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A Mixed-Method Study of Pre-service Teachers' Self-efficacy in the Indonesian Teacher Professional Education Program

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ABSTRACT

In order to enhance the quality of national teacher selection in Indonesia, the government has introduced the Pre-service Teacher Professional Education Program (PTPE). This one-year program follows a four-year undergraduate degree and aims to produce highly qualified teachers. Teachers' self-efficacy, which refers to the belief in one's ability to perform teaching tasks successfully, is essential in ensuring effective education. When pre-service teachers have a strong sense of efficacy during their education programs, they are more likely to be confident in assisting students in achieving learning goals. Accordingly, this study aimed to examine the pre-service teachers' self-efficacy level and identify the significant factors contributing to their development. The researchers employed an explanatory sequential mixed-method approach (Creswell, 2012) involving 37 pre-service teachers to achieve a comprehensive understanding. The study utilized the Teachers' Sense of Efficacy Scale, the Sources of Self-Efficacy Inventory, and interviews as data collection instruments. The findings revealed two primary outcomes: 1) pre-service teachers exhibited an excessively high measure of self-efficacy, and 2) mastery experience, vicarious experience, verbal persuasion, and psychological arousal significantly contributed to pre-service teachers' self-efficacy. The implications of this research extend to future investigation, the PTPE program, teacher educators, teacher tutors, and school leaders to support the development of pre-service teachers' self-efficacy.

1. INTRODUCTION

In recent years, literature has emphasized investigating teachers' efficacy, which contributes to teacher professionalism and teaching effectiveness (Clark & Newberry, 2019; Pendergast et al., 2011; Ryan & Hendry, 2023). High levels of teacher self-efficacy are associated with a solid instructional approach and increased dedication to student achievement. Conversely, low self-efficacy leads to less effort in addressing diverse student needs. Hence, teachers' self-efficacy plays a critical role in influencing learning outcomes (Barni et al., 2019; Liu et al., 2021; Ma & Cavanagh, 2018), making it prominent sociopsychological variable in educational research.

Brief Description of Pre-service Teachers' Self-Efficacy

The concept of self-efficacy, derived from Bandura's social cognitive theory, (Bandura, 1977, 1986, 1997), is central to many studies (Berg & Smith, 2016). It refers to an individual's belief in their capacity to accomplish tasks (Ma & Cavanagh, 2018). Traits associated with self-efficacy include setting challenging objectives for those with high self-efficacy and avoiding risks for those with low self-efficacy. Additionally, individuals with high self-

efficacy believe that specific actions lead to success and are more likely to persevere in encountering difficulties. Self-efficacy levels also impact how individuals experience stress and depression, with higher levels correlating to a reduced likelihood of desperation.

In the context of educators, self-efficacy pertains to a teacher's belief in their ability to handle professional tasks and challenges (Barni et al., 2019, p.2). It predicts teachers' practices, influences cognitive processes and emotional states, and shapes actions in the classroom (Cansiz & Cansiz, 2019; Orakcı et al., 2023; Pas et al., 2012; Pendergast et al., 2011). Teacher's self-efficacy can be categorized into three areas: efficacy in enhancing student engagement, efficacy in delivering instructional strategies, and efficacy in classroom management (Duffin et al., 2012; Han & Wang, 2021; Tschannen-Moran & Hoy, 2001). Numerous studies have shown that high teacher self-efficacy is associated with improved well-being, motivation, job satisfaction, instructional quality, classroom management, and student achievement (Barni et al., 2019; Brouwers & Tomic, 2000; Caprara et al., 2006; Choi & Lee, 2016; Han & Wang, 2021; Ma & Cavanagh, 2018).

Sources of Pre-service Teachers' Self-Efficacy

Insufficient attention has been given to understanding the factors contributing to pre-service teachers' self-efficacy. This scarcity explains why some pre-service teachers strongly believe in their abilities while others do not (Gale et al., 2021; van Rooij et al., 2019). Thus, further research is needed to investigate the sources of self-efficacy (Clark & Newberry, 2019; Gale et al., 2021; van Rooij et al., 2019). Bandura (1977) identifies four major factors influencing an individual's efficacy: mastery experience, vicarious experience, verbal persuasion, and psychological arousal.

Mastery experience refers to an individual's successful activities in a task. It is considered the most influential factor (Clark & Newberry, 2019; Gale et al., 2021). When teachers believe they have succeeded in the classroom, they are more likely to have confidence in their abilities. Conversely, if they realize they have not been effective, they may doubt their capacity as teachers. Observing others performing similar tasks, known as vicarious experience, can also boost the self-confidence of novice teachers (van Rooij et al., 2019). Thus, early in educators' careers, when many instructional activities are unfamiliar, vicarious experiences may significantly impact self-efficacy (Gale et al., 2021). Verbal persuasion refers to the feedback and remarks significant and sincere individuals provide regarding someone's competence and performance. Pre-service teachers may receive it primarily from fellow students, mentors, and teacher educators. In theory, their self-efficacy will likely increase when they receive positive feedback (van Rooij et al., 2019). However, it may not be influenced by "empty praise" or feedback from individuals the pre-service teacher does not trust or respect (Cansiz & Cansiz, 2019; Gale et al., 2021). Psychological arousal encompasses emotions and internal states such as stress, tension, anxiety, and motivation, which can impact an individual's confidence. Positive emotions, such as excitement and optimism, can enhance self-efficacy, while negative emotions, such as nervousness, anxiety, and stress, can hinder their abilities and result in low self-efficacy (Burić et al., 2020; Cansiz & Cansiz, 2019; DeMauro & Jennings, 2016; van Rooij et al., 2019).

Pre-service Teacher Professional Education Program in Indonesia

Teacher education programs globally face pressure to cultivate proficient educators (Clark & Newberry, 2019). In Indonesia, the Parliament Research Centre claims the country encounters challenges with teacher qualifications and competencies (Arifa & Prayitno, 2019). Correspondingly, as of 2022, half of Indonesia's teachers were honorary teachers (Statistics Indonesia, 2022). Likewise, the national teachers' competency assessment revealed an average score of 57 out of 100 (Andina & Arifa, 2021). Indonesia is also experiencing a severe teacher shortage (Febriana et al., 2018; Karim, 2021).

