

Perceptions of Peer Coaching Technique by the Alternative Learning System Community Implementers

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Abstract

Peer coaching is a process where peers collaborate to improve their skills, knowledge, and abilities in a particular area. The peer coaching method begins with the individual defining the problem or goal that they wish to work on. The Alternative Learning System (ALS) is a program of the Philippine Department of Education that offers non-formal education to out-of-school youths, adults, and other marginalized communities. The respondents of this study were the two hundred (200) community implementers of the Second Congressional District of the Division of Misamis Oriental from the municipalities of Opol to Lugait during the School Year 2022-2023. This study is adapted and modified from the study of Gutierrez et al. (2018) on Peer Coaching in a Research-Based Teacher's Professional Learning Method for Lifelong Learning: A Perspective and employed a quantitative research design, with data collected from the two hundred (200) ALS community implementers in the second congressional district of Misamis Oriental. Frequency and percentage, mean and standard deviation, regression analysis, and multiple correlation analysis.

Findings indicate that the teacher respondents' level of perception towards the peer coaching technique is highly effective in terms of teachers' self-efficacy, understanding of the teaching and learning process, decision-making, and reflective practice. The teacher respondents' level of content knowledge on the learning strand in terms of scientific and critical thinking skills, life and career skills, and understanding the self and society showed significant effects towards the peer coaching technique. Furthermore, the weak but significant relationship between the designation of the teacher-respondent and the length of service as an ALS implementer implies that more experienced teachers and those in leadership roles may be more effective in adopting peer coaching strategies. Teachers should provide a comfortable working environment, give enough training and seminars, encourage ALS Implementers to attend conferences and seminars and engage in training and development programs to assist workers in enhancing their skills and competence.

Keywords: Perception, Peer Coaching Technique, Alternative Learning System

1. Introduction

With the Alternative Learning System (ALS) community, the peer coaching technique is a beneficial strategy for tackling various issues experienced. It can aid in the resolution of challenges such as a shortage of resources and materials, insufficient training and professional development, classroom management issues, and a lack of learner engagement and motivation. Peer coaching may help peers by providing guidance, best practices, and emotional support. ALS community implementers may build a friendly and collaborative learning environment that fosters professional growth and improves learner outcomes by utilizing peer coaching.

The ALS is a program of the Philippine Department of Education that offers non-formal education to out-of-school youths, adults, and other marginalized communities. While Alternative Learning System strives to educate all learners, including those from varied backgrounds, there are still issues that must be addressed to ensure their success in the program. Addressing the diversity of learners in the Alternative Learning System necessitates a multifaceted strategy that takes into consideration the unique requirements and histories of each learner. The diversity of learners in the Alternative Learning System may be a powerful incentive for teachers

to research and use peer coaching approaches to boost educational quality and establish a more inclusive and fair learning environment.

Following Republic Act No. 10533, the Department of Education (DepEd) released the enclosed policy on The Learning Action Cell (LAC) as a K to 12 Basic Education Program School-Based Continuing Professional Development Strategy for the Improvement of Teaching and Learning (DepEd Order 35, s. 2016). Through this policy, the DepEd fully supports the continued professional development of its teaching personnel based on the idea of lifelong learning and the DepEd's dedication to the development of teachers' potential targeted at their success in the profession. This may be accomplished through the school-based LAC, which primarily serves as a professional learning community for teachers, assisting them in improving practice and learner achievement.

With this, every Filipino has the right to free basic education; nevertheless, for a variety of reasons, some Filipino children are unable to attend and complete official K to 12 Basic Education. DepEd has since created the Alternative Learning System to provide all Filipino children with the opportunity to attend and complete basic education in a format that best matches their circumstances and interests the second time around. ALS teachers must be well aware of their students' requirements and situations in order to create a helpful and inclusive learning environment. They must be able to adapt to diverse teaching methods and have great communication and interpersonal skills, as well as patience and understanding. They must also be adaptable and innovative to construct learning activities that are relevant and interesting for their learners. Finally, they must constantly enhance their teaching abilities and expertise through professional development programs and training to provide the greatest learning experience for their learners and prepare them for the difficulties of the twenty-first-century workforce.

On the other side, the ALS Program is a parallel learning method that offers a viable alternative to existing formal teaching for out-of-school Filipino children, youth, and adults. UNICEF has been collaborating with the DepEd-ALS Task Force to help OSCYAs achieve basic and functional literacy skills (UNICEF, 2022). The ALS Program employs a contextualized non-formal curriculum that is largely aligned with the formal school system's K to 12 Curriculum for Basic Education. However, it is not a mirror image of the official school curriculum. It is similar but not identical. This considers earlier learning and organizes functional literacy indicators into six interconnected learning strands.

