Pre-Service Teachers' Motivations to Participate in the Near-Peer Mentoring Program

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Abstract

Recent research indicates that college students experienced increased stress and academic anxiety during the Covid-19 era. Near-peer mentoring is a program that pairs students in different grade levels with the goal of enhancing their academic, emotional, and social development. This study uses the Expectancy-Value Theory to examine the motivation of pre-service science teachers to participate as mentors in the near-peer mentoring program, and the costs they attach to participating in the program. The qualitative research was conducted with a total of twelve pre-service science teachers. Data were collected through individual interviews during the spring semester of 2021. Results revealed that participants found the program useful, benefited from this program in terms of social/emotional support and academic career, and stated that it would be more beneficial if the content of the program were improved. The participants' motivation to participate in the near-peer mentoring program were categorized into seven, from the most beneficial to the least, as follows: (1) developing learning strategies, (2) career planning, (3) access to university services, (4) communication, (5) sense of belonging, (6) academic development, and (7) support in registration and course selection. This research carries notable importance as it can strengthen the sense of community among pre-service teachers. This study is likely to provide an opportunity for the design of near-peer mentoring programs in universities and the development of content in accordance with the findings. Furthermore, the insights derived from this study can be crucial in designing and implementing effective near-peer mentoring programs at tertiary education levels, promising mutual benefits for both the mentor and the mentees.

Keywords

Mentoring program, near-peer mentoring, pre-service teachers, science education.

INTRODUCTION

The sudden shift to online education during the Covid-19 pandemic has created many challenges for students around the world. During these difficult times, students have experienced many positive and negative aspects of the educational processes and methods. Studies have shown that college students' stress and academic anxiety levels have increased during the Covid-19 process, where their learning and overall motivation decreased, and they suffered from academic and social support from instructors and peers (Son et al., 2020; Tan, 2021). First-year college students face many transition and adjustment issues, and they may be particularly in need of guidance during this process (Akinla et al., 2018; Salimi et al., 2021). College students in their junior or senior years have gone through similar processes, and they may be able to guide students new to college through the difficulties they have experienced.

Near-peer mentoring (NPM) is a form of mentoring in which peer mentors and mentees are close in age and often in the same program at different grade levels. NPM has been shown to help college students with their personal, academic, and professional development (Marshall et al., 2021; Zaniewski & Reinholz, 2016). NPM also provides opportunities for students studying at different grade levels to continue their education with similar interests and explore new areas (Hidayat et al., 2023; Tenenbaum et al., 2014).

Research on NPM points to the positive outcomes of peer mentoring for both mentors and mentees (e.g., Lopatto, 2010). Peer mentors experience the intrinsic motivation of supporting other students to apply concepts to their own lives, and develop new relationships (Colvin & Ashman, 2010). In addition, NPM can enhance mentors' leadership, communication, and organizational skills (Hall & Jaugietis, 2011). Since the goals of teacher education programs are to train pre-service teachers who can adapt to innovation, take informed decisions, be solution-oriented, and renew and develop themselves for real life, the NPM program may provide an opportunity for pre-service teachers to acquire and demonstrate these characteristics. This study examined the motivations of pre-service teachers to participate in the NPM program as mentors according to the Expectancy-Value Theory (Eccles, 1983). This theory provides a comprehensive framework for examining how an individual's motivation for a task is related to expectations, beliefs, and goals because of behavior. With this goal, the research questions of this study are:

(1) What is the motivation of pre-service teachers to participate in the Near-Peer Mentoring Program as a mentor?

(2) What kind of costs do mentors attach to participating in the Near-Peer Mentoring program?

The significance of this research lies in its potential to enhance the sense of belonging among pre-service teachers in teacher education programs, facilitate exploration of career options, increase motivation (particularly in the context of distance education), foster virtual connections among students who may not have previously interacted despite attending the same university, and improve academic engagement. Additionally, this study is expected to contribute to the design and implementation of effective NPM programs in colleges and universities, ultimately benefiting both mentors and mentees alike.

Expectancy Value Theory (EVT)

Motivation and engagement play a crucial role in creating a successful learning environment, which includes behavioral, sensory, and cognitive aspects (Crosling et al., 2009; Eryılmaz, 2013; Newmann,

1992; Saritepeci et al., 2015; Yang & Wu, 2012). Motivation, as emphasized by Lumsden (1994) and Marzano (2006), refers to an individual's desire and interest to participate in a process. Wigfield et al. (2015) further emphasize that motivation can be observed not only through willingness but also through the intensity of engagement in a particular activity. Ryan and Deci (2000) define motivation as the driving force behind behavior. Therefore, contemporary motivation theories and research focus on understanding and explaining how individuals' beliefs, values, and goals influence their motivation levels (Wigfield et al., 2015).

