A Study on the Relationship between College Students' Social Skills and Metacognition through Service-learning Participation*

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Abstract

Purpose This study aims to investigate the correlation of social skills and metacognition among university students participating in service-learning programs. Also by evaluating the satisfaction of college students participating in service learning, this research seeks to understand the impact of this program on learning experiences. **Research design, data and methodology:** The research period spans two semesters, each comprising 15 weeks, from March 2, 2023, to December 20, 2023. Detailed procedures, including planning, preparation, data collection, analysis, and organization, cover activities conducted over the course of 30 weeks. These activities encompass various stages, from initial classroom planning with designated English storybooks to reflection and feedback sessions aimed at continuous development. Data collection methods include surveys, interviews, and observations, allowing for a comprehensive examination of social skills and metacognition among participating students. **Results:** The results show significant correlations between social skills and metacognition, such as the correlation between knowledge and statistics ($r = 0.759$, $p < .01$), the moderate correlation between cooperation and knowledge ($r = 0.532$, $p < .01$), the moderate correlation between statistics and cooperation ($r = 0.539$, $p < .01$), and the correlation between self-regulation and assertion ($r = 0.278$, $p < .001$). The average score of the satisfaction of college students participating in service learning was 4.8 out of 5. **Conclusions:** This study highlights the significant role of service-learning in boosting social skills and metacognition among university students. This study enhances the academic understanding of the relationships between social skills, metacognition, and service-learning programs, contributing to the expansion of both theoretical and practical knowledge in the field.

Keywords : Service-learning, Social skills, Metacognition, Correlation, Satisfaction

JEL Classification Code : I20, I23, I29

1. Introduction

In the era of the Fourth Industrial Revolution, education aims to go beyond mere acquisition of knowledge to equipping students with the ability to creatively solve problems. Learning should no longer be confined to the classroom but should evolve towards practical application and utilization in society.

One of the prime educational experiences embodying this is service-learning. Service-learning is an activity where students utilize the professional knowledge and skills they have acquired at university to collaborate with peers in addressing community issues, thereby producing meaningful outcomes. It can be viewed as an experiential education model that involves volunteering in the local community based on each student's major and course knowledge.

Participation in such activities not only enhances students' understanding of course content and academic achievement through problem-solving processes but also increases their awareness of citizenship, community, and social responsibility in the local community (Shin & Kim, 2020).

Social skills play a crucial role in service-learning. The process of enhancing social skills itself can improve self-efficacy (Lent & Brown, 2006). It is expected that the development of social skills through cooperation, communication, and problem-solving in service-learning will be closely related to self-efficacy (Choi, 2005). According to Bellack and Hersen (1979), social skills are defined as an individual's ability to express positive or negative emotions within the scope of not harming others in interpersonal situations. Additionally, Trower and Bryant (1978) defined social skills as the ability to accurately understand what others are expressing and to express students' own verbal and non-verbal behaviors appropriately according to social norms to achieve personal goals. Social skills refer to the ability to maintain smooth interpersonal relationships with others based on effective communication skills. In current university education, emphasis is placed on learning not only through individual effort but also through cooperation and communication within groups. Participatory teaching methods and cooperative learning curricula confirm this. It is known that when learners have a sense of belonging and learn with peers who share the same goals, their learning efficiency improves. In this context, social skills can contribute to enhancing interest and learning motivation in the learning process, as well as facilitating learning by communicating with peers and collaborating to share and develop learning experiences (Schunk & Pajares, 2002).

Service-learning can be considered in relation to metacognition, as metacognition refers to learners' awareness of their own thought processes and their ability to plan, monitor, evaluate, and regulate these processes (Flavell, 1979). In education, metacognition plays a role in promoting students' cognitive awareness of the learning methods they use, which stimulates students' cognition and helps them engage in active thinking processes during class (Schraw & Dennison, 1994). The metacognitive abilities of university students participating in service-learning are enhanced when they interact with team members and solve problems in cooperative learning situations (Panadero & Järvelä, 2015). In such situations, students can naturally develop their metacognitive abilities by perceiving their teammates' thinking, monitoring it, and adjusting their own activities accordingly.

