work, Undergraduate Nursing Students, Nursing Education

### Introduction

Nursing education aims to equip students with theoretical knowledge and practical skills to provide safe and cost-effective patient care [1, 2]. Currently, the healthcare service emphasizes interdisciplinary collaboration to ensure safe and high-quality care [3]. Various higher-level intellectual skills are crucial for promoting collaboration among healthcare professional disciplines. Interactive group work is an innovative teaching-learning method commonly employed to enhance knowledge and skill development through a student-centred learning approach [3-5]. Therefore, interactive group work embraces self-initiated study and group learning [3, 5, 6]. In professional training curricula, the applications of interactive group work are currently increasing to develop self-learning motivation and collaborative attributes in students [7]. Students in a group have the opportunity to learn more their individual

study and from others through discussion, feedback, sharing and clarification [3, 8]. In that sense, Interactive group work facilitates social networking and supportive relationships and develops social awareness and social interactions with others even from diverse cultural backgrounds and personal experiences contributing to more empowerment and cooperation abilities [4, 9-11].

As the current healthcare service emphasizes multidisciplinary collaboration to ensure patient safety and higher quality care, interactive group work is an effective tool for training collaborative attributes in students for clinical practice [12]. Students can develop higher-level intellectual skills, such as for communication, critical thinking, leadership and management, and problem solving, by interacting with others for personal and professional development [7-13]. However, how nurse students' higher-level intellectual

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skills developed through interactive group work was not well understood. Specifically, the study aimed to address what higher-level intellectual skills are developed through interactions with other students in small group work based on the perspectives of students and educators.

## Materials and Methods

### Design

This study was a secondary analysis of a qualitative study using semi-structured group interviews [14]. This study design allowed the exploration of students and educators' perspectives of higher-level intellectual skill development and allowed the researcher to follow up on interesting issues to enrich the content of the topic during the in-depth interviews.

### Participants and Settings

Purposive sampling was used to recruit the participants for this study. Participants who were undergraduate nurse students or educators at a professional training institution and had experience of learning or teaching small group were invited to participate in the study. Students and educators were separated for the interview.

### Data Collection

A semi-structured interview guide was used to explore development of higher-level intellectual skills through interactive group work from the perspectives of students and educators. Three to four students or educators were formed in a group. Face-to-face group interviews were conducted by the principle investigator (PI) and were digitally audio-recorded in a quiet room at the study institution. The research assistant (RA) took fieldnotes on facial expressions, special tones and body language, and on interactions between the interviewer and interviewees to ensure more contextual information for analysis. The interviews started with the open-ended question, "Tell me how you learn specific intellectual skills while working in a group". Each interview lasted about 45 to 90 minutes. Data collection was stopped when data saturation was reached.

### Ethical Considerations

Approval was sought from the Ethics Research Committee of the study institution. Participants were required to sign an informed consent form once they agreed to participate in the study. All personal data were kept strictly confidential and anonymous.

### Data Analysis

Colaizzi's method was used for data analysis in this study [15]. All interviews were first transcribed verbatim by the RA and accuracy checked by the PI before the analysis. Then the PI and the RA independently read and reread the verbatim transcriptions to obtain significant statements about students developing higher-level intellectual skills in small group work. Meanings were formulated and sorted into categories or clusters of themes. The findings were integrated into an exhaustive description of the phenomenon. To ensure qualitative rigour and trustworthiness, the principle researcher and research assistant analysed the data independently.

The PI and the RA compared the results. All discrepancies were solved through discussions among two independent researchers until a consensus was reached.

### Study Rigour and Triangulation

To ensure qualitative rigour and trustworthiness, purposive sampling allowed continuous comparisons among the perspectives of participants from different cohorts of undergraduate nursing programmes. Triangulation was employed during the interviews while simultaneously implementing persistent observation and taking fieldnotes. The PI and the RA did their individual coding independently and then compared the results to eliminate potential biases and illuminate blind spots. Member checking was performed to verify the results of the initial analysis, give comments, and add information to clarify the statements and refine the themes.

### Results

The study involved 13 students and 10 educators. All students were from year 2 to 5 and the educators had 2 to >10 years' teaching experience.

Based on the students' and educators' perspectives, four higher-level intellectual skills, namely interpersonal communication, critical thinking, problem-solving, and creativity, were identified and presented them as themes below.

