



Comparing Self-Efficacy between Matriculating and Graduating Physical Education Student Teachers in Singapore

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Abstract

Background: Self-efficacy plays a central role in shaping preservice teachers' instructional confidence, persistence, and professional readiness within physical education teacher education programs. Despite its importance, empirical evidence comparing self-efficacy across different stages of teacher preparation in Southeast Asia remains limited, particularly within the Singaporean educational context.

Aims: This study aimed to examine differences in self-efficacy between matriculating and graduating physical education student teachers in Singapore and to identify program components contributing to these differences.

Methods: A retrospective causal-comparative design was employed involving 112 physical education student teachers (69 males and 43 females) from the National Institute of Education. Self-efficacy was measured using the Physical Education Teaching Efficacy Scale covering seven pedagogical domains. Data were analyzed using descriptive statistics and independent samples t-tests with Cohen's *d* to determine effect sizes.

Result: Statistically significant differences were observed across all efficacy factors, with graduating student teachers demonstrating higher confidence in instruction, applying scientific knowledge, assessment, and technology integration. However, efficacy related to content knowledge and teaching students with special needs remained comparatively lower, suggesting gaps in specialized preparation and experiential learning opportunities.

Conclusion: Physical education teacher education programs appear to enhance preservice teachers' self-efficacy substantially, highlighting the value of structured coursework and authentic learning experiences. Strengthening inclusive education training and reinforcing entry-level sport expertise may further optimize efficacy development and support the preparation of competent and confident future physical education teachers.

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INTRODUCTION

In Singapore, the National Institute of Education is the sole provider of physical education teacher education programs, and physical education student teachers either read the Bachelor of Science (Education) program, Diploma of Physical Education program, or the Post-Graduate Diploma in Education (Physical Education) programs (National Institute of Education, 2023c, 2023b, 2023a). The three programs comprise similar categories and courses that address specific purposes of teacher education (see Table 1).

Table 1. Categories and Courses in Physical Education Teacher Education Programs in Singapore.

Category	Purposes	Courses
Academic subject	Covers knowledge of the content and fundamental concepts and principles of the subject	<ul style="list-style-type: none">Anatomical & biomechanical foundations of PA

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		<ul style="list-style-type: none"> • Foundations of psychology & motor learning in PA • Growth & motor development • Physiology of exercise
Curriculum studies	Covers subject-specific teaching methodologies and pedagogical skills appropriate to Singapore schools	<ul style="list-style-type: none"> • Badminton • Soccer • Softball • Instructional Methods
Education studies	Covers key concepts, principles, and theories in education that are necessary for effective teaching in Singapore schools	<ul style="list-style-type: none"> • Assessing learning & performance • Teaching & managing learners • Technologies for meaningful learning

Note: Courses not listed exhaustively; for illustrative purposes only.

[Gurvitch & Metzler \(2009\)](#) suggested that physical education teacher education programs are the main environments that fuel the sources of self-efficacy among physical education student teachers and identified enactive mastery as the most powerful source of efficacy beliefs. Specifically, physical education teacher education programs can develop physical education student teachers' self-efficacy by providing them with a sequence of authentic experiences over time, and opportunities to face and overcome challenges and adversity. More importantly, teachers with high self-efficacy have been found to exert more effort on difficult students, devote more lesson time to learning activities, create mastery experiences for students, support the development of students' intrinsic interest and self-directedness to learn, and demonstrate greater commitment to the teaching profession ([Bandura, 1997](#)). Therefore, this study aims to examine the physical education teacher education programs' effect on self-efficacy by comparing self-efficacy between matriculating and graduating physical education student teachers in Singapore.

The concept of self-efficacy was theorized by Albert Bandura, which refers to the perceptions of one's capability to perform a task successfully in a specific situation ([Bandura, 1977, 1997](#)). According to [Bandura \(1997\)](#), self-efficacy is influenced by four main sources, enactive mastery, vicarious experience, verbal persuasion, and physiological and affective states, which have an impact on an individual's behavior and performance. Enactive mastery is based on personal experiences of success and failures and is most significant in forming positive, neutral, or negative beliefs about one's capabilities. Vicarious experience is gained through observing others and comparing one's ability with others. Observing more success in others who are comparable to ourselves would positively form the beliefs of one's capability. Verbal persuasion is where the individual is convinced through the feedback given on their capability which may strengthen or diminish their beliefs ([Egele et al., 2025; Zhang et al., 2022](#)). Physiological and affective states are the feelings in which the individual experiences anxiety, stress, or fatigue in a situation. In turn, self-efficacy influences how individuals behave in various situations, i.e., they avoid situations where they believe they do not have the necessary coping skills and they approach situations where they believe they have the necessary coping skills. Also, individuals with high self-efficacy tend to persist in challenging situations while individuals with low self-efficacy tend to cease their coping efforts prematurely.