Despite the apparent interconnection between service learning, social skills, and metacognition, there has been little research on the relationship between social skills and metacognition among students participating in service learning. This study aims to investigate the correlation between social skills and metacognition among college students participating in service learning, aiming to provide new insights into the field of education and learning. Additionally, by evaluating the satisfaction of college students participating in service learning, this research seeks to understand the impact of this program on learning experiences. Such research endeavors to offer crucial information for the understanding and advancement of education and social communities. The research questions to achieve the objectives of this study are as follows:

1. What is the correlation between social skills and metacognition among college students participating in service learning?

2. What is the satisfaction of college students participating in service learning?

2. Literature Review

2.1. Service Learning

Service-Learning combines 'service' and 'learning' to intentionally structure realistic situations that require problem solving for the growth and development of students, providing opportunities for participation in activities that can meet the needs of both individuals and the local community, thereby integrating experiential education (Jo, 2008). It involves student-centered, experimental learning realized in the local community and connected to the needs of that community. Therefore, the purpose of service-learning is achieved when services for realistic and meaningful local communities are integrated as a means of instruction. In other words, students explore and develop their learning through real experiences, effectively applying what they have learned (Cleary & Benson, 1998). In Service-learning, 'learning' refers to the educational elements of volunteerism, while 'service' can be explained from a constructivist perspective as volunteer actions integrated into or satisfying the criteria of the curriculum, rather than being mere curriculum supplements. Constructivism defines learners as actively engaging with the environment to construct new knowledge based on existing knowledge, emphasizing the discovery and resolution of tasks by the learners themselves. According to constructivism, learners should build their understanding of a given subject through diverse perspectives and design lessons as if learners have no prior knowledge (Grassi, 2003). Service-learning is also connected to motivational theory. The desire for volunteering arises from the inherent

human drive to fulfill needs, making it a natural behavior (Jo, 2008).The various definitions of service-learning highlight the diversity of approaches to this concept. Service-learning is defined as an experience that meets human needs and contributes to educational growth, emphasizing its direct impact on learners' learning and personal development (Robert & William, 1996).

In contrast, service-learning is defined as an educational and learning program that integrates meaningful social contributions, enhances learning experiences through guidance or reflection, and aims to cultivate civic responsibility to strengthen communities (Kim, 2007). This definition emphasizes the intertwining of learning and civic responsibility in service-learning to bring about sustainable social change.

These diverse definitions underscore the varied forms and goals of service-learning in enriching learners' educational experiences and fostering civic responsibility. Through this understanding, we see that service-learning can be applied across various domains in both educational and social contexts.

John Dewey's philosophy of pragmatism serves as one of the foundations of service-learning theory. Dewey (1910) viewed learning as an ongoing process of experience, where knowledge is expanded and developed through new experiences rather than simply acquired from textbooks. He emphasized reflection as a critical learning method, suggesting that learners can deepen their understanding by critically reflecting on their experiences and thoughts. Dewey's philosophy underscores the importance of learning and reflection in service-learning, highlighting how learners can cultivate civic responsibility and develop knowledge and skills through real-world experiences.

According to Jacoby (1996), service-learning differs from volunteerism or community service in that it engages students through the educational system, offering more than just service. It involves students experiencing real-world situations, feeling civic responsibility, and simultaneously achieving educational goals. Service-learning is seen as a crucial experience where students directly encounter social issues and accomplish educational objectives through their engagement.

2.2. Social Skills

According to Elliott, social skills are defined as the behaviors adapted appropriately to various situations occurring in interpersonal relationships, representing a significant outcome acquired through school life and enabling effective interaction with others. Therefore, we can understand these skills as a series of complex abilities necessary for expressing oneself and leading a meaningful life within interpersonal relationships (Lee et al., 2001).