#### Theme 1: Interpersonal communication

All participants pointed out that their communication among teammates were improved through working in a small group. Interpersonal communication is the core element for a healthy and strong group dynamics [3]. A lack of effective communication will invalidate the completely learning process no matter in individual learning and group learning through interactive group work [15, 16].

*"Working in a group facilitates our communication among our teammates. I can communicate with my teammates to share our viewpoints and to ventilate our feelings. Through discussion and listening to others, I found that my communication skills are improved each time. We learned through sharing and listening to others with respect and understanding."* (Student 4)

Another student emphasized the value of learning through various communication channels while working together.

*"I have experiences of working in a group. When you work in a group, you are expected to work with others with different ideas, personalities, and interests. Our group work will be divided into small parts and each of us will be responsible for one or two parts. Therefore, we need to communicate well with other groupmates. Otherwise, our works cannot be combined to be one piece. When I listen to others, I learn from them, and also learn to communicate in the group. I recall that I worked with eight groupmates for a poster. Each of us had our own task. But how we could make our small works, like puzzles, turn to be a poster? We need to*

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*communicate, to discuss, and to share. By time to time, I learned how to communicate with others. I had to share and listen to them. Even if time is running short, we can use various channels, such as WhatsApp and Skype for group discussion.” (Student 2)*

All educators agreed that interactive group work was effective to develop students’ communication skills. They explained that nurses needed to maintain good communication with other healthcare disciplines for better patient care. Students were required to learn to effectively communicate with other teammates who were from various backgrounds, interests and personalities. Students enhanced their knowledge through sharing their ideas. Both students and educators shared that communication was the most challenging aspect of lifelong learning. Students needed to establish good relationships with groupmates and emphasized “respect” was an important element for establishing and maintaining good communication and interpersonal relationships.

*“Students must understand and accept others with different backgrounds and personalities. Completion of project is, of course, important but it is more important for students to realize that good relationships and communication made it happen. In between, they actually learned how to respect others even though ideas might differ or are even unhelpful. In my experience, some students are able to communicate with others very well. They listen to their groupmates and they share their viewpoints. I believe that communication with patience, acceptance, and respect is very important for an effective communication. I believe mutual respect is the core of collaborative development. Students learn communication through working in a group definitely, and it is what we (educators) expected.” (Educator 6)*

Another educator continued,

*“Students must communicate with each other once they have formed a group, which helps them know one another better and learn how to get along with others with different backgrounds. Sometimes, I found some students do not know their groupmates in their group. Certainly, working in a group is important for them to communicate with others who are with different backgrounds. They need to not only learn from the group project but also learn to communicate with someone no matter if they know or do not know, to accept points of view different from theirs, and to respect others’ feelings and thoughts. I can see some students learn all of these very well through working in a group, but some cannot. Well, it’s their study journal... Communication is definitely essential in their study. Students have to learn various skills to well equip themselves for better patient care. When I found some students who could not work well in a group, it’s usually due to communication gaps or misunderstanding among them. Mutual respect is the lesson I usually teach those students.” (Educator 1)*

### **Theme 2: Critical thinking**

All students agreed that they learned more seriously in a group because each of them had to commit to fulfil a project. During the learning process, they developed their critical thinking ability to

integrate their knowledge and skills through working in a group. A student shared his experience.

*“At the beginning, we have to search as much information as possible for our own task of the group project. During our searching, we need to critically screen and select the relevant information. The most challenging part is to integrate all information for our learning and our project. By time to time, I found that I developed some critical thinking skills.” (Student 3).*

Most of the educators mentioned that critical thinking was the important skill for students to learn through interactive group work in their nursing training. An educator shared her experience how she found her students develop their critical thinking skills through interactive group work.