In response, the Indonesian government introduced *Pendidikan Profesi Guru* (Teacher Professional Education; TPE) in 2017. This one-year training program follows a four-year undergraduate program and is compulsory for novice in-service and pre-service teachers with bachelor's degrees. In the international discourse, it is commonly understood that such a program is only catered to in-service teachers (Yusrina et al., 2022). However, in the Indonesian context, it is divided into two types: *PPG Dalam Jabatan* for in-service teachers and *PPG Prajabatan* for pre-service teachers, with the latter being the focus of this study (Pendergast et al., 2011).

Pre-service Teacher Professional Education (PTPE) students have significant responsibility as future

educators (Direktorat PPG, 2023). Hence, the curriculum offers meaningful learning opportunities connected to teaching practice (Direktorat PPG, 2023). The course comprises two semesters with a credit system (Direktorat PPG, 2023), totalling 39 units in Core Courses (33 units), Selective Courses (4 units), and Elective Courses (2 units). To achieve program and certification graduation, students must undergo assessments that evaluate pedagogical knowledge and practical skills (Direktorat PPG, 2023).

The Significance of the Study

The researchers acknowledged that while teacher self-efficacy has been extensively discussed in various disciplines and contexts, limited attention has been given to Indonesian PTPE students' self-efficacy and its contributing sources within the scholarly community, possibly due to the newness of the field. Most studies in Indonesia have focused on self-efficacy in in-service teachers and college students (Arofah, 2019; Damanik & Aldridge, 2017; Darta & Saputra, 2020; Krismiyati et al., 2020; Kristiandi, 2019; Megawati & Astutik, 2018; Othman & Masum, 2017; Rahman et al., 2014). Nonetheless, PTPE students hold a strategic position and responsibility as future teachers.

One significant topic in the discussion of teachers' self-efficacy is the teacher professional programs (Clark & Newberry, 2019; Pendergast et al., 2011; Yesilyurt et al., 2021). The initial teaching phase is crucial for developing teachers' self-efficacy (Pendergast et al., 2011), as it is a time when pre-service teachers compare what they have learned with the actual conditions of teaching professionals (Clark & Newberry, 2019). The level of self-efficacy is significantly influenced during this initial teaching experience, and once established, it tends to be resistant to change (Berg & Smith, 2016). Therefore, it may be easier to develop teacher self-efficacy during the early stages of teacher education than to make changes once these beliefs have been formed. Accordingly, understanding self-efficacy and its primary contributing factors can provide valuable insights into the current state of pre-service teachers' efficacy and essential elements in teacher development, where various sources of efficacy can play crucial roles. Hence, this study aimed to provide insights to support the well-being of pre-service teachers and accelerate teacher education growth. Correspondingly, the research sought to address the following research questions:

1. How self-efficacious are the participants in their ability to assist their future students in achieving learning goals?
2. Which sources (i.e., mastery experience, vicarious experience, verbal persuasion, and psychological arousal) significantly contribute to the development of participants' self-efficacy?

2. MATERIAL AND METHODS

This study employed a mixed methodology approach, combining quantitative and qualitative data collection techniques. While most self-efficacy studies relied on quantitative approaches (Berg, 2011), the researchers chose a mixed-methods design to gather comprehensive information and enhance interpretation (Berg & Smith, 2016). Likewise, this research utilized an explanatory sequential design (Creswell & Plano, 2018), incorporating qualitative interviews to gain further insights into the quantitative survey data. This approach illuminates correlations within the quantitative data and provides a deeper understanding of their formation. Additionally, the qualitative phase followed the quantitative phase to investigate the findings in more detail.

Participants

The questionnaire participants were 37 PTPE students studying various education disciplines. The majority were female (n=31, 84%). Among them, 57% were aged 26-30, 35% were aged 22-25, and 8% were 30 or older. They were enrolled in PTPE programs at eight different universities. Of the 37 participants, 20 agreed to be interviewed. However, due to study limitations, the researchers selected 10 participants for the interviews, including two males and eight females. The researchers chose them based on their ability to communicate their experiences and ideas clearly, eloquently, and thoughtfully. During data collection, the participants were in their last semester and had completed a 6-month fieldwork teaching assignment. Most were fresh graduates, while a few had 1-2 years of experience as novice teachers.

Data collection

To initiate data collection, the researchers invited PTPE students via WhatsApp groups to complete an online questionnaire. The invitations included study objectives, instructions, and confidentiality assurances. After completing the questionnaire, participants were invited to an interview. The researchers conducted one-on-one interviews via video calls to provide a comfortable and accurate environment for participants to express themselves (Creswell, 2012). The interview duration varied based on participant availability, averaging approximately 30 minutes.

Ethical considerations were strictly followed during the interviews. In this regard, participants received informed consent forms, ensuring they understood the research objectives and their expected roles. Likewise, participants had complete freedom to choose whether to participate, decline, or withdraw from the interview at any point. They were encouraged to seek clarification for any questions or concerns about their involvement. Moreover, the researchers avoided presenting harmful behaviours or false information to the participants.

Instruments

The researchers assessed participants' self-efficacy utilizing the short version of the Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Hoy, 2001), which measures three dimensions: instructional strategy, student engagement, and classroom management. It comprises 12 items, with four items per dimension. Participants rated their agreement with each statement on a 7-point scale (1= Not at all certain can do; 7= Absolutely certain can do). The TSES has been extensively validated and proven reliable in numerous studies worldwide (Duffin et al., 2012; Klassen & Chiu, 2010; Pfitzner-Eden, 2016), including a study in Indonesia where its reliability was demonstrated through Cronbach's alpha coefficient of .88 (Maulana et al., 2020). Furthermore, the scale was translated into Indonesian and reviewed by two proficient English Education lecturers. Cronbach's alpha coefficients of .83, .87, and .91 were obtained for the three dimensions, indicating high internal consistency. Table 1 below shows sample items from the TSES.

Table 1. Number and Sample Items of TSES

Dimensions of teachers' self-efficacy	Number of items	Sample items
Instructional strategy	4	How well can you implement alternative teaching strategies in your classroom?
Student engagement	4	How much can you do to motivate students who show low interest in schoolwork?
Classroom management	4	How much can you do to control disruptive behaviour in the classroom?