They are considered an essential part of life adaptation, providing a crucial foundation for forming appropriate relationships with others, resolving conflicts, and contributing to various developmental domains such as cognitive, language, and motor skills (Choi, 2011). Behaviors constituting the subdomains of social skills include empathy, cooperation, and leadership. For example, cooperation refers to the ability to work and interact with others, while leadership involves demonstrating leadership within a team and leading the progress of work. These social skills help individuals express their opinions appropriately, respond to others' emotions, and maintain cooperative relationships (Mcfall, 1982). Similarly, O'Malley describes these skills as the abilities individuals exhibit in interactions with others, encompassing environmental, personality, and social aspects.

In conclusion, social skills allow individuals to navigate social situations appropriately and thrive within society. Generally, people have common criteria for determining appropriate behavior in different situations. Based on this understanding, effectively navigating social situations requires the ability to understand social norms and utilize social skills effectively in various contexts. Therefore, social skills encompass the adaptive elements necessary for maintaining balance and harmony while interacting with the given environment. They refer to specific behavioral skills and denote the ability to engage in prosocial behaviors in social contexts.

In this study, social skills are defined as inclinations towards cooperative behavior, self-regulation, empathy, and assertiveness, which form the fundamental functions of social behavior. These skills involve recognizing oneself, showing consideration for others, and assisting each other to adapt to and navigate through social interactions and societal expectations, ultimately fostering harmonious social activities and social adaptation.

2.3. Metacognition

The term "metacognition" began to be specifically defined by cognitive psychologists after the 1970s (Hobson, 2008). It is used to describe knowledge related to perception, memory, thinking, and behavior, and it is known to play a significant role in various domains such as decision-making, memory, learning and motivation, cognitive development, and so on (Metcalfe & Shimamura, 1994). The definition of metacognition can vary slightly among scholars, but generally, it is defined as awareness or knowledge about cognition or the act of cognition itself. American psychologist Flavell (1979) was the first to define the concept of metacognition, stating that it involves individuals consciously monitoring and controlling their own performance in order to successfully complete tasks.

Flavell (1979) delineated the distinction between cognition and metacognition as follows: Cognition involves intellectual activities for cognitive progress, primarily related to problem-solving or information processing. In contrast, metacognition is the function of monitoring these cognitive activities, overseeing and regulating one's own learning and problem-solving processes. While cognitive strategies are used simply to obtain answers, metacognitive strategies are employed to gain confidence in the answers already obtained. Thus, metacognition signifies the ability to observe and evaluate students' own learning and cognitive processes to achieve better learning outcomes.

Additionally, Brown (1987) emphasized that distinguishing between cognition and metacognition is not an easy task but a necessary one. He presented the following perspective: cognition represents mere understanding of knowledge, whereas metacognition signifies the appropriate utilization of knowledge. Brown pointed out a significant difference between knowledge and its appropriate utilization, suggesting that recognizing this difference can be very useful in emphasizing which aspects should be developed from an educational standpoint. This highlights the importance of not only acquiring knowledge but also pondering how to utilize it appropriately.

Metacognitive activities encompass three main components: planning, monitoring, and regulation. Planning involves setting goals for study before starting to read the textbook, scanning, questioning, and analyzing the task. By doing so, individuals can activate previously acquired knowledge and plan more appropriate thinking strategies and processes. Planning allows for organizing the learning process and setting goals, facilitating efficient learning (Brown et al., 1983).

Metacognitive strategies are practical procedures and strategies used to monitor and control learners' cognition during task performance. These strategies include self-observation, self-evaluation, self-regulation, self-checking, self-instruction, and self-questioning. Such metacognitive strategies are particularly useful for assessing understanding and applying knowledge when performing new or challenging tasks (Lucangeli & Cabrele, 2006).