*“I found that students usually learn critical thinking when they discuss. They usually brought their knowledge they learned and shared in the group. All students would discuss the findings they individually got from their home study, explain the phenomena altogether, and select relevant information for their project. Students develop critical thinking skills through analyze the statements shared by their groupmates. During the process from sharing to selection, they need to assimilate their learning and skills based on evidence. Such training is important for students to collect and analyze patients’ condition through critical thinking and analysis.” (Educator 6)*

### **Theme 3: Problem-solving**

All students admitted that working in a group was an effective learning process in which they were able to solve the problems together. The problems were diverse, spanning individual learning to complex interpersonal collaboration issues. Through group discussion, students shared their learning and worked together to address their difficulties. They would also find the answers via surfing internet and seeking advice from their tutors. A student shared her experience,

*“I have my own responsible parts to do in the group. I surf the Internet and watch some videos on YouTube for relevant information. It’s exciting when I found the answers. In such learning, I could have more questions. If I do not do anything, I can only provide the answers of my part. Honestly, it’s not enough because I cannot explain my part well to my teammates. Therefore, I search again until I am able to understand my part well. At least, I can explain my part to my teammates. In such, I develop skills to solve problems.” (Student 2)*

Another student agreed and shared, “I also have the same experience to have many questions and then find the answers while working on my own part. The problem-solving skills can be developed through discussion in the group. We sometimes cannot find the answers thoroughly. I therefore bring the problems in the group. Through discussion, we all solve the problems together. Group work is a good learning channel to learn from others, not

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only from problems. Our problem-solving ability is enhanced particularly through discussion and working altogether.” (Student 12)

All educators admitted that group work enables students to learn new knowledge through collaboration. They expected students to work on their individual tasks first and then work in a group. The educators believed that students learned from searching and solving problems together, not only the knowledge but also the conflicts among them. An educator shared,

*“Students are expected to learn more through a small group work. I found that students would distribute their own work and share with their groupmates. If they have any difficulties, they should discuss in a group first. I can also see students develop senses of accountability, perseverance, patience, and acceptance of others. If they do not have those attitudes and behaviors, they cannot solve the problems altogether. For sure, they learn from a question and further questions. No matter they learn from their own study or their group, Problem-solving skills enable students to be more competent. It is also an important ability to provide safe care for patients.” (Educator 6)*

*Another educator added, “Sometimes, the problems come from the conflicts or arguments among students while they are discussing. Students need to learn how to handle with all kinds of problems. I had a group of students. they had lots of arguments at the beginning. At the end, they would approach me because there were conflicts in the group. I told them that they should learn how to compromise and accept others while they were trying to solve problems. Otherwise, problems were not being solved but it’s meaningless if conflicts fill in the group. Students have to learn to solve problems even if they receive different ideas” (Educator 8)*

#### **Theme 4. Creativity**

Some students enjoyed their group work because they were able to use their talents. Through using their talents, they developed their creativity ability.

*“(feeling excited) ... depends on what types of group projects. I love posters because I love drawing pictures, putting photos on them, and sticking decorations. Some teammates are very talented. They can make special designs for our group project and make it more attractive.” (Student 1)*

Another student further shared about the importance of having a talented and creative groupmate in a group:

*“It is important to have a groupmate who is an artist. He loved drawing and was very creative. Even a tedious PowerPoint project, he could turn into an attractive artwork to impress others and allowed us to enjoy our participation in the final presentation. (Student 4)*

*Some educators expressed that not all students were creative, but those who were, they would enjoy their learning much more.*

*“If a student can find his/her talent and show it in the group, the group will be more energetic. I had a student who loved to draw a picture while her groupmates were sharing their ideas or learning. I found that the group would be more positive and filled with laughs. I can see that student used her creativity to draw a picture. At the beginning, she tried to make herself understand what her groupmates expressed. Because of her drawing, the whole group was immersed in the group sharing. I also felt amazed that she could draw that fast and share that in the group. Actually, students should use their imagination when they learn. Imagination is also creativity to help students illustrate the statements to a picture or a scene.” (Educator 11)*

#### **Discussion**

This study revealed four major themes related to development of the higher-level intellectual skills, including interpersonal communication, critical thinking, problem solving, and creativity, based on perspectives of students and educators. They are all crucial for students to equip themselves to provide high-quality care. Unlike examinations and practical skill assessments, these skills are integrated into the curricula and under-evaluated throughout the study. These skills can be nurtured in accordance with students’ involvement in their learning through interacting with others. Therefore, this study results increase educators’ awareness of the development of higher-level intellectual skills through interaction among students.