The six learning strands and their corresponding topics or skills are Learning Strand 1 Communication Skills (English and Filipino), Learning Strand 2, Scientific and Critical Thinking, Learning Strand 3 Mathematical and Problem-Solving Skills, Learning Strand 4 Life and Career Skills, Learning Strand 5 Understanding Self and Society and Learning Strand 6 Digital Citizenship.

The purpose of this study is to examine the perspectives of community implementers, also known as District ALS Coordinators, Mobile Teachers, Literacy Volunteers, and Community ALS Implementers, in Misamis Oriental's second congressional district, on the influence of the peer coaching technique. It provides an initial assessment of how policymakers and program supervisors can help address the challenges of implementing policies that increase program participation, increase teachers' satisfaction, decrease work-related stress, and meet the needs of teachers while maintaining appropriate intervention and education methods in educating out-of-school youth and adults learners in an inclusive setting by determining and understanding their perceptions.

This study is anchored on the study of Gutierrez et al. (2018), entitled *Peer Coaching in a Research-Based Teachers' Professional Learning Method for Lifelong Learning: A Perspective* states that teachers, who are considered lifelong learners, must draw insights from their experiences with the help of colleagues.

The research begins by exploring the difficulties that teachers have in keeping up with the continually changing demands of the educational world. According to the findings, peer coaching is an excellent professional development way promoting lifetime learning among teachers. Peer coaching can help teachers' continuous professional development while also improving learner results by stressing cooperation, evidence-based practices, and ongoing learning.

Furthermore, the Department of Education (DepEd) released the enclosed policy on The Learning Action Cell (LAC) as a K to 12 Basic Education Program School-Based Continuing Professional

Development Strategy for the Improvement of Teaching and Learning (DepEd Order 35, s.2016). The LAC program is intended to enhance teacher agency, cooperation, and reflective practice. The LAC program seeks to enhance student outcomes and build a culture of continuous improvement in schools by empowering teachers to identify and solve particular teaching and learning difficulties. The LAC program is a promising method to school-based professional development that has the potential to enhance teaching and learning results in K to 12 Basic Education institutions in the Philippines.

As posited by Dayao (2020) Learning Action Cell session is a program initiated by the Department of Education that attempts to develop professional learning communities that will assist teachers in having a broader perspective of teaching topics and approaches.

On the other hand, the Department of Education provides the attached Guidelines on the Implementation of Enhanced Alternative Learning System (ALS 2.0) on the 2019 ALS K to 12 Curriculum following the mandate of Republic Act No. 10533 entitled Enhanced Basic Education Act of 2003. The Department of Education (DepEd) is issuing these policy recommendations to ensure that the ALS program is implemented consistently. This policy reaffirms the Department's commitment to expanding and strengthening ALS while also ensuring that ALS learners acquire the required knowledge and 21st-century skills (DepEd Order No. 013, s. 2019). Moreover, the ALS K-12 Curriculum incorporates a core skill acquisition continuum, which consists of six interconnected learning strands. The ALS K to 12 Curriculum presently only covers Junior High School. Alternative Learning System, on the other hand, a Senior High School curriculum is being developed, and the most recent draft edition contains a TVL Track in which the learner chooses a particular skill and receives work/industry immersion (ALS-EST Handbook for Implementers, 2019).

The ALS K-12 Curriculum is designed to educate learners with the information, skills, and values they need to become productive and responsible members of society. It is linked with the learning competencies and standards established in the K to 12 Basic Education Program. Learners can also acquire a high school diploma or a certificate of completion through the program, which can lead to higher education and job prospects.

2. Methodology

This study employed the descriptive research method. The descriptive survey was used to collect statistics and information on the respondents' perceptions of peer coaching techniques. This study is adapted and modified from Gutierrez et al. (2018) on Peer Coaching in a Research-Based Teacher's Professional Learning Method for Lifelong Learning: A Perspective. A survey questionnaire is utilized to gather the needed data on the respondents' perceptions of the characteristics of the peer coaching techniques. On the other hand, the content knowledge on the learning strand is adapted and patterned from ALS K to 12 Curriculum (DepEd Order No. 013, s. 2019).

According to McCombes (2019), descriptive research seeks to characterize a population, circumstance, or phenomenon correctly and methodically. A descriptive research strategy can employ a wide range of research methodologies to study one or more variables. Descriptive research is useful when the research aims to identify traits, frequencies, trends, and classifications. It is beneficial when little is known about the topic or situation. Before you can investigate why anything occurs, you must first comprehend how, when, and where it occurs.