To identify self-efficacy sources among PTPE students, the researchers utilized the Sources of Self-Efficacy Inventory (SOSI) (Kieffer & Haley, 2000), based on Bandura's theory. The SOSI has 35 items rated on a 7-point scale, ("Definitely Very Untrue" to "Definitely Very True"). The researchers modified the inventory by removing repetitive and ambiguous items, resulting in a final version with 24 items. Table 2 below provides a summary of the items and quantities. Similar to the TSES approach, the researchers initially translated the modified SOSI. In this study, inventory reliability was assessed using Cronbach's alpha, indicaing high reliability for each dimension: mastery experience (α = .81), vicarious experience (α = .79), verbal persuasion (α = .85), and psychological arousal (α = .80).

Table 2. Number and Sample Items of SOSI

Sources of teachers' self-efficacy	Number of items		Items
	Original	Modified	
Mastery experience	9	7	I have developed many teaching skills by actually teaching.
Vicarious experience	9	7	Watching other teachers made mistakes has taught me how to be a more effective teacher.

Verbal Persuasion	10	5	I learn little about how to actually teach effectively from the suggestions of others.
Psychological arousal	7	5	My fear of making mistakes affects my ability to teach.

The researchers conducted semi-structured interviews to gain deeper insights into participants' self-efficacy levels and sources. In this regard, the interviews included open-ended and closed-ended questions, as recommended by Creswell (2012). The open-ended questions allowed participants to freely express their experiences, while the closed-ended focused on specific aspects. The interview was developed based on research objectives, such as asking participants about their teaching accomplishments, the influence of the PTPE program on their teaching confidence, and other experiences or factors contributing to their confidence as teachers.

Data analysis

The researchers employed the explanatory sequential design for data analysis (Creswell & Plano, 2018), consisting of two phases: quantitative and qualitative. In the quantitative phase, questionnaire responses were analyzed using SPSS version 25. It involved examining descriptive statistics (e.g., mean and standard deviation) and conducting multiple regression analysis to determine efficacy levels and identify significant sources. In the qualitative phase, a deductive thematic analysis (Braun & Clarke, 2006) was used to analyze and interpret interview data. A computer-assisted qualitative data analysis software (CAQDAS), ATLAS.ti 9, was employed for data management and In Vivo coding. An integrative analysis (Creswell & Plano, 2018; Ivankova et al., 2006) was ultimately performed, combining the results from both phases. Additionally, the findings of the first and second research questions were also interpreted.

3. FINDINGS
Pre-service teachers' self-efficacy levels
Quantitative findings

Quantitative findings indicated high self-efficacy across all dimensions: student engagement, instructional strategy, and classroom management. The participants were confident in effective instruction, motivating students, and creating a positive learning environment. Table 3 displays the descriptive statistics results, highlighting consistently high self-efficacy levels in student engagement (5.45), instructional strategy (5.61), and classroom management (5.45). Mean scores for all items exceed 5.0, with participants expressing the highest confidence in 'providing alternative explanations or examples when students are confused' (5.92) and 'building students' belief in their academic abilities' (5.68). Meanwhile, the lowest mean score was observed in 'assisting families in supporting their children's academic progress (5.14).

Table 3. Summary of Descriptive Statistics Results

TSE Dimensions	Measured Items	Min	Max	Mean	Std. Dev.	Mean	Std. Dev.
Student engagement	Getting students to believe they can do well in schoolwork.	4	7	5.68	.784	5.45	.94
	Helping students value learning.	4	7	5.57	.835		
	Motivating students with low interest in schoolwork.	3	7	5.41	.896		
	Assisting families in helping their children do well in school.	2	7	5.14	1.134		
Instructional strategy	Providing an alternative explanation or example when students are confused.	4	7	5.92	.829	5.61	.85
	Crafting good questions for students.	4	7	5.65	.753		
	Implementing alternative strategies in the classroom.	4	7	5.54	.900		

	Using a variety of assessment strategies.	4	7	5.32	.818		
Classroom management	Calming disruptive or noisy students.	3	7	5.57	.899	5.45	.89
	Establishing a classroom management system with each group of students.	4	7	5.57	.835		
	Controlling disruptive behavior in the classroom.	3	7	5.38	.924		
	Getting children to follow classroom rules.	3	7	5.30	.909		

Qualitative findings

In interviews, participants consistently demonstrated high self-efficacy as teachers, expressing their ability to effectively implement instructional strategies, engage students, and create a conducive classroom atmosphere. The following comments highlight their confidence in enhancing teaching strategies and emphasize the importance of preparation for successful delivery. Participants made the following remarks when discussing their preparation:

I think I am confident enough in my ability to teach students effectively. By mastering the subject of the material that I will teach, I am able to deliver clear explanations. (P1)
Yes, I can (create effective instruction), I always consider the students' characteristics before preparing lessons and assessments. It is important as it helps achieve learning outcomes. (P2)

During the interviews, participants demonstrated their proficiency to use various teaching methods and customized assignments to address individual students' needs and values. They frequently mentioned:

I utilize a student-centered approach and teaching at the right level. These approaches help my teaching suitable to students' needs. I see the students become more attached to the material and comfortable with the learning environment. (P4)
I always use a variety of learning models to accommodate the various learning styles of students... It turns out that this has a positive impact. The students become actively asking questions and expressing opinions. (P6)

Regarding their ability to engage students during lessons, some participants expressed confidence in enhancing students' attention, curiosity, and motivation. Accordingly, they shared the following responses:

Yes, I think I can do it. Most of the time, I do not only teach by talking, but also by using technology tools such as videos. Next, I stimulate students to ask. In addition, I do various learning assessments… By doing so, I see students are actively involved in the lesson. (P3)
… It is important to determine learning that is based on the student's profile. I think this is effective for building student engagement… They become confident in what they present, and feel related to the material. (P4)

Significant sources of teachers' self-efficacy
Quantitative Findings

Multiple regression analysis examined the linear contribution of various self-efficacy sources to pre-service teachers' overall self-efficacy. The predictor variables significantly predicted 49% of the variability (R^2 = .494). Furthermore, ANOVA test results in Table 4 depicted the significance of the variance ratio ($F_{(4, 33)}$ = 7.814) and the probability value (p= .01 < 0.5).