One widely used theory in the field of motivation is Expectancy-Value Theory (EVT), which links motivation to individual expectations and value perceptions in each context (Atkinson, 1964; Wigfield & Eccles, 2000). EVT posits that motivation results from an individual's expectations for task performance in each context and the values they attribute to the task (Brophy, 1999). Expectations are recognized as a fundamental source of motivation across domains (Eryılmaz, 2013), and values significantly influence choice, effort, and persistence in achievement-related activities (Guo et al., 2015; Marsh et al., 2005). EVT provides a comprehensive framework for analyzing academic and career preferences based on expectations, achievement-related values, and career goals (Eccles, 1983; Wigfield & Eccles, 2000).

According to EVT, students are more motivated to persist and complete a task if they value its accomplishment (Wigfield & Eccles, 2000). Task value, as defined by Eccles (2009), refers to the qualities of a task that increase or decrease the likelihood that an individual will choose it (p. 82). EVT categorizes task value into four dimensions: (1) achievement value, (2) intrinsic value, (3) utility value, and (4) perceived cost (Eccles & Wigfield, 2002; Wigfield & Eccles, 2000). Achievement value refers to the personal significance of a task in relation to an individual's self-concept (Wigfield & Eccles, 2000). Intrinsic value represents the enjoyment or intrinsic interest derived from the task (Wigfield & Eccles, 2000). Utility value refers to the usefulness of the task in achieving an individual's present and future goals (Eccles & Wigfield, 2002). Perceived cost involves what an individual must sacrifice to perform a task and the expected effort required to complete the task (Eccles, 2005, p. 113).

EVT has been widely employed to examine students' motivation, expectations, and educational experiences in diverse programs (Matusovich et al., 2008; Thomson & Palermo, 2018). Research consistently suggests that values strongly predict engagement and persistence in various tasks, programs, and career paths (Wigfield & Eccles, 2000). In the context of peer mentoring programs, the extant literature highlights their potential as influential contextual factors in promoting student motivation and persistence in their chosen fields (Kuhn et al., 2022; Sattler et al., 2012).

Near-Peer Mentoring (NPM) Program

In a constantly changing and complex world, mentoring is an essential approach so that individuals can keep up with the changing conditions, receive emotional support, and develop themselves in various areas. Cornu (2005) described mentoring as "a formal process whereby a more experienced person can give support and advice to a less experienced colleague for the purpose of professional growth" (p. 355). Though mentoring has the same purpose in general, there are various mentoring programs in the literature, including different contexts such as professional mentoring, peer mentoring, and faculty advisors to doctoral student mentoring (Sanchez et al., 2006). In the educational setting, mentorship programs have long been considered a successful model to encourage the development of students in the early years of K-12 and college education (Budge, 2006). Especially, college students' attrition has long been a source of concern for higher education administrators, so university peer mentoring

programs have been discussed as having the potential to increase student engagement (Sanchez et al., 2006; Terrion & Leonard, 2007). Educational mentoring programs, which can be executed formally and informally, have different instructional aims, such as decreasing dropout rates of students, developing the students pedagogically, and enhancing relationships between students and faculty members (Rodger & Tremblay, 2003).

Students in their early years may have difficulty adapting to the new environment, coping with stress, and networking (Akinla et al., 2018; Singh et al., 2014). Therefore, the NPM program has a crucial role in effective undergraduate education (Colvin & Ashman, 2010; Rodger & Tremblay, 2003). NPM program is a mentoring program that allows undergraduate students or recent graduates to come together as mentors with slightly younger or less experienced students to encourage them professionally and personally (Akinla et al., 2018; Colvin & Ashman, 2010). The difference between the peer mentoring program from other traditional mentoring programs is that the age difference between the mentee and the mentors is slight (Terrion & Leonard, 2007). Colvin (2007) emphasized that it is necessary to identify the roles between mentors and mentees decisively and to provide training for the program in NPM programs. The NPM program has several positive effects on both mentor and mentee students regarding social, cognitive, and professional aspects (Budge, 2006; Krause & Moore, 2022; Rodger & Tremblay, 2003). For example, college students' social and faculty relationships, self-esteem and academic self-efficacy, motivation, self-regulation, and retention rate are developed with the NPM programs (Akinla et al., 2018; Rodger & Tremblay, 2003; Budge, 2006; Zaniewski & Reinholz, 2016).