This study is not only concerned with acquiring data and information but also with the analysis and interpretation of the findings' implications. Variables such as respondents' profiles considering their designation, highest educational attainment, length of service as ALS Implementer, and type of Community Learning Center will also be studied.

The respondents of this study were the two hundred (200) community implementers of the Second Congressional District of the Division of Misamis Oriental from the municipalities of Opol to Lugait during the School Year 2022-2023. Alternative Learning System (ALS) Community Implementers are those who work directly with communities to administer and support ALS programs. They play an important role in

assuring the successful delivery of ALS education and assisting learners who cannot enter or finish formal schooling.

3. Results and Discussion

Problem 1: What is the profile of the respondents in terms of:

- 1.1 **Designation;**
- 1.2 **Highest Educational Attainment;**
- 1.3 **Length of Service as ALS Implementer; and**
- 1.4 **Type of Community Learning Center?**

Table 1
Distribution of the Respondents' Designation

Designation	Frequency	Percentage
District ALS Coordinator	10	5.00
Mobile Teacher	9	4.50
Literacy Volunteer	4	2.00
Community ALS Implementer	177	88.50
Total	200	100%

Table 1 shows the respondents' profiles in terms of designation. Results show that out of 200 respondents, 177 (88.5%) are community ALS implementers. This means that the majority of the respondents are community ALS implementers. This further means that a huge number of fresh graduates opted to do volunteer work in the Alternative Learning System since work experience is essential for advancing in their teaching careers. Community ALS Implementers act as positive change agents in their communities. They not only educate learners but also empower them to become active and engaged citizens who can contribute to the development of their communities. Giancaspro and Manuti (2021) state that in the Philippines, ALS is a program that provides an alternative way of education to out-of-school youths and adults who have not completed their basic education. Their dedication, hard work, and commitment are critical in ensuring that the ALS program achieves its goals and improves the lives of those who are frequently left behind in the traditional educational system. Their work serves as a reminder that education is a powerful tool for change and that everyone, regardless of background or circumstance, deserves access to a high-quality education. Community ALS implementers are likely to be enthusiastic about education and driven to provide opportunities for lifelong learning to those who might otherwise be excluded from the formal education system. Continuous research has demonstrated that volunteering may be used as a strategy for professional growth and tangible employment: volunteering can be experienced as a desire to better job chances or to learn new skills.

On the other hand, the lowest frequency is four 4 or (2%) hold a designation as a literacy volunteer. This means that a small number of respondents are working on their promotion. Literacy volunteers in Alternative Learning System are a diverse group of people who share a passion for education and a desire to serve others. This further means that to be an effective literacy volunteer in the Alternative Learning System. Volunteers must have outstanding communication skills, patience, creativity, and a willingness to engage with a variety of groups. In addition, literacy volunteers must keep up with the most recent teaching techniques and materials as the ALS program evolves. Becoming a literacy volunteer with ALS allows you to give back to the community while also assisting folks in acquiring the literacy skills they need to achieve higher education, better career prospects, and a greater quality of life. Attending training and seminars is essential for improving your teaching abilities and networking with other literacy volunteers. They should be informed about the subject and be able to adapt their teaching style to meet the needs of their learners. As posited by Reyes and

Glaraga (2017) that in the Philippines, ALS literacy volunteers face challenges such as insufficient resources, a lack of support from local government units, and a lack of training opportunities. More assistance should be provided to improve their effectiveness, and policymakers and stakeholders should recognize their contribution.

Table 2
Distribution of the Respondents' Highest Educational Attainment

Highest Educational Attainment	Frequency	Percentage
Doctorate Degree	0	0.00
Master's Degree with Doctorate units	0	0.00
Master's Degree	2	1.00
Bachelor's Degree with MA units	17	8.50
Bachelor's Degree	181	90.50
Total	200	100%

Table 2 shows the respondents' profile in terms of highest educational attainment. Results show that out of 200 respondents, the highest frequency of 181 (90.5%) are bachelor's degrees. This means that the majority of the respondents are bachelor's degree graduates. This further means that the majority of Alternative Learning System community implementers are still deciding whether to pursue a master's degree.

One of the reasons why most respondents had a bachelor's degree is that most respondents were community ALS implementers. Since community ALS implementers do not get a salary, most of them do not have the financial means to acquire a master's degree. But due to the recently issued New Merit and Selection Plan (MSP) for SY 2023-2024, which will now be used in the ranking of Teacher 1 applications, therefore prospective teachers should have a master's degree to be competitive since collecting MA units is required to get points. As posited by Abasolo Jr (2017), the teacher is the essential figure in the classroom from whom the lesson comes. For this reason, a look was made into his qualification to identify how educationally and professionally prepared he is to perform the delicate task of teaching.