Few studies have investigated self-efficacy among physical education student teachers in the past two decades. For example, Erbas and colleagues measured and analyzed self-efficacy in terms of gender and year of study ([Erbaş, 2020](#)), the relationship between self-efficacy and task-centered anxiety ([Erbaş & Ünlü, 2020](#)), and the relationship between self-efficacy and teaching-learning conceptions ([Erbaş et al., 2014](#)). The first study reported significant differences between gender in terms of overall self-efficacy and some of its factors, and no significant differences between year of study in terms of overall self-efficacy except for some of its factors, i.e., applying scientific knowledge in teaching physical education, and accommodating skill level differences. The second study reported that self-efficacy was high, task-centered anxiety was optimal, and a moderate positive relationship between teaching efficacy and task-centered anxiety, i.e., physical education student teachers with high self-efficacy are not anxious about their teaching tasks. Lastly, the third study reported that traditional teaching-learning conceptions have a medium positive correlation with the self-efficacy

factor of using assessment and small positive correlations with the remaining self-efficacy factors. In addition, constructivist teaching-learning conceptions have small positive correlations with self-efficacy factors of teaching students with special needs, instruction, and using technology but no correlations with the other self-efficacy factors.

In another study, [Eroglu & Unlu \(2015\)](#) examined the general and physical education-specific self-efficacies of physical education student teachers. General self-efficacy refers to an individual's overarching convictions regarding their capacity to effectively navigate challenges and manage demanding or adverse circumstances. 80 physical education student teachers were recruited from a physical education academy, and their general and physical education-specific self-efficacies were measured and analyzed. It was found that there was a positive relationship between the general and physical education-specific self-efficacies of the physical education student teachers, i.e., physical education preservice teachers with stronger generalized self-efficacy tend to perceive themselves as more capable and effective when carrying out responsibilities associated with the physical education teaching role.

Most recently, [Choi et al. \(2021\)](#) examined the relationship between self-efficacy and physical literacy among physical education student teachers in the Asian context. Physical literacy encompasses the way individuals perceive, appreciate, and participate in physical activity, reflected through their self-identity and confidence, their capacity for self-expression and social interaction, as well as their knowledge and understanding. 218 physical education student teachers were recruited from three universities in Hong Kong and Taiwan, and their self-efficacy and physical literacy were measured and analyzed. It was found that self-efficacy was highest among the Year 5s and lowest among the Year 2s, and self-efficacy was predicted by physical literacy. Specifically, two factors of physical literacy, i.e., sense of self and self-confidence, and self-expression and communication with others, were correlated with all factors of self-efficacy, and one factor of physical literacy, i.e., knowledge and understanding, was correlated with all but one factor of self-efficacy, i.e., teaching students with special needs. The results suggested that improving physical education student teachers' physical literacy through movement opportunities and quality physical education will, in turn, increase their self-efficacy in teaching physical education.

To the best of the authors' knowledge, self-efficacy among physical education student teachers in Southeast Asia is understudied. Furthermore, there is limited generalizability of the existing studies as there are contextual differences in the physical education teacher education programs across Asia ([Choi et al., 2021](#)). This study aims to examine the physical education teacher education programs' effect on self-efficacy by comparing between matriculating and graduating physical education student teachers in Singapore. Specifically, the study sought to address the following research questions:

1. What is the difference in self-efficacy between matriculating and graduating physical education student teachers in Singapore?
2. What courses in the physical education teacher education programs can the difference in self-efficacy between matriculating and graduating physical education student teachers in Singapore be attributed to?

METHOD

Participants

Prior to determining the total number of participants, a purposeful sampling strategy was employed to ensure that the selected physical education student teachers represented distinct stages within the teacher education trajectory. Purposeful and criterion-based sampling remains widely recommended in contemporary educational research when participants must meet clearly defined program characteristics aligned with specific research objectives ([Campbell et al., 2020](#)). In this study, inclusion criteria were established to capture both matriculating and graduating cohorts, thereby enabling a meaningful comparison of self-efficacy development across the professional preparation continuum. Such a sampling approach strengthens contextual rigor and analytical relevance by aligning participant selection with recent methodological standards emphasizing transparency, transferability, and theoretical alignment in sampling decisions. A total of 112 physical education student teachers participated in this study, comprising 69 males and 43 females drawn from different stages of teacher preparation. Of these participants, 39 were categorized as matriculating students,

whereas the remaining 73 belonged to the graduating cohort representing later stages of professional preparation formally.