There are various studies concerning NPM in the literature, but the difference is to align these studies with numerous theories such as social support theory (Hall & Jaugietis, 2011), experiential learning theory (Wagner & Du Toit, 2020), identity-based motivation theory (Madison, 2020), relational model of mentoring (Heirdsfield et al., 2008), self-determination theory, cognitive career theory, social exchange theory (Limeri et al., 2017) and expectancy-value theory (Limeri et al., 2017; Sattler et al., 2012). Among studies that commonly integrate EVT into a peer-mentoring program to understand motivation and outcomes, some studies also combined three emerging theories that are self-determination theory, cognitive career theory, and EVT, in line with the data analysis to demonstrate the motivation of mentors (Limeri et al., 2017). This study was framed with EVT from the perspectives of peer mentors (Wigfield & Eccles, 2000).

Near-Peer Mentoring and Expectancy Value Theory

Near-peer mentoring (NPM) is highlighted in the literature as a divergent form of traditional mentorship at the university level to help students' transition into higher education (Akinla et al., 2018; Heirdsfield et al., 2008). The differences between the aims of participation in programs in NPM and traditional forms of mentoring require a theory that fits the motivation of participation. Literature indicates that participating in an NPM program is associated with expectations and values in peer mentors' and mentees' personal, academic, and professional development (Sattler et al., 2012). With the need for mentoring programs at the university level, many studies have been conducted about NPM considering different theories (i.e., EVT, social support theory, experiential learning theory). These theories vary according to the aim of the mentoring program. Literature reveals that peer mentors are motivated to help other students, apply concepts in their own life, and form new relationships (Colvin & Ashman, 2010). Also, Wigfield and Eccles (2000) claimed that expectancy-value theory (EVT) could allow for a well-aligned study of outcome expectations. From this perspective, this

study has been conducted in line with EVT (Eccles, 1983), reflecting the motivation to be mentors in a science education program.

Various studies in different fields (i.e., engineering, medicine, and education) have been conducted regarding NPM with EVT. Even though many studies consider the EVT as a framework to understand the motivation of peer mentors and mentees to participate in the program, there are some similarities and differences between those studies in the aspects of grade level, context, department, aim, values of the theory, costs, and perspectives (Daley & Zeidan, 2020; Limeri et al., 2017; Sattler et al., 2012). For instance, Sattler and colleagues (2012) revealed a peer mentoring model in an online environment that has value for professional and personal development for graduate students in an engineering program with EVT, particularly regarding the associated value, utility value, and cost. Similarly, Limeri et al. (2017) investigated the mentoring relationship between graduate students as mentees and postgraduate researchers as mentors through the lens of postgraduate mentors in the aspects of motivations for mentoring and their perceived outcomes. Daley and Zeidan (2020), on the other hand, focused on a particular group and showed that EVT is consistent with the mentoring programs in the aspects of motivation and experiences of participants with learning disabilities.

Even though numerous research has been conducted on diverse elements of NPM with EVT, the motivation and experience of the participants may vary by department. For instance, undergraduate students in teacher education programs can benefit from the program in the aspects of teacher professional development as a divergent outcome of the program from medical or engineering programs (Akinla et al., 2018; Cornu, 2005; Sattler et al., 2012). Since NPM may improve mentors' leadership, communication, and organizational skills (Hall & Jaugietis, 2011) as an outcome of the program, participation in an NPM program may be particularly important for pre-service teachers. The aim of the teacher education programs, which are adapting the innovations, taking quick actions, being solution oriented as well as renewing themselves for real life, aligns with the opportunities for pre-service teachers in NPM programs. It may be crucial to explore pre-service science teachers' motivation as mentors to participate in an NPM program developed in an online environment during the Covid-19 pandemic period, when students may need more academic, social, and professional support than before. Therefore, this study utilizes the EVT to investigate the motivations of pre-service teachers to participate in the NPM as a mentor and the costs they attach to participating in the program.