Table 4. ANOVA test results for teachers' self-efficacy and its sources

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1282.215	4	320.554	7.814	.01
	Residual	1312.758	32	41.024		
	Total	2594.973	36			

a. Dependent Variable: Teachers' self-efficacy
b. Predictors: (Constant), Psychological arousal, Verbal persuasion, Vicarious experience, Mastery experience.

Table 5. Coefficients test results for teachers' self-efficacy and its sources

Models		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	β		
1	(Constant)	5.323	15.811		.337	.01
	Mastery experience	1.213	.459	.594	2.639	.01
	Vicarious experience	.255	.519	.082	.492	.03
	Verbal persuasion	.987	.527	.312	1.873	.04
	Psychological arousal	.669	.534	.251	1.254	.02

a. Dependent Variable: Teachers' self-efficacy

Table 5 shows the regression coefficients for each dimension of the predictor variables, indicating that they positively and significantly contributed to predicting pre-service teachers' self-efficacy. The dimension with the highest β value was mastery experience (β = .594), followed by verbal persuasion (β = .312). Further statistical tests revealed that pre-service teachers scored higher in self-efficacy when they had successful teaching experiences (B = 1.213, p = .01 < .05), meaningful classroom observations (B = .255, p = .03 < .05), and constructive evaluative comments from others (B = .987, p = .04 < .05), as well as experienced more positive emotions and fewer negative emotions during teaching (B = .255, p = .02 < .05).

Qualitative findings
Mastery experience: Discovering effective teaching strategies
During the interviews, participants responded positively to the questions, agreeing that pedagogical experience enhanced self-efficacy. They found their teaching strategies rewarding when successfully igniting students' enthusiasm and engagement. The following are some notable teaching experiences they shared:

The most enjoyable teaching experiences were when the students participated actively... It boosted my confidence as my method successfully fostered their interest or engagement. (P2)

One of my best teaching experiences was when I taught a complicated subject... I carefully planned the lesson using various learning tools and methods... I invited students to discussions and used actual illustrations to explain difficult concepts. When I observed positive responses, my sense of satisfaction and confidence grew. (P3)

One participant emphasized the significance of designing learning experiences that connected what students learned in school to real-world problems. She felt a sense of satisfaction and confidence when she successfully achieved it.

… I was happy when the learning strategy that I used allowed students to be able to relate the knowledge they had in real life to the material that I was teaching. (P7)

The participants emphasized the impact of Pre-Service Teacher Professional Education (PTPE) fieldwork on teaching mastery. In this regard, they viewed mastery experiences as crucial for developing pedagogical competence. For most participants, PTPE fieldwork offered practical knowledge in identifying students' needs, designing effective learning experiences, and creating assessments.

> *The best teaching experience occurred during my fieldwork. I got the real experience to know the actual conditions of the class, identify the various characteristics of students, and how to compile good learning materials. (P4)*

> *We were prepared to create an effective teaching and assessment, which benefited me greatly. My teaching skills increased, and it automatically made me more confident. (P9)*

The theoretical and practical knowledge gained from PTPE were found to be significantly influential. In this regard, the participants expressed that they realized it was advantageous in enhancing their self-efficacy.

Vicarious Experience

Observing tutoring sessions aided pre-service teachers in acquiring knowledge, teaching skills, and boosting self-confidence. These observations were particularly valuable for gaining new experiences, especially in challenging classroom environments.

> *.. I was eager to observe my tutor. It motivates me to adopt best practices from her. Observing her was like an evaluation to improve my teaching. I gained confidence in both class management and learning materials. (P2)*

> *When I watched teachers were working, I learned a lot. They have far more experience than I do. One thing was about making decisions on the spot when the class environment wasn't quite well. I learned how they make impromptu changes to make sure that learning keeps going well. (P5)*

Furthermore, one participant highlighted the tutor's assistance in comprehending and creating a learning design aligned with the latest national curriculum. The tutor also imparted previously unacquired knowledge from her bachelor's degree.

> *I gained invaluable experience when observing tutors, I gained a lot of knowledge that I might not have gotten before when I was in college. From the tutor, I got knowledge about how to design the Kurikulum Merdeka module which I had never gotten in college. (P6)*

However, in some cases, participants reported feeling inadequate during observation. They perceived their tutor to be more skilled and effective than themselves.

> *When I saw my tutor was teaching, I experienced feelings of inferiority. On the one hand, I am still lacking of teaching practice. On the other, I also need this observation to improve my teaching. (P7)*

Verbal Persuasion

Many participants noted that receiving constructive feedback from lectures, tutor teachers, and peers significantly boosted their confidence in the teaching practice. This feedback was valuable in evaluating and improving their teaching and problem-solving skills, especially when starting. The following are some typical responses:

> *I would be very grateful if I get a suggestion, whether it's from lecturers, fellow students, tutors, or other parties. With these suggestions, I can reflect more on the strengths and weaknesses. I have applied this and it can help improve my teaching. (P1)*

Suggestions from lecturers, tutors, and colleagues are important. I can understand my strengths and areas for improvement. I can improve my teaching methods, develop lesson plans better, and adapt to the needs and characteristics of students. It automatically increases my confidence. (P8)

The interviews revealed that informal positive feedback from students also significantly increased pre-service teachers' self-efficacy. The following excerpt displays how one participant became more self-efficacious after engaging in a discussion with her students:

… Having students talk about their preferences has helped me improve my teaching confidence. During those discussions, my students and I evaluate my teaching and their learning to establish a balance that helps them learn better. (P4)

In addition, the positive comments and suggestions provided by school leaders also increased participants' sense of self-efficacy.

I once talked with one of the vice principals during my fieldwork. He was a very nice person. He encouraged and motivated me. Also, He told me that the school would do as best as possible to facilitate us develop teaching skills…. This experience more or less increased my confidence. (P6)

Psychological arousal

The interview data revealed that the emotional state of pre-service teachers affected their teaching performance. In this regard, enthusiastic and confident participants demonstrated higher self-efficacy in managing the class effectively.

Of course, it has an effect. When I am excited and happy, I tend to teach more interactively and positively… (P1)

… If my mood is good, of course, it will have a positive impact as I will become more committed to carrying out my job. (P2)

On the contrary, negative emotions such as exhaustion, anxiety, stress, or irritation undermined their self-efficacy and hindered the creation of an excellent learning environment.