Interpersonal communication skills include active listening, empathy/understanding of others, problem-solving, conflict resolution and patience, which function during interactions with others [13-18]. In other words, interpersonal communication develops and enhance collaborative relationships and social interaction. As the current healthcare service emphasizes multidisciplinary teamwork, interpersonal communication skills are crucial to nurturing students’ collaborative attributes [15, 17, 18]. Good communication improves outcome quality and resolves conflicts [13, 16-18]. Effective interpersonal communication is beneficial to individualized and group learning through mutual respect and exchange of experience and ideas.

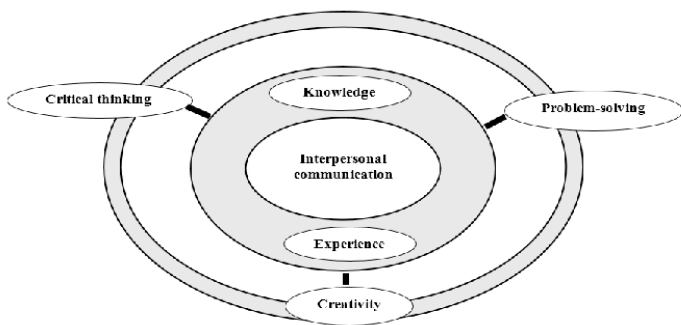
Due to the complexity of the healthcare service, critical thinking is essential for determining high-priority care, ethical decision-making and clinical judgment [19-21]. Critical thinking is also an essential skill for resolving conflicts and difficulties [10, 20, 21]. Critical thinking ability is commonly examined using various teaching methodologies, e.g. problem-based learning, with positive results. Critical thinking and problem solving are inter-related [19-22]. Students learn to think competently and independently to cultivate their problem-solving abilities [19, 20]. Nurses also



have to equip themselves with analytic and reasoning abilities that coexist with critical thinking and/or problem-solving skills to ensure appropriate patient care. The extent of development of critical thinking, problem solving, and analytic and reasoning skills is related to the degree of competence in knowledge and experience [14].

Creativity is a unique ability that combines skills, experience and knowledge to improve outcome quality [23]. A creative person can motivate their group to complete a group work using different channels or methods. Students' creativity skills should be nurtured to increase their feasibility when providing care to patients with innovative ideas [24]. Creativity is useful for problem-solving and generating new strategies and ideas [23]. Students may encounter unpredictable situations that demand creative thinking for appropriate decision-making [23, 24]. Creative thinking and critical thinking are inter-related and can exist simultaneously [23]. During group discussion, students have opportunities to brainstorm and share their ideas; they generate constructive and creative ideas and explain the rationales, making them more engaged in their learning [23, 24]. Today's healthcare service tends to rely greatly on sophisticated and convenient equipment; the development of creativity ability is impeded. Educators should provide a nurturing environment for students to develop creative thinking with adequate support [17].

It is important to note that interpersonal communication is the core element for further directing the development of other higher-level intellectual skills. These skills are all interlinked and individually connected with interpersonal communication. Knowledge and experience can be fostered and shared through interpersonal communication during learning, leading to the enhancement of other higher-level intellectual skills through small group work. Therefore, small group work can promote students' personal and professional growth not limiting the knowledge and practical skills for appropriate care, but also by creating a better learning and collaborative environment for further skill development [25, 26]. Figure 1 illustrates the relationships among the four skills and their interactions with knowledge and experiences through interaction group work.



**Figure 1:** The relationships among these four higher-level intellectual skills and their interactions with knowledge and

experiences through small group work.

This study found the development of higher-level intellectual skills through interactive group work was valuable for personal and professional development. However, this study has some limitations. As all participants were recruited from the same educational institution, the results cannot be generalized in other educational institutions because the perspectives of those students and educators could be influenced by the specific teaching and learning modes at the study institution.

## Conclusions

The study revealed four major themes related to higher-level intellectual skill development based on the experience of learning in a small group among undergraduate nursing students or teaching in a small group among nurse educators. These themes showed the importance of higher-level intellectual skill development in nursing study. Of these skills, interpersonal communication is a core element of the development of other higher-level intellectual skills. All identified skills are significant to enhance their interdisciplinary collaboration abilities to provide higher quality care. Educators should pay more attention to not only achieve course intended learning outcomes but also increase their awareness of students' learning in developing these higher-level intellectual skills through interaction with others.

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