METHOD

Research Design

This research adopts a qualitative exploratory methodology, aligning well with the objectives laid out for studies of this nature as defined by Marshall and Rossman (2016). Such an approach is particularly suited for minimally explored topics and where limited existing literature exists (Creswell & Creswell, 2018). Specifically, the present study focuses on a relatively under-researched area, pre-service teachers' motivations for engaging as near-peer mentors. Due to the scant research available on this subject, this study aims to construct an initial conceptual framework to inform future investigations (Creswell & Creswell, 2018).
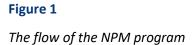
Open-ended, semi-structured interviews were conducted to capture a rich, multifaceted understanding. This qualitative data collection technique enables participants to express their viewpoints comprehensively and aligns with the discovery-oriented nature of exploratory research
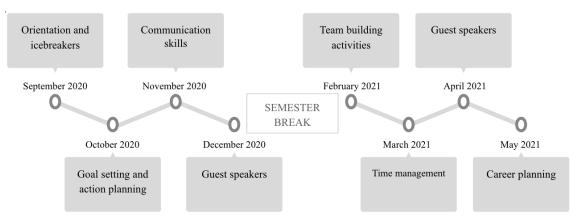
(Marshall & Rossman, 2016). An inductive thematic analysis was conducted to identify recurring patterns and themes in the collected data. This analytical approach is deemed suitable for under-investigated areas as it allows for data-driven exploration of the topic (Braun & Clarke, 2012). The sample size is intentionally small and purposively selected, consistent with the guidelines for exploratory research, which advocate for the richness of information over statistical generalizability (Marshall & Rossman, 2016). Furthermore, while the EVT serves as a guiding framework for our investigation, it is not the object of formal testing in this study. This flexible application of theoretical constructs is emblematic of the qualitative exploratory research model (Agee, 2009).

In summary, this investigation embodies the quintessential features of qualitative exploratory research, which include the pursuit of novel insights into less-examined phenomena, the use of open-ended data collection and analysis methods, a small and purposively chosen sample, and a flexible theoretical framework to illuminate the findings (Agee, 2009; Marshall & Rossman, 2016). This approach is congruent with established guidelines for conducting exploratory research in the educational context (Creswell & Creswell, 2018).

Procedure

This study was conducted at a large, research-intensive public university in Turkey. During the Covid-19 pandemic, an NPM program was developed to support first-year pre-service teachers. Junior and senior pre-service teachers volunteered as mentors in the NPM program. As part of the program, these volunteer mentors virtually met with first-year pre-service teachers four times each semester in the 2020-2021 academic year. The first meeting focused on introducing and explaining the purpose of the NPM program. Then, the first-year pre-service teachers listed their expectations for the meetings, and the content of the following sessions was determined according to their needs and expectations. The topics included various activities to enhance the mentoring experience and promote learning and growth (Figure 1).

Figure 1

The flow of the NPM program

As shown in Figure 1, the NPM program was designed to address a comprehensive range of areas, encompassing academic, social, career, and professional development. Through sessions collaboratively shaped to align with the unique needs and objectives of the mentees, the program

provided a targeted approach to skill acquisition, knowledge enhancement, and network building. Specific activities within the program were strategically crafted to cultivate these essential competencies and connections.

The first session was dedicated to an introductory overview, where the foundational principles and objectives of the program were articulated with icebreaker games. Additionally, the meeting provided a forum for mentees to voice their individual expectations for subsequent sessions. The second session focused on goal setting and action planning to guide mentees on specific action steps as a pre-service teacher, target dates, resources needed, potential obstacles and ways to manage challenges. The third session was dedicated on communication skills including conversations and activities on active listening, providing feedback, presentation abilities, etc. The fourth and seventh sessions included invited speakers to give tips and tricks to pre-service teachers about study skills, campus resources and services, as well as student clubs. The fifth session included team building activities to promote sense of belonging and a community of practice. The sixth session was on time management to help mentees develop time management skills and strategies. The last session was on conversations concerning post-graduate trajectories and vocational avenues within the domain of science education were a focal point of discussion.

Participants

Participants of the current study were twelve junior and senior pre-service teachers in the science education program who volunteered to be peer mentors. These twelve participants were between 21 and 26 years of age, and all of them were female. Participants were selected through purposive sampling. The selection criteria were that they were junior and senior pre-service science teachers who participated as mentors. The research objective was to investigate the motivations and perceived costs associated with pre-service teacher mentors. This approach is in line with the use of purposive sampling, a technique where participants are deliberately selected based on their specific relevance to the research questions, guided by predetermined criteria (Etikan et al., 2016). With a sample size of twelve participants, the study adhered to the principles of purposive sampling, prioritizing the attainment of nuanced, qualitative insights over statistical representativeness.