Research Design

The study adopted a retrospective causal-comparative research design (Gay et al., 2011). This study is approved by the institutional review board of the authors' university (IRB-2023-022).

Instruments

Physical education student teachers' self-efficacy was measured using the Physical Education Teaching Efficacy Scale (Humphries et al., 2012). The scale comprised 35 items on seven efficacy factors, i.e., (1) content knowledge, (2) applying scientific knowledge, (3) accommodating skill level differences, (4) teaching students with special needs, (5) instruction, (6) assessment, and (7) using technology. Participants responded to each item using a 10-point Likert scale of 1 (disagree/ cannot do) to 10 (agree/ highly certain I can do). Three items were re-worded to better fit the context of the physical education student teachers in this study. E.g., "I know what the NASPE standards are, and can plan and teach toward them" was reworded as "I know what the syllabus's learning outcomes are, and can plan and teach toward them". Humphries et al. (2012) reported that the internal consistency values of the factors ranged from .77 to .94, and the test-retest reliability ranged from .63 to .88.

Procedures

The participants were recruited in two phases. The graduating physical education student teachers were first recruited at the end of their physical education teacher education program in May 2023 and the matriculating physical education student teachers were subsequently recruited at the start of their physical education teacher education program in August 2023. The authors briefed the participants, sought their informed consent, and administered the instrument. Participants took no more than 20 minutes to complete the instrument, and they were checked for completeness before the data was entered into a computer file for analysis.

Data Analysis

Descriptive statistics and independent samples t-tests were run for the seven efficacy factors using IBM SPSS Statistics (Version 28), with the significance level pre-determined at .05. Effect size is calculated using Cohen's *d*, and the criteria for interpretation are .2 = small effect, .5 = medium effect, and .8 = large effect (Pallant, 2020).

RESULTS AND DISCUSSION

Results

The independent samples t-tests indicated that there were statistically significant differences in all the efficacy factor scores between the matriculating and graduating physical education student teachers (see Table 2).

Table 2. Physical education student teachers' efficacy factor scores.

Efficacy factor	Matriculating (n = 39)		Graduating (n = 73)		t	p	d
	M	SD	M	SD			
Efficacy about content knowledge	5.31	1.50	6.65	1.20	-5.17	<.001	1.03
Efficacy for applying scientific knowledge in teaching PE	5.87	1.55	7.73	.87	-8.15	<.001	1.62
Efficacy about accommodating skill level differences	6.29	1.33	7.89	.87	-7.64	<.001	1.51

Efficacy about teaching students with special needs	4.02	1.60	5.71	1.50	-5.56	<.001	1.11
Efficacy about instruction	6.73	1.19	7.97	.90	-6.24	<.001	1.24
Efficacy for using assessment	6.10	1.36	7.54	1.08	-6.15	<.001	1.22
Efficacy for using technology	6.44	1.33	7.87	1.26	-5.65	<.001	1.12

Source: Primary Data

DISCUSSIONS

The first aim of the study was to investigate the differences in self-efficacy between matriculating and graduating physical education student teachers in Singapore. The statistically significant differences as well as the huge effect sizes for all the efficacy factor scores can be explained by [Gurvitch & Metzle \(2009\)](#), i.e., physical education teacher education programs were the main environments that fueled self-efficacy and possibly the most powerful source of efficacy beliefs for physical education student teachers in Singapore.

With efficacy factor scores above 7.0 representing “I probably can do it” ([Choi et al., 2021](#)), it is not surprising that the matriculating physical education student teachers did not score above 7.0 for any efficacy factors as they have not embarked on their physical education teacher education programs. Although the graduating physical education student teachers scored above 7.0 for five efficacy factors, it is worrying that they scored below 7.0 for two efficacy factors, i.e., efficacy about content knowledge and efficacy about teaching students with special needs. Possible reasons for the two low-scoring efficacy factors will be discussed in the later sections.