Metacognitive knowledge is a form of declarative knowledge that encompasses understanding of the interaction between individuals, tasks, and strategies. In contrast, metacognitive strategies operate in real-time during cognitive activities to control and regulate cognitive processes. Through the interaction of these three subcomponents, learners can understand what they know about what they know, why they are performing a task, and what efforts are needed to achieve the task.

2.4. Service learning, Social skills and Metacognitive

Participating in group activities, where individuals express opinions and advocate for their viewpoints within a cooperative setting, enhances their understanding of their own knowledge. Through such activities, individuals naturally cultivate skills such as self-advocacy and self-regulation, which, in turn, affect metacognitive abilities (Lee, 2019). This concept is supported by the findings of Panadero and Jarvela in 2015, indicating that interactions within cooperative learning situations naturally enhance metacognitive abilities as individuals perceive, check, and adjust their own and others' thoughts during problem-solving.

Service learning experiences often involve collaboration, communication, and problem-solving in real-world contexts. Engaging in service activities can enhance social skills such as teamwork, empathy, and effective communication as students interact with diverse communities and work towards common goals (Loughner & Lakin, 2017). Also service-learning encourages students to reflect on their experiences, learning processes, and the impact of their actions on others. This reflective practice fosters metacognitive skills, including self-awareness, goal-setting, monitoring progress, and adapting strategies. Through service learning, students develop a deeper understanding of their own learning styles and strengths. (Eyler & Giles, 1999).

There is a reciprocal relationship between social skills and metacognition. Effective social interactions require metacognitive abilities such as perspective-taking, understanding social cues, and regulating one's behavior based on social contexts. Conversely, developing social skills through collaboration and communication can enhance metacognitive skills by prompting individuals to reflect on their interactions and adjust their behaviors accordingly (Bandura, 1977).

Therefore, service-learning programs play a vital role in enhancing both university students' social skills and metacognitive abilities simultaneously.

3. Research Methods and Materials

3.1. Subjects

This study involved students who had taken the 2023 Service-learning course and others who had volunteered in English education at six kindergartens in D city. It included 48 undergraduate students from different academic years, ranging from first to fourth year. These students were taking elective general education courses at the University of A city (EFL), which comprised 3 hours of classes per week and carried 3 credits.

3.2. Research Period and Procedures

The specific steps and procedures for planning, preparation, data collection, analysis, and organization of this study are outlined below. The research period spanned from March 2, 2023 to December 20, 2023. Throughout the total of 15 weeks of classes, for the first 5 weeks preceding kindergarten volunteer work, students planned classroom activities using designated English storybooks. They prepared and presented these activities in actual classrooms and underwent a process of revision and improvement based on feedback from peers and instructors. Over the next 7 weeks, participating students in service-learning visited selected kindergartens for educational service. They conducted various prepared classroom activities. Throughout the activities, they continuously reflected, analyzed, and planned with team members and instructors to create activities tailored to the students' levels. Following the completion of the 7-week programs, there were 3 weeks dedicated to reflection and feedback sessions aimed at continuous development.

At the beginning of the semester, each class underwent a general orientation session on effectively conducting service learning. Towards the end of the semester, a survey was conducted to assess social skills and metacognition.

The service-learning-based general education classes were structured into two main components: service and learning. The primary goal of these classes, consistent with undergraduate programs, was knowledge acquisition, typically through theory-based learning. Additionally, activities such as developing lesson plans, conducting class demonstrations, and receiving feedback from instructors and peers were carried out.

In the second stage, the service component involved detailed instructional activities at public kindergartens. In the third stage, students who participated in service learning returned to the university after their service activities. They utilized feedback to reflect on areas for improvement and revised their lesson plans accordingly. Throughout this process, students engaged in a continuous cycle of learning, application, reflection, and refinement, contributing to their overall development as educators.