… To be honest, when I'm in a bad mood, I don't feel passionate about doing my job. … (P2)

… With a lot of workloads from PTPE and the school, I was worried that my fatigue would negatively influence the way I taught and hinder the students from learning… (P5)

One participant shared an example of a classroom incident that caused her to experience negative emotions:

… for example, when I found that the teaching tools were not functioning properly, which hindered the learning process. During this condition, I became agitated and irritated, and then my way of speaking began to stutter…(P2)

Participants were fully aware that such negative emotions could lead to undesirable outcomes. Thus, they tried to cope with them and prevent them from interfering with their teaching.

My mood frequently influences how I teach. But I don't want my students to know if I am in a bad mood…. However, to handle it, I tried to calm down, took a breath, and started thinking about what should I do. In that way, I can still control my emotions when the class is not going well. (P5)

The present study aimed to investigate pre-service teachers' self-efficacy and its contributing sources.

Hence, both quantitative and qualitative data were incorporated. The pre-service teachers reported high self-efficacy in student engagement, instructional strategy, and classroom management. In this context, they believed in their ability to deliver effective instruction, motivate students, and create a positive learning environment. Regarding the sources of self-efficacy, four factors significantly predicted their self-efficacy, with mastery experience being the most dominant. Pre-service teachers attributed their self-efficacy primarily to their successful teaching experiences, particularly during the PTPE fieldwork. They felt satisfied and competent when their teaching strategies worked well, and they gained practical knowledge from their experiences in the field. The pre-service teachers also drew self-efficacy from other sources, such as vicarious experience, verbal persuasion, and psychological arousal. They learned from observing their tutors and peers, received constructive feedback from various parties, and dealt with positive and negative emotions during their teaching experiences.

4.   DISCUSSION

This mixed-method study examined self-efficacy among students in the Pre-service Teacher Professional Education Program and identified the sources influencing its development. In regards to the first objective, the questionnaire and interview responses indicated a high level of self-efficacy in all dimensions, such as instructional strategies, student engagement, and classroom management. These findings align with recent reports (Clark & Newberry, 2019; Gale et al., 2021; Liu et al., 2021; Orakcı et al., 2023). The participants demonstrated understanding of their educator role and determination to adapt teaching approaches for an optimal learning environment. They expressed confidence in maintaining discipline, order, attention, focus, and learning performance in the classroom.

These results suggest that teachers with a strong sense of efficacy tend to have effective teaching methods and are committed to overcoming challenges (Barni et al., 2019; Liu et al., 2021; Ma & Cavanagh, 2018; van Rooij et al., 2019). Nonetheless, participants' positive responses might have exaggerated their self-efficacy and their perception of being well-prepared teachers capable of managing classrooms and handling challenges. They frequently expressed idealistic conditions and ignored the shortcomings of the Indonesian education system, such as lack of facilities, limited access, large class sizes, and frequent curriculum changes (Dewantara, 2020; Febriana et al., 2018; Karim, 2021; Widiati et al., 2018). It might be due to their limited teaching experience during the fieldwork, which did not expose them to the full range of challenges encountered by teachers. Additionally, it should be noted that the fieldwork took place in relatively more developed schools with better facilities, easier access, and academically inclined students. Other factors that influenced their perceptions included their past and current educational experiences as students and sentimental memories of their educational backgrounds that fostered a belief in their teaching abilities (Pendergast et al., 2011).

Regarding the second research objective, multiple regression and interview thematic analysis indicated that all four sources significantly predicted pre-service teachers' self-efficacy. Mastery experience was the most influential source, which aligns with the belief that practical experience is the best preparation for pre-service teachers in real classroom settings (Pendergast et al., 2011). This result is consistent with previous research (Cansiz & Cansiz, 2019; Gale et al., 2021; Pendergast et al., 2011; Ryan & Hendry, 2023; van Rooij et al., 2019; Yesilyurt et al., 2021) except for Clark & Newberry's (2019). Despite limited pedagogical experience, mastery experience was critical for the participants, likely because they had completed six months of practical teaching during their fieldwork, gaining successful teaching experiences. Participants also considered minor successes, such as delivering materials based on a plan or directing students' attention, as instances of mastery experience (van Rooij et al., 2019).

The present study also uncovered that vicarious experiences played a role in affecting self-efficacy, although they had the least impact compared to other sources. The extent of the influence of vicarious experience on self-efficacy remains a subject of ongoing debate in previous research. While this research results regarding vicarious experience differ from some published studies (Çapa-Aydın et al., 2013; Pfitzner-Eden, 2016; van Rooij et al., 2019), they are consistent with those of Cansiz & Cansiz (2019), Clark & Newberry (2019), Yesilyurt et al., (2021). In this study, most participants viewed observing others teach as a valuable activity for acquiring new knowledge and enhancing their confidence. However, some reported the opposite effect, stating that observing a more capable teacher reduced their confidence. This circumstance supports the notion that observational experiences may produce referential comparisons. In this context, pre-service teachers' self-efficacy is enhanced when they make favorable comparisons but diminished when they perceive others as more competent (Gale et al., 2021).

The significant influence of vicarious experience on self-efficacy aligns with Bandura's (1997) assertion that it plays a vital role when individuals encounter new tasks and lack substantial prior experience as they seek out better models. It might explain why vicarious experiences have a significant effect on the self-efficacy of pre-service teachers.

Verbal persuasion, also known as social persuasion, was found to be the second most influential factor after mastery experience, according to the quantitative analysis results. These findings support the study by Gale et al., (2021), who also found that the combination of social persuasion and mastery experiences had a powerful impact on enhancing teachers' self-efficacy. The significant influence of verbal persuasion has also been observed in other previous studies, such as Clark & Newberry (2019), Liu et al., (2021), and Pfitzner-Eden, (2016). However, van Rooij et al., (2019) failed to find a correlation between verbal persuasion and pre-service teachers' self-efficacy. The present study revealed that participants frequently expressed positive attitudes toward suggestions and feedback from other pre-service teachers, tutor teachers, professors, and school leaders. In this regard, they saw feedback as a helpful input that improved their pedagogical skills. These findings are consistent with Ryan & Hendry's (2023) study, in which teachers did not specifically identify being "persuaded" as a source of self-efficacy, but rather appreciated and absorbed supportive feedback related to the technical aspects of teaching. Moreover, the interview data indicated that positive and warm student feedback also contributed to increased teacher self-efficacy, as pre-teachers developed friendly relationships and received good feedback on their teaching through spoken interpersonal dialogues (Liu et al., 2021).