The second aim of the study was to identify the courses in the physical education teacher education programs to which the difference in self-efficacy between matriculating and graduating physical education student teachers in Singapore be attributed. With five efficacy factors scoring above 7.0, representing “I probably can do it” ([Choi et al., 2021](#)), this suggests that the courses have enhanced graduating physical education student teachers’ efficacy about/for instruction (e.g., Instructional Methods), accommodating skill level differences (e.g., Growth & Motor Development), using technology (e.g., Technologies for Meaningful Learning), applying scientific knowledge (e.g., Foundations of Psychology & Motor Learning in Physical Activity), and using assessment (e.g., Assessing Learning & Performance). Conversely, two efficacy factors scored below 7.0 and will be further discussed in the following sections.

First, the efficacy about teaching students with special needs factor focused on one’s beliefs to effectively work with students with special needs in a regular physical education class ([Humphries et al., 2012](#)). Graduating physical education student teachers in Singapore scored the lowest for this factor, and this was one of the lowest scoring factors in past studies (e.g., ([Choi et al., 2021](#); [Erbaş, 2020](#); [Erbaş et al., 2014](#); [Erbaş & Ünlü, 2020](#); [Humphries et al., 2012](#); [Ogrodnik et al., 2018](#))). For example, [Ogrodnik et al. \(2018\)](#) reported that the efficacy about teaching students with special needs factor was lowest among the participants and suggested that the physical education student teachers were not sufficiently prepared during their physical education teacher education programs. [Erbaş et al. \(2014\)](#) also reasoned that low efficacy scores are due to physical education student teachers being only provided with theoretical knowledge during the courses, but without concrete examples and without practical opportunities to apply the theoretical knowledge. [Erbaş \(2020\)](#) suggested that the efficacy about teaching students with special needs factor was higher among physical education student teachers in Year 4 than in Year 3 because of their opportunities to work with experienced teachers during teaching practice.

An obvious reason for this efficacy factor’s low score is that the physical education teacher education programs did not have a specialized course to enable physical education student teachers to teach students with special needs. In Singapore, physical education teachers generally relied on continual professional development, e.g., courses and workshops, to acquire the necessary knowledge and skills for teaching students with special needs in their physical education classes. Most recently, the National Institute of Education has sought to address this shortcoming by

introducing the “Inclusive Physical Activity & Sport” course in all the physical education teacher education programs, commencing from the August 2023 semester (National Institute of Education, 2023a, 2023b, 2023c). Future research should examine the course’s impact on the self-efficacy to teach students with special needs among physical education student teachers.

Second, the efficacy about content knowledge factor focused on confidence in one’s knowledge to teach various physical education content effectively (Humphries et al., 2012). Graduating physical education student teachers in Singapore scored the second lowest for this factor, and this was also one of the lowest scoring factors in past studies (e.g., Choi et al., 2020; Erbas, 2020; Erbas & Unlu, 2020; Erbas et al., 2014; Humphries et al., 2012; Ogrodnik et al., 2018). Choi et al. (2020) suggested that the efficacy about content knowledge factor is influenced by content coursework and physical education student teachers’ past playing experience in games/sports. In Singapore, physical education student teachers participate in a plethora of physical activity courses during their physical education teacher education programs, e.g., Badminton, Basketball, Dance, Floorball, Gymnastics, Football, Outdoor Education, Softball, Track & Field, and Volleyball. Each lasting 26 hours, the physical activity courses generally aimed to equip physical education student teachers with the knowledge and skills so that they can demonstrate the techniques and play the game with appropriate rules.

Despite attending the plethora of physical activity courses, a possible reason for this efficacy factor’s low score is that the physical education teacher education programs’ entry requirement is not strictly enforced, i.e., applicants should preferably also have strong sports involvement in secondary school, junior college, or polytechnic (National Institute of Education, 2023c, 2023b, 2023a). It is estimated that amateurs would have accumulated at least 2000 hours of experience in their game/sport (Ericsson et al., 1993). Unfortunately, Tan (2024) reported that physical education student teachers in Singapore generally do not accumulate sufficient playing experience in games/sports before they enter the physical education teacher education programs, with more than 60% of the physical education student teachers having less experience than amateurs in their game/sport. As physical education teacher education programs might not have the luxury to increase the number of physical activity courses or extend the duration of existing physical activity courses, administrators should review their admission criteria to improve this efficacy factor’s scores, i.e., admitting applicants with sufficient playing experience in their game/sport into the physical education teacher education programs.