Table 1: Service Learning Procedures

Step	Service	Learning
1 (5 weeks)		Course Learning Lesson planning
		Preparing syllabus Class Activities
		Demonstration Presentation
		Feedback (Peer / instructor)
2 (7 weeks)		Educational Service Teaching English
		Student-centered
		With Story Books
3 (3 weeks)		Final Presentation
		Reflections
		Feedback (Peers/ instructor)

3.3. Research Instruments and Data Analysis

3.3.1. Social Skills Measurement Instrument

This study employed the Korean version of the Social Skills Rating System (K-SSRS), validated for college students by Moon (2002), to assess social skills abilities. Developed by Gresham and Elliott, this tool comprises a total of 25 items and assesses students' social skills across four subdomains: empathy, cooperation, self-regulation, and assertion. Each item is rated on the 5-point Likert scale, with higher scores indicating higher levels of social skills. The overall reliability of this measurement instrument was found to be satisfactory, with a Cronbach's α value of .767. The composition of items for each sub-factor of social skills is presented below (Table 2).

Table 2: Reliability of the Social Skills Instrument

Subfactors	Content	No.	quantity	Cronbach's α
Cooperation	Cooperate with the team members on assignments	9,10,25	3	
Self-regulation	Even if our opinions differ, I listen attentively.	5,7,11, 14,19, 22,24	7	
Empathy	When something bad happens to someone else, I feel sorry for them	2,4,6,8 ,13,16, 17,21	8	.766
Assertion	Express emotions to let others know	1,3,12, 15,18, 20,23,	7	

Total		25	25	

3.3.2. Metacognition Measurement Instrument

In this study, we employed the Metacognition Measurement Instrument developed by Choi (2011) for assessing metacognition. This instrument was derived from Yang's (2000) self-regulated learning measurement tool, focusing on measuring metacognitive strategy usage, alongside incorporating items from Pintrich and De Groot's (1990) Motivated Strategies for Learning Questionnaire (MSLQ) to evaluate metacognitive strategies. Additionally, it integrates a reconstructed version of the Metacognitive Awareness Inventory (MAI) by Schraw and Dennison (1994). Each item is assessed on a 5-point Likert scale, with higher ratings indicating elevated levels of metacognitive abilities. The instrument encompasses a total of 30 items, and its overall reliability was established with a Cronbach's α coefficient of .874. The breakdown of item composition for each metacognitive subdomain is delineated in Table 3.

Table 3: Reliability of the Metacognition Instrument

Subfactors	Content	No.	quantity	Cronbach's α
Planning	Set goals before studying.	15,16, 17, 18,19	5	
Monitoring	If I encounter unfamiliar concepts, I seek clarification.	20,21, 22, 23, 24,25	6	
Regulating	Double-check to ensure I've solved the problem correctly.	26,27, 28,29, 30	5	.874
Declarative knowledge	I am aware of what I excel at and what I struggle with	1,2,3,4 ,5,6,7	7	
Procedural knowledge	When solving problems, I recall methods I have previously experienced.	8,9	2	
Conditional	I adapt my study	10,11,	5	

knowledge	strategies depending on the problem or subject at hand.	12,13, 14		
Total			30	

3.3.3. Data Analysis Levels of Social Skills and Metacognition

In this study, correlational analysis was conducted to examine the relationship between social skills and metacognition among college students participating in service learning. Confirmatory factor analysis was also performed to assess the validity of the measurement tools. These analyses were conducted using SPSS 24 and AMOS 24 software. Additionally, the performance perception and satisfaction of service learning participants were analyzed through the Likert 5-point scale.

4. Results and Discussion

4.1. Correlation between Social Skills and Metacognition

The analysis investigated the correlation between social skills and metacognition among university students engaged in service-learning, as depicted in Table 5. The findings revealed statistically significant positive correlations between social skills and metacognition, suggesting a constructive relationship between these two domains. Specifically, individuals who demonstrated higher levels of social skills tended to exhibit stronger metacognitive abilities, indicating a potential interplay between social-emotional competencies and metacognitive processes within the context of service-learning participation.