Another finding of this study was that pre-service teachers' self-efficacy could be predicted by both positive and negative emotional states. These results partially corroborate the findings of previous research (Burić et al., 2020; DeMauro & Jennings, 2016; Gale et al., 2021; Klassen & Chiu, 2010). Upon closer examination of the quantitative and qualitative analysis, it was evident that the participants tended to experience positive emotions. This finding was unsurprising, as individuals with higher levels of self-efficacy generally exhibit more positive emotions (Burić et al., 2020). However, it is important to note that the quantitative instrument employed in this research did not clearly differentiate between positive and negative psychological arousal, as both types of feelings were categorized under the term "psychological arousal." Furthermore, an interesting finding emerged from the interviews, as their responses indicated that participants could maintain self-efficacy even when experiencing negative emotions. It suggests that participants recognized the potential negative impact of stress and anxiety on their teaching and took preventive actions. It aligns with the prediction made by DeMauro & Jennings (2016), who mentioned that experiencing stress might prompt pre-service teachers to focus and better prepare for upcoming challenges. One possible explanation was that participants were psychologically prepared when they enrolled in PTPE, drawing on the knowledge and experience gained from their bachelor's education to anticipate emotional challenges.

5. LIMITATION AND IMPLICATION

Although significant efforts were made to ensure a robust research design and analysis, this study had several limitations that should be considered. Firstly, it is important to approach the data with caution due to the small sample size of participants. As a result, the generalizability of the findings was limited, and they might not be applicable to broader contexts. Conducting further studies with a wider and more diverse range of participants is recommended to address this limitation. Secondly, it is worth noting that most participants in this study were female. Therefore, future researchers are encouraged to ensure a balanced representation of genders in their studies to avoid potential biases. Thirdly, the present study data were obtained at a single point in time, making it impossible to determine the direction of pre-service teachers' self-efficacy until they become certified in-service teachers. Hence, these limitations encourage future studies to employ longitudinal analysis, as self-efficacy can be influenced by various factors over time, including personal factors, social interactions, and the environment (Bandura, 1986). Lastly, it is essential to acknowledge that this study heavily relied on the Sources of Self-Efficacy Inventory (Kieffer & Haley, 2000), which contains four dimensions of self-efficacy sources. However, recent studies have suggested that there were additional sources that should be considered. For instance, mastery of content knowledge, pedagogical knowledge, and technological knowledge have been identified as crucial factors in predicting self-efficacy (Liu et al., 2021; van Rooij et al., 2019). Furthermore, while this mixed-method study revealed a distinction between positive and negative psychological arousal affecting self-efficacy, the scale being involved did not capture this distinction. Therefore, future investigations should

consider incorporating additional sources of self-efficacy.

Despite these limitations, the present study employed a mixed-method design, which proved to be valuable in enhancing understanding of pre-service teachers' self-efficacy levels and identifying significant predictors. By incorporating qualitative interviews alongside quantitative measures, the researchers gained deeper insights and improved the interpretation accuracy. Accordingly, this study found that pre-service teachers displayed a high sense of self-efficacy but tended to overestimate their ability to achieve learning goals. In this regard, it is necessary to note that excessive levels of self-efficacy can have negative consequences when pre-service teachers encounter the actual challenges of their profession (Pendergast et al., 2011). Thus, they should be mindful of the diverse conditions present in schools in Indonesia and be prepared to face unexpected scenarios. Additionally, these findings suggest several courses of action for the PTPE to provide a more comprehensive understanding of the current educational challenges faced by the Indonesian government. Moreover, the fieldwork in this study primarily took place in more privileged schools, so the PTPE is suggested to expand fieldwork opportunities to underdeveloped schools to provide pre-service teachers with a more realistic teaching experience.

Regarding the second research question, all four sources significantly predicted pre-service teachers' self-efficacy. Firstly, the most prominent finding from this study was that mastery experience emerged as the most significant predictor. However, van Rooij et al., (2019) argued that pre-service teachers' self-efficacy could potentially decline when they repeatedly experience failures during their initial teaching attempts. van Rooij et al. (2019) further mentioned that these failures might be attributed to heavy workloads and insufficient guidance. Accordingly, this study recommends that PTPE curriculum developers and teacher educators design tasks with a gradual increase in complexity, starting from smaller responsibilities. This approach is believed to help pre-service teachers build and maintain a robust self-efficacy that can withstand occasional setbacks (van Rooij et al., 2019). Secondly, the study found empirical evidence supporting the significant roles of verbal persuasion and psychological arousal in influencing self-efficacy. Consequently, teacher educators, teacher tutors, and school leaders are encouraged to provide supportive feedback and create positive learning environments when pre-service teachers encounter difficulties. Thirdly, the results indicated that self-efficacy could be predicted by observing other teachers' success. Nevertheless, compared to the other sources, this factor gained the lowest score in the quantitative analysis. It suggests that teacher educators and teacher tutors should support pre-service teachers by facilitating successful practice modelling, enabling them to identify their strengths and weaknesses.

6.   CONCLUSION

The present study was designed to determine the PTPE students' self-efficacy levels as well as their contributing sources or factors. The results indicated that the participants had high levels of self-efficacy. Additionally, all four sources (mastery experience, vicarious experience, verbal persuasion, and psychological arousal) were found to significantly predict self-efficacy. These findings have significant implications for how the learning activities provided by the PTPE were related to the self-efficacy of pre-service teachers. With these insights, the PTPE could continue its efforts to provide pre-service teachers with warm and valuable experiences, ultimately ensuring that they graduate as confident, competent, and highly effective individuals who are prepared for the educational responsibilities.