Data Collection

This study was designed as a qualitative inquiry to investigate the motivation of pre-service science teachers to participate in the NPM program as mentors, and the costs they attach to participating in the program. Data sources for the current study included semi-structured interviews with junior and senior pre-service teachers who participated in the NPM program voluntarily as mentors in the 2021 Spring semester to provide an in-depth understanding of their mentoring experience. The interview questions were approved by the university's human subject research review board (E-84391427-050.01.04-18323). Participants was informed about the study and filled out the consent form prior to data collection. The individual interviews were held by the first three authors via Zoom and, on average, were 30 minutes long. The interviews were audio-recorded and then transcribed.

In developing the interview protocol for the present study, the initial step involved a comprehensive literature review centered on the topic of near-peer mentoring programs. This review served to highlight existing research gaps, notably the dearth of studies exploring the motivations of pre-service teachers to act as mentors. Previous research indicated various benefits for mentors, such as enhanced leadership, teaching skills, and communication abilities (Hall & Jaugietis, 2011). However, the specific motivations that drive pre-service teachers to become mentors remained largely unexamined, thus

necessitating further inquiry. Given this identified research gap, the interview questions were strategically formulated to align closely with the study's objectives, particularly focusing on mentors' motivations and perceived costs associated with participation. The EVT framework (Eccles et al., 1983) served as the theoretical scaffolding for the structuring of the questions. A matrix was developed to map each interview question to the corresponding research question and EVT construct, thereby ensuring that the questions were anchored both in the study's aims and its theoretical underpinning.

Approximately 5-7 open-ended questions were devised, in accordance with Turner's (2010) guidelines, to afford participants the latitude to elaborate on their experiences and perspectives in depth. Predefined follow-up probes were also incorporated into the protocol for instances where further clarification or exemplification would be necessary. Expert methodology consultants reviewed the draft protocol, offering feedback with respect to its alignment with the study's goals and the clarity of the questions posed. Based on this external review, the protocol underwent subsequent revisions aimed at bolstering its validity. A pilot test was conducted with 2-3 participants, resulting in additional refinements based on these preliminary interviews. Ultimately, the final interview protocol emerged as a rigorously designed tool, firmly anchored in the existing literature, the study's explicit objectives, and its theoretical framework (Appendix 1). This meticulous design process contributes to the credibility and trustworthiness of the qualitative findings derived from the study.

Data Analysis

In this study, qualitative content analysis was used. Each participant was coded with numbers. Interviews were transcribed anonymously with assigned numbers. The data were analyzed using thematic analysis within the EVT framework. First, researchers constructed the codes and themes individually regarding the EVT framework. Then, the codes and themes were brought together and sorted out. Researchers selected, examined, simplified, summarized, and transformed the data. Common codes and themes were determined. The first three researchers independently read the transcribed interviews and coded them individually. Researchers compared coding results and discussed coding categories between reading episodes until reaching full agreement.

Ethical Principles

Ethics committee permission for this study was obtained from Rectorate of the University of Boğaziçi Social Sciences and Humanities Human Research Ethics Committee with the decision dated 18.06.2021 and numbered 2021/05.
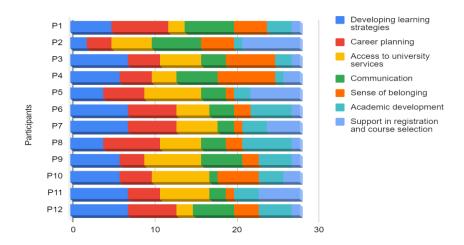
FINDINGS

According to the research questions, the results were formed into two categories as motivation and cost. For the first research question, utility, common problems, sense of belonging, and socialization codes emerged as the motivation of the participants. The utility value that the participants attached to the NPM program were the most mentioned category and had subcategories such as academic development, career planning, and personal/emotional support. The costs attached to the program are categorized as engagement and program. Low participation and lack of time were examples of the engagement category while unplanned schedule and lack of content were of the program category.

The Motivation of Participants to Participate in the Near-Peer Mentoring Program as a Mentor

The participants' motivation to participate in the NPM program was categorized into seven. The frequency from the most beneficial to the least as follows: (1) developing learning strategies, (2) career planning, (3) access to university services, (4) communication, (5) sense of belonging, (6) academic development, and (7) support in registration and course selection (see Figure 2).