Table 4: Correlation between Social Skills and Metacognition

	K	S	C	Sr	E	A
K	1	.759**	.532**	.554**	.634**	.505*
S		1	.539**	.489*	.652**	.542**
C			1	.635**	.515*	.463*
Sr				1	.546**	.278***
E					1	.643**
A						1

*p<.05, **p<.01 ***p<.001

K: Knowledge
S: Statistics

C: Cooperation
Sr: Self-regulation
E: Empathy
A: Assertion

Moreover, the analysis underscores significant correlations among other variables. The correlation between knowledge and statistics (r=0.759), with a p-value smaller than .01 (p<.01), underscores a substantial association (p<.01). Similarly, the moderate correlation between cooperation and knowledge (r=0.532), with a p-value smaller than .01 (p<.01), denotes a meaningful relationship. Likewise, the moderate correlation between statistics and cooperation (r=0.539), with a p-value smaller than .01 (p<.01), further accentuates a notable association. Additionally, the noteworthy correlation between self-regulation and assertion (r=0.278), with a p-value smaller than .001 (p<.001), underscores an exceptionally significant relationship.

4.2. Satisfaction of College Students participating in Service-learning

The satisfaction of college students participating in service learning was analyzed using the Likert 5-point scale, revealing highly positive responses across all items. Overall satisfaction with the service-learning activities was rated at 4.8, teamwork and cooperation among team members received a rating of 4.9, a sense of accomplishment was reported as 4.8, and the appropriateness of course objectives and volunteer activities was rated at 4.8.

Table 5: Satisfaction of College Students participating in Service learning

Items	Mean
Overall satisfaction with the Service Learning	4.8
Teamwork and Cooperation	4.9
Self-awareness and Goal-setting	4.8
Self-regulation	4.7
Sense of Accomplishment	4.9
Total	4.82

5. Conclusions

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The primary goal of this study was to investigate the connection between social skills and metacognition among university students who are involved in service-learning activities, aiming to provide new insights into the field of education and learning. Additionally, by evaluating the satisfaction of college students participating in service learning, this research seeks to understand the impact of this program on learning experiences. Through an analysis of the correlation and influence of social skills and metacognition, our objective was to delineate the pathways through which they mutually affect each other. Drawing upon the insights gleaned from addressing these research questions, we engaged in discussions and drew meaningful conclusions. The result shows that the correlation between knowledge and statistics r=0.759(p<.01), the moderate correlation between cooperation and knowledge r=0.532(p<.01), the moderate correlation between statistics and cooperation r=0.539(p<.01), and the correlation between self-regulation and assertion r=0.278(p<.001). The analysis revealed significant correlations between social skills and metacognition among university students engaged in service-learning. Particularly noteworthy was the finding indicating that social skills influence metacognition. This suggests that service-learning courses enhance students' social skills, subsequently contributing to the development of their metacognitive abilities. The satisfaction of college students participating in service learning was also analyzed using the 5-point Likert scale. The average for all five items was 4.82, indicating a positive level of satisfaction.

This finding suggests that service-learning not only enhances social skills and metacognition individually but also fosters more effective learning through the positive correlation between these two factors. This study enhances the academic understanding of the relationships between social skills, metacognition, and service-learning programs, contributing to the expansion of both theoretical and practical knowledge in the field.

Since this study focused on students from one university, there may be limitations to generalizing the results. Therefore, further research is needed to generalize the findings and validate their effectiveness in various contexts. To achieve this, the following recommendations can be proposed: Conducting research targeting students from various universities or educational institutions would enhance the investigation of the relationship between service-learning participation and social skills as well as metacognition from multiple perspectives. Expanding the study to include students with diverse academic years, majors, and backgrounds would allow for an analysis considering differences and characteristics among students. By doing so, the potential for generalizing the research findings could be increased.

Therefore, in future research, considering these aspects will enable a broader analysis of the impact, thus facilitating a more comprehensive understanding.

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