While the lowest frequency is, two 2 or (1%) of the respondents are master's degree graduates. This implies that the proportion of teachers pursuing a master's degree is the lowest. Perhaps it is due to the large number of variables to consider, such as time and money. This further implies that teaching is a multitasking profession. Perhaps teachers' workloads are frequently hard, with long hours and several obligations outside of the classroom. Obtaining a graduate degree may be time-consuming and may necessitate time away from the classroom, which is tough for teachers to undertake. This might be one of the reasons why teachers do not pursue graduate degrees. As posited by Lee and Lee (2020), teachers' achievement of higher degrees, particularly master's degrees, has received much attention, as many states grant compensation increases for teachers who obtain extra education. Students who were taught by many highly skilled professors were more likely to achieve higher-level educational degrees, according to the findings. Given that teacher education will continue to play an important role, the findings of this study have far-reaching consequences for education policy around the globe.

Table 3 shows the respondents' profile in terms of length of service as ALS implementers. Results show that out of 200 respondents, the highest frequency of 76 (38%) served as ALS implementers for 1-2 years already. This means that many of the respondents have already served as ALS implementers for 1-2 years. This further means that the most common duration of service is 1-2 years, indicating that, as demonstrated in the designation profile, the majority of the respondents are community ALS implementers who are growing to enjoy their teaching job and want to remain a little longer to gain more work experience. This also implies that the majority of the respondents still want work experience to obtain a teaching position. Because employment experience is essential and acquiring a Teacher 1 post is tough, many community ALS implementers prefer to stay in service for an extended length of time. They resolved to collect enough points

before applying for a teaching position at the Department of Education. Having a good connection with others is equally important for remaining at work. Employees who are passionate and compassionate about their jobs are more likely to stay. A teacher's duration of service may also indicate his level of expertise in his field. The longer he serves, the more seasoned he becomes. According to Abasolo Jr (2017), years of teaching experience may be regarded as a vital component for an excellent teacher, and many people believe that experience is the finest instructor.

Table 3
Distribution of the Respondents 'Length of Service as ALS Implementer

Length of Service	Frequency	Percentage
7 years and above	10	5.00
5-6 years	12	6.00
3-4 years	37	18.50
1-2 years	76	38.00
9 months and below	65	32.50
Total	200	100%

The lowest frequency of only 10 (5%) of the respondents had served as ALS implementers for seven years and above. This means that there were only the respondents were experienced teachers. Serving in ALS can be difficult since it necessitates a different set of skills and tactics than in a conventional classroom setting. The fact that just a few instructors have served in ALS for seven years and above may imply that major hurdles make it difficult for teachers to continue in the program for an extended length of time.

Joo et al. (2019) explored the association between the duration of service and work satisfaction. Work environment, workload, compensation, recognition, and job security were also recognized as factors influencing job satisfaction in the study. Overall, the study implies that when teachers' service time grows, they may suffer a drop in work satisfaction. School administrators and policymakers must address these elements to increase teacher job satisfaction.

Table 4
Distribution of Respondents' Type of Community Learning Center

Type of Community Learning Center	Frequency	Percentage
Type 1	117	58.50
Type 2	28	14.00
Type 3	55	27.50
Type 4	0	0.00
Type 5	0	0.00
Total	200	100%

Table 4 shows the respondents' profile in terms of the type of Community Learning Center. Results show that out of 200 respondents, the highest frequency of 117 (58.5%) served a type 1. This means that the majority of the respondents served as type 1 community learning centers. It is critical to have a suitable environment for learning. Learners' learning styles might be influenced by their surroundings. Learners must have access to a learning environment in which they may freely express themselves and satisfy all their learning needs. This further means that the majority of the respondents served a modest meeting area with tables and chairs and a blackboard (shared usage with a community chapel or multipurpose building owned/managed by barangay government or private facility temporarily provided for learning purposes). This further reveals that the environment has a significant impact on how learners think and learn. Creating a

favorable learning environment is essential for learners to unleash their full potential. The relationship between instructor and students, as well as the physical state of the classroom, influence the classroom atmosphere. It has an impact on kids' social interaction and academic ability, as well as their mental health.

Furthermore, a conducive physical learning environment is safe, clean, orderly, well-ventilated, spacious, adequately lit, acoustically sound, with adequate air circulation and temperature, and other environmental factors that do not disrupt the child's mental health and provide a conducive learning environment (Paul et al. (2017).