REFERENCES

Andina, E., & Arifa, F. N. (2021). Problematika Seleksi dan Rekrutmen Guru Pemerintah di Indonesia. *Aspirasi: Jurnal Masalah-Masalah Sosial*, *12*(1), 85–105. https://doi.org/10.46807/aspirasi.v12i1.2101

Arifa, F. N., & Prayitno, U. S. (2019). Peningkatan kualitas Pendidikan: Program Pendidikan Profesi guru Prajabatan dalam Pemenuhan kebutuhan guru Profesional di indonesia. *Aspirasi: Jurnal Masalah-Masalah Sosial*, *10*(1), 1–17. https://doi.org/10.22212/aspirasi.v7i1.1084

Arofah, A. A. (2019). Financial Literacy, Self-Efficacy, and Financial Behaviour of College Students International. *International Journal of Pedagogy and Teacher Education (IJPTE)*, *3*(2). https://doi.org/10.20961/ijpte.v3i2.17546

Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. In *Psychological Review* (Vol. 84, Issue 2).

Bandura, A. (1986). Social foundations of thought and action. In *Englewood Cliffs, NJ*. Prentice-Hall.

Bandura, A. (1997). Self-efficacy: The exercise of control. In *Self-efficacy: The exercise of control.* W H Freeman/Times Books/ Henry Holt & Co.

Barni, D., Danioni, F., & Benevene, P. (2019). Teachers' self-efficacy: The role of personal values and motivations for teaching. *Frontiers in Psychology*, *10*(July). https://doi.org/10.3389/fpsyg.2019.01645

Berg, D. (2011). *An international comparative study of the teacher efficacy beliefs and concerns about teaching of preservice teachers in Malaysia, New Zealand, and England* [Doctor of Education, University of Otago]. https://ourarchive.otago.ac.nz/handle/10523/1691

Berg, D. A. G., & Smith, L. F. (2016). Preservice Teacher Self-Efficacy Beliefs. In G. Sussane & D. Pendergast (Eds.), *Asia-Pacific Perspectives on Teacher Self-Efficacy* (pp. 1–17). SensePublishers. https://doi.org/https://doi.org/10.1007/978-94-6300-521-0_1

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Brouwers, A., & Tomic, W. (2000). A longitudinal study of teacher burnout and perceived self-efficacy in classroom management. *Teaching and Teacher Education*, *16*(2), 239–253. https://doi.org/https://doi.org/10.1016/S0742-051X(99)00057-8

Burić, I., Slišković, A., & Sorić, I. (2020). Teachers' Emotions and Self-Efficacy: A Test of Reciprocal Relations. *Frontiers in Psychology*, *11*(August). https://doi.org/10.3389/fpsyg.2020.01650

Cansiz, M., & Cansiz, N. (2019). How Do Sources of Self-Efficacy Predict Preservice Teachers' Beliefs Related to Constructivist and Traditional Approaches to Teaching and Learning? *SAGE Open*, *9*(4). https://doi.org/10.1177/2158244019885125

Çapa-Aydın, Y., Uzuntiryaki-Kondakçı, E., Temli, Y., & Tarkın, A. (2013). Adaptation of Sources of Self-Efficacy Inventory into Turkish. *Elementary Education Online*, *12*(3), 749–758. http://ilkogretim-online.org.tr

Caprara, G. V., Barbaranelli, C., Steca, P., & Malone, P. S. (2006). Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level. *Journal of School Psychology*, *44*(6), 473–490. https://doi.org/10.1016/j.jsp.2006.09.001

Choi, E., & Lee, J. (2016). Investigating the relationship of target language proficiency and self-efficacy among nonnative EFL teachers. *System*, *58*(June), 49–63. https://doi.org/10.1016/j.system.2016.02.010

Clark, S., & Newberry, M. (2019). Are we building preservice Teacher self-efficacy? A large-scale study examining Teacher education experiences. *Asia-Pacific Journal of Teacher Education*, *47*(1), 32–47. https://doi.org/10.1080/1359866X.2018.1497772

Creswell, J. W. (2012). *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research* (4th ed.). Pearson Education.

Creswell, J. W., & Plano, V. (2018). *Designing and Conducting Mixed Methods Research* (3rd ed.). Sage.

Damanik, E., & Aldridge, J. (2017). Transformational Leadership and its Impact on School Climate and Teachers' Self-Efficacy in Indonesian High Schools. *Journal of School Leadership*, *27*(2), 269–296. https://doi.org/https://doi.org/10.1177/105268461702700205

Darta, D., & Saputra, J. (2020). Self-Efficacy: Analysis of Learning Outcomes of Teacher Education Professionals (PPG). *MaPan: Jurnal Matematika Dan Pembelajaran*, *8*(2), 248–263. https://doi.org/10.24252/mapan.2020v8n2a6

DeMauro, A. A., & Jennings, P. A. (2016). Pre-service teachers' efficacy beliefs and emotional states. *Emotional and Behavioural Difficulties*, *21*(1), 119–132. https://doi.org/10.1080/13632752.2015.1120057

Dewantara, I. P. M. (2020). Curriculum changes in Indonesia: Teacher constraints and students of prospective teachers' readiness in the implementation of thematic learning at low grade primary school. *Elementary Education Online*, *19*(2), 1047–1060. https://doi.org/10.17051/ilkonline.2020.696686

Direktorat PPG. (2023). *Prajabatan - Direktorat Pendidikan Profesi Guru (PPG)*. https://ppg.kemdikbud.go.id/prajabatan-landing-page

Duffin, L. C., French, B. F., & Patrick, H. (2012). The Teachers' Sense of Efficacy Scale: Confirming the factor structure with beginning pre-service teachers. *Teaching and Teacher Education*, *28*(6), 827–834. https://doi.org/10.1016/j.tate.2012.03.004

Febriana, M., Nurkamto, J., Rochsantiningsih, D., & Muhtia, A. (2018). Teaching in Rural Indonesian Schools: Teachers' Challenges. *International Journal of Multicultural and Multireligious Understanding*, *5*(5), 11–20. https://doi.org/10.18415/ijmmu.v5i5.305

Gale, J., Alemdar, M., Cappelli, C., & Morris, D. (2021). A Mixed Methods Study of Self-Efficacy, the Sources of Self-Efficacy, and Teaching Experience. *Frontiers in Education*, *6*. https://doi.org/10.3389/feduc.2021.750599

Han, Y., & Wang, Y. (2021). Investigating the Correlation Among Chinese EFL Teachers' Self-efficacy, Work Engagement, and Reflection. *Frontiers in Psychology*, *12*(October). https://doi.org/10.3389/fpsyg.2021.763234

Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice. *Field Methods*, *18*(1), 3–20. https://doi.org/10.1177/1525822X05282260

Karim, S. A. (2021). Mapping the Problems of Indonesia's Education System: Lessons Learned from Finland. *Tell : Teaching of English Language and Literature Journal*, *9*(2), 86. https://doi.org/10.30651/tell.v9i2.9368

Kieffer, K. M., & Haley, J. A. (2000, April 25). Development and validation of the sources of self-efficacy inventory (SOSI): Exploring a new measure of teacher efficacy. *The Annual Meeting of the National Council on Measurement in Education*.