Figure 2

The motivation of participants to participate in the NPM program

According to the analysis of the first research question, four subcategories were formed, which are utility, sense of belonging, socializing, and common problems (see Table 1). The highest motivation among participants to participate in the program was grouped in the utility category, where all the participants found the NPM program useful. The second most common motivation for participants to participate in the program was grouped in the category of common problems, where most of the participants stated the common problems experienced by mentees and mentors as a source of motivation to participate in the program. Sense of belonging and socializing also emerged as categories that participants indicated for the motivation to participate in the program as mentors.

Table 1

The Motivation of Participants to Participate in the NPM Program

Category	Subcategory	Number of Participants	Sample Participant Statements
Motivation	Utility	12	Participant 1: "My biggest motivation was that someone benefits from our experiences, changes their lives according to these experiences, and makes their lives easier for them."
	Common Problems	9	Participant 4: "I always say when I encounter with something that I wish someone had told me this before. For example, I had the thought of changing a department before or I had questions about how I could study for a course or there were questions about which teacher I should choose. There was no someone who could help me. There was no one I could ask. I said that if I participate in such a program as a mentor, I will help from the beginning of the preparation whether it is about who they should take in the course selection or how they should study."
	Sense of Belonging	3	Participant 2: "I was a remedial student, actually it took a long time for me to feel a sense of belonging to the school. The aim of the program was to help get to know the school, the culture of the university, the department, and the operation, and to provide guidance. I thought this program might be very useful. My motivation was that."
	Socialization	2	Participant 5: "When I was studying as an undergraduate, I said: I wish there was a guide for me. I wish I knew more people from departments or could meet with my professors or not only in class but also through different programs."

According to the analysis, the utility value that the participants attached to the NPM program were the most mentioned category and included subcategories in academic development, career planning, and personal/emotional support. Specifically, in terms of the utility of the NPM program for academic development, two subcategories emerged. The first one was the academic contribution, where most of the participants found the program useful considering learning about instructors and courses. The second one was content which included content development, improving communication skills, and classroom management. Half of the participants found the program valuable in terms of content development for science education (Table 2).

Table 2

Utility of the NPM Program for Academic Development

Category	Subcategory	Number of Participants	Sample Participant Statements
Utility value for academic development	Academic Contribution	8	Participant 3: "Probably not much. My expectation was not like a benefit, as I already said academically as well. Those meetings were like meeting with our friends. In other words, I don't think it adds anything academically to me as feedback because it's always been like information transfer. It was like we were having coffee with our friends. That's why I don't think it's a very professional benefit."
	Content	6	Participant 2: "Collecting content or, for example, coping with the problem when the participation is not high and producing new content has developed academically. I am studying in the science education department. One of the biggest parts of my job is to produce content and shape things according to the current situation. In this respect, it was academically useful."

In terms of the utility of the NPM program for career planning, half of the participants stated that the program was useful in terms of introducing different career paths and providing networking (Table 3). As networking, both mentees and mentors got to know each other and see how they work in a community. The participants stated that the program enabled mentees to learn career paths that they did not know before. The mentees also had a chance to communicate with the professors whose courses they did not take. Additionally, the participants emphasized that they also learned about different opportunities to advance in science education thanks to the communication they established with each other and with the professors. The program subcategory means the science teaching program. Some of the participants indicated that the NPM program was useful in terms of knowledge related to science teaching such as content creation, technological tools, useful websites for students, ice-breaking activities, and teaching and leading skills. Most of the mentors expressed that taking different responsibilities in meetings was preparing them to be a teacher. Even though the meetings had different topics than science education, the mentors had a chance to practice and improve their classroom management and leadership skills. In the non-utility subcategory, students expressed that they already know about their friends' experiences, so the program did not bring any utility in terms of career planning for mentors.

Table 3

Utility of the NPM Program for Academic Development

Category	Subcategory	Number of Participants	Sample Participant Statements
Utility value for career planning	Career Path	6	Participant 6: "In terms of career, there was a peer meeting about a master's degree. If you ask if it meant a lot to me on the first dates, no, but on the last dates, yes. What can happen when you graduated with a master's degree? My friend mentioned that he works for a company."
	Non-utility	5	Participant 12: "I would have benefited from the experiences of my friends as I listened to the mentors' own experiences during this process, but I already knew what everyone was doing, as we had a warm atmosphere in the department with the mentors. However, for someone who does not know, I think it will help."
	Program	4	Participant 2: "Planning, organization, producing content, communicating with people and maintaining them, answering questions, sharing experiences, and exchanging ideas are all part of our profession. These kinds of things are important because I am planning an academic career, not just working in the field. You set a purpose for something that is valuable and you work for it. You discuss the pros and cons. You are looking for a solution. These items are at the forefront of both academic and professional requirements."