Finally, Singapore’s National Institute of Education can be reassured that their physical education student teachers are benefitting from the physical education teacher education programs to a large extent because of the statistically significant differences in all efficacy factors between the matriculating and graduating groups. More importantly, graduating physical education student teachers scored highly for most efficacy factors, and should be able to teach learners with different skill levels effectively while incorporating scientific knowledge, assessment, and technology. While the efficacy about teaching students with special needs scores was low for this study’s group of graduating physical education student teachers, this study’s group of matriculating physical education student teachers will be reading the newly introduced “Inclusive Physical Activity & Sport” course. Although it was suggested that admission criteria should be reviewed to improve the efficacy about content knowledge scores, it might resultantly reduce the number of candidates in the physical education teacher education programs. Alternatively, continual professional development, e.g., in-service courses and workshops, for physical education teachers might be a more feasible approach to address the low efficacy about content knowledge scores.

There are three limitations to this study. First, the data was collected from distinct groups of matriculating and graduating physical education student teachers, limiting the generalizability of this study’s findings. Second, the physical education student teachers’ actual practice is not examined in this study, and one’s self-efficacy does not always equate to behavior (Bandura, 1977). Last, Gay et al. (2011) cautioned against claiming cause-effect relations based on causal-comparative research as both the supposed cause and effect might be affected by a variable not included in the study.

Implications

The present findings highlight the critical role of structured physical education teacher education programs in shaping preservice teachers’ professional self-efficacy across multiple pedagogical domains. The significant differences between matriculating and graduating cohorts

suggest that sustained exposure to curriculum studies, academic subject knowledge, and practicum experiences contributes meaningfully to efficacy development. However, the relatively lower efficacy in content knowledge and teaching students with special needs indicates the need for more inclusive pedagogical preparation and authentic experiential learning opportunities. Educational institutions may therefore consider integrating specialized inclusive education modules and enhancing admission criteria or early skill development pathways to ensure balanced competency growth among future physical education teachers.

Research Contribution

This study contributes to the growing body of literature on teacher efficacy within the Asian physical education context by providing empirical evidence from Singapore, a region that remains underrepresented in existing research. By comparing self-efficacy across two distinct stages of teacher preparation, the study extends theoretical perspectives on efficacy development by demonstrating how structured educational experiences function as enactive mastery opportunities that strengthen professional confidence. Additionally, the findings offer practical insights for curriculum designers by identifying specific efficacy domains that benefit from targeted pedagogical interventions. As such, this research bridges theoretical constructs of self-efficacy with applied implications for teacher education policy and program design within contemporary physical education settings.

Limitations

Despite its contributions, several limitations should be acknowledged when interpreting the findings. First, the use of separate matriculating and graduating cohorts restricts causal interpretation and may limit the longitudinal understanding of efficacy development over time. Second, the reliance on self-reported measures may introduce response bias, as perceived efficacy does not necessarily reflect actual teaching performance in authentic classroom environments. Third, contextual factors such as prior sport experience, institutional culture, and individual motivation were not extensively controlled, which may have influenced efficacy perceptions. These limitations suggest caution when generalizing the findings beyond similar teacher education contexts.

Suggestions

Future studies are encouraged to adopt longitudinal designs that follow physical education student teachers across different phases of their professional preparation to better capture developmental trajectories of self-efficacy. Expanding the sample across multiple institutions or Southeast Asian regions would also enhance external validity and allow for cross-cultural comparisons of teacher education effectiveness. Moreover, incorporating mixed-method approaches, including classroom observations and reflective interviews, may provide deeper insight into how efficacy beliefs translate into pedagogical practice. Finally, further investigation into inclusive physical education training and content knowledge enhancement strategies is recommended to address the efficacy domains identified as comparatively weaker in this study.

CONCLUSION

This study aimed to examine self-efficacy among physical education student teachers in Singapore. It was found that matriculating physical education student teachers scored low for all seven efficacy factors while graduating physical education student teachers scored high for five efficacy factors. The results indicated that physical education student teachers are generally benefiting from their physical education teacher education programs but were lacking in efficacies about content knowledge and teaching students with special needs. While concrete efforts were made to better enable physical education student teachers to teach students with special needs, future research should examine the course's impact on the self-efficacy of teaching students with special needs among physical education student teachers. As physical education teacher education programs do not have the luxury to increase or extend the duration of physical activity courses, relying on continual professional development might be a more feasible approach to address the low efficacy about content knowledge scores. Future research should examine the impact of continual

professional development, e.g., in-service courses and workshops, on physical education teachers' efficacy about content knowledge.