Klassen, R. M., & Chiu, M. M. (2010). Effects on Teachers' Self-Efficacy and Job Satisfaction: Teacher Gender, Years of Experience, and Job Stress. *Journal of Educational Psychology*, *102*(3), 741–756. https://doi.org/10.1037/a0019237

Krismiyati, K., Musesil, P., & Yulia, H. (2020). Pre Service Teachers' Self-efficacy in Professional Competence Courses Offered at Faculty of Information Technology in a Private University in Salatiga. *International Journal of Active Learning*, *5*(2), 62–70. https://doi.org/10.15294/ijal.v5i2.27609

Kristiandi. (2019). The Inclusion of Metacognitive Listening Strategy Instruction for The Development of Self-Efficacy in Learning Listening Skills. *International Journal of Pedagogy and Teacher Education (IJPTE)*, *3*(2). https://doi.org/10.20961/ijpte.v3i2.35957

Liu, H., Chu, W., & Wang, Y. (2021). Unpacking EFL Teacher Self-Efficacy in Livestream Teaching in the Chinese Context. *Frontiers in Psychology*, *12*(August). https://doi.org/10.3389/fpsyg.2021.717129

Ma, K., & Cavanagh, M. (2018). Classroom ready? Pre-service teachers' self-efficacy for their first professional experience placement. *Australian Journal of Teacher Education*, *43*(7), 134–151. https://doi.org/10.14221/ajte.2018v43n7.8

Maulana, H., Rangkuti, A. A., Dwiutami, L., Fakultas, W., Psikologi, P., Negeri, U., & Sumintono, J. B. (2020). Testing of the Indonesian Version of the Instrument Teachers' Sense of Efficacy Scale Using Rasch Modelling. *ANIMA: Indonesian Psychological Journal*, *35*(2), 133–156. https://doi.org/10.24123/aipj.v35i1.2905

Megawati, F., & Astutik, Y. (2018). Teaching Practicum: Investigating EFL Pre-service Teachers' Self Efficacy. *English Review: Journal of English Education*, *7*(1), 125–136. https://doi.org/10.25134/erjee.v7i1.1500

Orakcı, Ş., Yüreğilli Göksu, D., & Karagöz, S. (2023). A mixed methods study of the teachers' self-efficacy views and their ability to improve self-efficacy beliefs during teaching. *Frontiers in Psychology*, *13*(January). https://doi.org/10.3389/fpsyg.2022.1035829

Othman, A., & Masum, A. (2017). Professional Development and Teacher Self-Efficacy: Learning from Indonesian Modern Islamic Boarding Schools. *Educational Process: International Journal*, *6*(2), 7–19. https://doi.org/10.22521/edupij.2017

Pas, E. T., Bradshaw, C. P., & Hershfeldt, P. A. (2012). Teacher- and school-level predictors of teacher efficacy and burnout: Identifying potential areas for support. *Journal of School Psychology*, *50*(1), 129–145. https://doi.org/10.1016/j.jsp.2011.07.003

Pendergast, D., Garvis, S., & Keogh, J. (2011). Pre-Service Student-Teacher Self-efficacy Beliefs: An Insight Into the Making of Teachers the Making of Teachers. *Australian Journal of Teacher Education*, *36*(12), 45–58. https://doi.org/10.14221/ajte.2011v36n12.6

Pfitzner-Eden, F. (2016). Why do I feel more confident? Bandura's sources predict preservice teachers' latent changes in teacher self-efficacy. *Frontiers in Psychology*, *7*(Oct), 1–16. https://doi.org/10.3389/fpsyg.2016.01486

Rahman, U., Sulaiman, W., Nasir, R., & Omar, F. (2014). The Role of Job Satisfaction as Mediator in the Relationship between Self-Efficacy and Organizational Citizenship Behavior among Indonesian Teachers. *International Journal of Business and Social Science*, *5*(9), 255–261. https://doi.org/https://doi.org/10.5555/ijosmas.v1i1.2

Ryan, M., & Hendry, G. D. (2023). Sources of teacher efficacy in teaching reading: success, sharing, and support. *Australian Journal of Language and Literacy*, *46*(1), 1–14. https://doi.org/10.1007/s44020-022-00016-0

Statistics Indonesia. (2022). *Statistik Pendidikan*. https://www.bps.go.id/publication/2022/11/25/a80bdf8c85bc28a4e6566661/statistik-pendidikan-2022.html

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: capturing an elusive construct. *Teaching and Teacher Education*, *17*(7), 783–805. https://doi.org/10.1016/S0742-051X(01)00036-1

van Rooij, E. C. M., Fokkens-Bruinsma, M., & Goedhart, M. (2019). Preparing Science Undergraduates for a Teaching Career: Sources of Their Teacher Self-Efficacy. *Teacher Educator*, *54*(3), 270–294. https://doi.org/10.1080/08878730.2019.1606374

Widiati, U., Suryati, N., & Hayati, N. (2018). Unraveling the challenges of Indonesian novice teachers of English. *Indonesian Journal of Applied Linguistics*, *7*(3), 621–629. https://doi.org/10.17509/ijal.v7i3.9824

Yesilyurt, E., Deniz, H., & Kaya, E. (2021). Exploring sources of engineering teaching self-efficacy for pre-service elementary teachers. *International Journal of STEM Education*, *8*(1). https://doi.org/10.1186/s40594-021-00299-8

Yusrina, A., Bima, L., Berkhout, E., & Suryadarma, D. (2022). *Selecting Teachers in Indonesia: Predicting Teacher Performance using Pre-Employment Information*. https://doi.org/10.35489/BSG-RISEWP_2022/098