In terms of the utility of the NPM program for personal/emotional support, all the participants found the program beneficial for themselves, and the vast majority of the participants found the program useful for socialization, happiness, and emotional satisfaction (Table 4). Since the program was conducted during distance education, participants had a chance to socialize with their peers. Moreover, that period was mentioned as depressive by most of the students for different reasons such as health problems, family problems, or unsuccessfulness. The participants regarded the program as bringing happiness because it provided an environment where they can get away from such problems. The participants stated that they were able to meet their social needs as there were alternative meeting times where they could spend time together with other students, share their experiences in that period, and find possible solutions for their problems. The way they support each other enabled them to achieve emotional satisfaction.

Table 4

Utility of the NPM Program for Personal/Emotional Support

Category	Subcategory	Number of Participants	Sample Participant Statements
Utility value	Socialization	11	Participant 1: "This program was very good for me in terms of sociality. I felt very good after each meeting. Starting to see such different people, talking about different things. It is time to talk for us because we are constantly listening during the lesson. Frankly, it was good for me that we were more active."
	Happiness	9	Participant 12: "Absolutely. I can definitely say here. Because it was a time when we were very depressed, I can say that those meetings really made us happy. I do not remember ever complaining."
	Emotional Satisfaction	5	Participant 2: "It is not just socialization, they are things that support each other when morale and motivation rise from there. I saw people after a day I spend alone, I chatted, it provided emotional satisfaction. It's nice to pass on what you know to people because people take advantage of it."

The Costs Participants Attached in Engaging in the Near-Peer Mentoring Program

The second research question was about the costs of the NPM program. The definition of the cost category was the stated sacrifices participants experience while serving as mentors in the NPM program. Half of the participants stated that they did not attach a cost to participating in the program. However, participants who attached a cost to participating in the program expressed the hardships considering engagement and the program (Table 5). The cost of engagement in the NPM program included low participation, lack of communication, workload, low motivation, failure to attend on time, and lack of time. The cost for program content in the NPM program included a lack of content, unplanned schedules, and the uncertainty of the content.

Table 5

Utility of the NPM Program for Personal/Emotional Support

Category	Subcategory	Number of Participants	Sample Participant Statements
Cost	Program content	11	Participant 2: "We may have had difficulties in producing content that appeals to everyone during this pandemic period."
	Engagement	9	Participant 6: "I just could not always attend meetings. Because it was a crowded team, there was difficulty in finding the common time."
	No-cost	5	Participant 4: "No, it was not difficult for me. It used to happen every two or three weeks. My classes were busy, yes, but it's not something that takes a long time. There was no difficulty for me, such as arranging meeting times, workload, or allocating time."

DISCUSSION

The current study focused on the motivation and cost of participating in the NPM programs. Similar to the finding of this research, the utility and intrinsic value categories are consistent with the literature (Budge 2006; Colvin & Ashman, 2010). However, the importance of the program might be different for mentors in line with the contents of the program and participation. When the program's utility is considered, mentors might regard one category as beneficial for mentees rather than mentors. Although the mentors stated academic development and support for courses as the second most useful aspect of this program, they indicated that the program did not contribute to their academic development because they evaluated the program in terms of both mentors' and mentees' points of view and they saw it as an experience sharing and conversation environment. This finding is consistent with the literature that indicates mentorship programs were effective in satisfaction but did not improve academic performance (Sanchez, 2006).

In the study of Terrion and Leonard (2007), they cited career-related function as one of the important features of the program. However, in the current study, mentors stated that they benefited from speakers and each other in terms of different career options, but they did not consider it a prominent aspect of the entire program. When the entire NPM program is considered, it has been seen that this program is quite beneficial in terms of personal emotional support, as well as support in registration and course selection in the literature, the importance of the ability to arrange a schedule together for meetings was emphasized as the difficulty of mentoring programs (Terrion & Leonard, 2007). Like the findings of this current study, relevant research also reported that mentors and mentees often use the lack of time to explain the cost associated with their mentoring relationships. Considering the costs attached to the program, when asked what can be done to overcome these difficulties, the vast majority of the participants offered suggestions about the development of the content of the program and promoting the program to the new coming students. Most of the participants indicated that

compulsory participation in the program and face-to-face meetings should be provided for close relationships among the participants. In addition, the vast majority of the participants stated that they would like to receive support/training for being mentors in order to improve the effectiveness of the NPM program.