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AUTHOR CONTRIBUTION STATEMENT

AT conceptualized the study, developed the research framework, coordinated data collection, conducted statistical analyses, and prepared the initial manuscript draft. ST, as the corresponding author, supervised the overall research process, refined the methodological design, led the interpretation of the findings, and managed all stages of manuscript revision and scholarly correspondence. TW supported data verification, assisted in analytical interpretation, and contributed to critical editing to enhance theoretical coherence and academic clarity. AT, ST, and TW collectively reviewed and approved the final version of the manuscript and take full responsibility for the integrity and accuracy of the work.

REFERENCES

- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman & Company.
- Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker, K. (2020). Purposive sampling: complex or simple? Research case examples. *Journal of Research in Nursing*, *25*(8), 652–661. <https://doi.org/10.1177/1744987120927206>
- Choi, S.-M., Sum, R. K.-W., Wallhead, T., Ha, A. S.-C., Sit, C. H.-P., Shy, D.-Y., & Wei, F.-M. (2021). Preservice Physical Education Teachers' Perceived Physical Literacy and Teaching Efficacy. *Journal of Teaching in Physical Education*, *40*(1), 146–156. <https://doi.org/10.1123/jtpe.2019-0076>
- Egele, V. S., Klopp, E., & Stark, R. (2025). An empirical ranking of the importance of the sources of self-efficacy for physical activity. *Health Psychology and Behavioral Medicine*, *13*(1). <https://doi.org/10.1080/21642850.2025.2567322>
- Erbaş, M. K. (2020). Predictive Validity of Teaching Efficacy Beliefs on Teaching-Learning Conceptions: A Study of Physical Education Teacher Candidates. *Journal of Education and Learning*, *10*(1), 61. <https://doi.org/10.5539/jel.v10n1p61>
- Erbaş, M. K., & Ünlü, H. (2020). Prediction Validity of Teaching Efficacy on Task-Centered Anxiety: A Study on Physical Education Teacher Candidates. *Kuramsal Eğitimbilim*, *13*(4), 701–715. <https://doi.org/10.30831/akukeg.776415>
- Erbaş, M. K., Varol, Y. K., Erdoğan, M., & Ünlü, H. (2014). Teaching efficacy of physical education teacher candidates. *Journal of Education and Practice*, *5*(19), 34–43.
- Ericsson, K. A., Krampe, R. T., & Tesch-Romer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, *100*(3), 363–406.
- Eroglu, C., & Unlu, H. (2015). Self-efficacy: Its Effects on Physical Education Teacher Candidates' Attitudes toward the Teaching Profession. *Educational Sciences: Theory & Practice*, *201*(212).
- Gay, L. R., Mills, G. E., & Airasian, P. W. (2011). *Educational research: Competencies for analysis and applications* (10th ed.). Pearson Education International.
- Gurvitch, R., & Metzler, M. W. (2009). The effects of laboratory-based and field-based practicum experience on pre-service teachers' self-efficacy. *Teaching and Teacher Education*, *25*(3), 437–443. <https://doi.org/10.1016/j.tate.2008.08.006>
- Humphries, C. A., Hebert, E., Daigle, K., & Martin, J. (2012). Development of a Physical Education Teaching Efficacy Scale. *Measurement in Physical Education and Exercise Science*, *16*(4), 284–299. <https://doi.org/10.1080/1091367X.2012.716726>
- National Institute of Education. (2023a). *Bachelor of Art / Science in an academic discipline and in education*.

- National Institute of Education. (2023b). *Diploma in Education (General/Mother Tongue specialisations) / Physical Education / Art/Music/Home Economics Education / Special Education (SSTs/SEN Officers) / School Counselling*.
- National Institute of Education. (2023c). *Postgraduate Diploma in Education (PGDE) (Physical Education) Programme Handbook: July 2023 Intake*.
- Ogrodnik, J., Przybyła, E., & Herman, E. (2018). The self-efficacy of physical education teacher candidates. *Zeszyty Naukowe Wyższej Szkoły Humanitas. Pedagogika*, 16, 293–304.
- Pallant, J. (2020). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS (Seventh ed.)*. Routledge.
- Tan, S. M. (2024). Pre-Service Physical Education Teachers' Playing Experience and Skill Analysis Ability. *JUMORA: Jurnal Moderasi Olahraga*, 4(1), 1–16. <https://doi.org/10.53863/mor.v4i1.1123>
- Zhang, J., Qi, G., Song, C., & Chen, J. (2022). Continuous idea contribution in open innovation communities: The role of verbal persuasion from peers. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1061415>