Similar to the findings of the current study, Terrion and Leonard's study (2007) revealed that mentors had not been trained before, but as a result of the study, mentoring training was actually necessary, as it arose in the current study. Also, Terrion and Leonard (2007) suggested that taking at least one year of training to join the mentoring program as a mentor would make mentors more proficient, and this should be considered as a criterion for the choice of mentor. It has been emphasized that volunteering and training are necessary for successful mentors in their field (Terrion & Leonard, 2007). Similarly, in the current study, mentors stated that training is necessary and thus the program becomes more planned and effective. When considering the practical and research implications of this study considering the above results and discussions, this program can be conducted more planned in terms of time and content, and mentor training can be given to volunteers. The limitations of this research were that the number of participants was small and the interviews with mentees couldn't be conducted. Therefore, future research can be conducted with more participants from other departments and mentees. Furthermore, the voluntary participants of the current study were female, thus, further research may be conducted in a more gender balanced NPM program.

The findings of this study indicated differences in the perceived motivations and costs described by pre-service science teachers as peer mentors. Given the potential benefits to participants, NPM programs may be designed to provide clear roles, responsibilities, and expectations from mentors and mentees to maximize the support provided to mentees. This study will contribute to mentoring literature for the researchers to develop and design effective NPM programs when considering the mentors' perspectives. Future research may focus on the mentees' perspectives on the effectiveness of the NPM programs. The findings of this study may also lead researchers and educators who work on near-peer mentoring to find innovative approaches to improve the utility of the program for mentors.

Conclusion, Limitations and Recommendations

This study examined the motivations and costs associated with participating in NPM programs. The findings aligned with previous research regarding the utility and intrinsic value categories. However, mentors' perceptions of program importance varied based on content and participation. While mentors acknowledged the program's benefit to mentees, they did not view it as significantly contributing to their own academic development. The study also emphasized the value of emotional support in mentoring relationships. This may be particularly important in pandemic times.

Regarding the costs participants associated to the program, they suggested an improve in the program content to make it more relevant to the needs of the mentees, making participation compulsory, and when possible, organizing face-to-face meetings. Participants also indicated a need for mentor training to enhance program effectiveness. Future research could be conducted with a larger sample, including interviews with mentees, and considering gender balance. The findings of this study provide insights for promoting effective design of NPM programs, including clear roles, responsibilities, and expectations to escalate support for mentees.

Based on the findings of this study, several recommendations can be made to strengthen the effectiveness of the NPM programs and to promote the motivation of the mentors. First, a detailed

planning for the time and content of the NPM program is recommended to meet the needs and expectations of the mentees and mentors. NPM program developers may include emotional, academic, and professional support in the mentorship program. Including mentorship training is the second suggestion based on the findings of this study. Mentorship training could help mentors develop the skills and knowledge necessary to effectively support mentees. The training program could include communication skills, goal setting, and career guidance.

Another suggestion based on the findings of the study is incorporating clearly defined roles, responsibilities, and expectations for both mentors and mentees to improve the effectiveness of the program. NPM program developers and mentors could also be encouraged to include innovative approaches to promote the utility of the program. The innovative approaches could include integrating new technologies and exploring mentoring models addressing specific challenges.

Future research could also include a more gender-balanced participants to establish a more complete understanding of NPM programs. This may provide insights into potential gender differences in the mentoring motivations, costs, and outcomes. Finally, participants from different departments could help expanding the scope of the research and help developing a broader understanding of the effectiveness and impact of NPM programs across academic disciplines.

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Appendix 1

Interview Protocol

1. What is your motivation for participating in the peer mentoring program?
2. What were your expectations from this program?
3. Which topics were discussed in the group meetings within the program?
4. What was your contribution/influence in the group meetings within the program?
5. Did the peer mentoring program benefit/contribute to you? Please explain
6. Do you think the peer mentoring program helped/contributed to the mentees? Please explain
7. Has the peer mentoring program been challenging for you? Please explain
8. Do you think the peer mentoring program had any challenges for the mentees? Please explain
9. What do you think can be done to overcome the challenges you mentioned?

Availability of Data and Materials

Not applicable.