While only 28 (14%) served type 2 Community Learning Center got the lowest frequency. This means that only a few of the teacher-respondents had served a semi-concrete building mostly constructed of light materials such as nipa and softwood, dedicated to ALS learning sessions and related activities, and outfitted with basic furniture and learning equipment. Ihekoronye (2020) states that effective teaching and learning require a welcoming, healthy, and secure school atmosphere. According to the findings, air-conditioned classrooms and classroom decorating do not improve students' learning, retention, or sense of comfort. Instructors should make sure that their lessons are well-lit and that the environment in the classroom is favorable to students feeling calm and comfortable so that they may engage more actively in the teaching-learning process.

Problem 2: What is the respondents' level of perception towards peer coaching technique in terms of:

- 2.1 Teachers' Self-efficacy;
- 2.2 Understanding of the Teaching and Learning Process;
- 2.3 Decision-making; and
- 2.4 Reflective Practice?

Table 5
Summary of Respondents' Level of Perception towards Peer Coaching Technique

Indicators	Mean	SD	Description
Teachers' Self-Efficacy	3.35	0.641	At all times
Understanding of the Teaching and Learning Process	3.41	0.681	At all times
Decision-Making	3.48	0.676	At all times
Reflective Practice	3.37	0.650	At all times
Overall	3.40	0.662	AT ALL TIMES

Legend: 3.26 - 4.00 At all times/Very Highly Effective 2.51 - 3.25 Most of the time/Highly Effective
 1.76 - 2.50 Sometimes/Not Effective 1.00 - 1.75 Never/Not Highly Effective

Table 5 shows the summary of the respondent's level of perception towards **peer coaching technique** with an overall mean of 3.40 (SD=0.662), described as **At all Times**. This means that the teacher-respondents have a **Highly Effective** perception concerning peer coaching techniques. This also implies that respondents considered the adoption of the peer coaching strategy to be critical in boosting teacher effectiveness. This demonstrates that consistent use of the peer coaching strategy may improve both teacher and student performance. The effectiveness of peer coaching is heavily reliant on the participants' opinions and attitudes toward the practice. Peer coaching may be a very successful strategy for encouraging workplace learning and growth if employees are open-minded, motivated to learn, and willing to share their experiences with their peers.

As posited by Schulze and Hargreaves (2018), peer coaching is a collaborative professional development strategy in which instructors collaborate to enhance their practices. It has the potential to improve teaching practice, increase teacher collaboration, and boost teacher motivation and self-efficacy; however, its success is dependent on the quality of the coaching relationship, the level of trust and openness

between coaches and coachees, and the level of support and resources provided by the school or district.

Bearden et al. (2017) state that most of the participating instructors had good opinions of the program, and it had a beneficial influence on their teaching methods, according to the study. Trust between the coaches and the coachees, good communication, and an emphasis on student learning were all important aspects of the program's success. The study sheds light on the advantages of peer coaching for teachers and emphasizes the necessity of fostering a friendly and collaborative school culture that encourages continued professional growth.

Moreover, the indicator **Decision-Making** obtained the highest overall mean rating of 3.48 (SD=0.676), described as **At all Times**. This means that the majority of the respondents show **Highly Effective** in continuing to feel that decision-making is vital in identifying what feasible courses of action should be taken for the welfare of everybody. This further means that good decision-making skills, which include critical thinking, analysis, and intuition, are necessary for success in many areas of life. For example, good decision-making abilities at work allow someone to examine all the information, grasp the present and desired states, and select the best course of action. People should make sensible judgments after investigating options and comprehending the implications. Peer coaching might be an effective method for developing decision-making skills. Peer coaching may provide individuals with a safe and supportive environment in which to discuss their decisions and get feedback from others. People can utilize this information to identify blind spots, biases, and other elements that may influence their decisions.

This has been made very clear in the statement by Ceschi et al. (2017) decision-making is a critical aspect of organizational efficiency and workplace satisfaction, and methodologies such as the model of organizational choice, strategic decision-making, and naturalistic decision-making have been developed to explore the influence of organizations on decision-makers. Individual variations in decision-making processes and decision-making styles, antecedent elements that may predict effective decision-making, and the predictive validity of rational responding have all received more attention in a recent study.

On the other hand, the indicator **Teachers' Self-Efficacy** got the lowest mean rating of 3.35 (SD=0.641), described as **At all Times**. This means that most of the respondents' level of perception towards peer coaching technique in terms of teachers' self-efficacy is **Highly Effective**. This further means that even though the indicator was described as at all times, still got the lowest mean rating among the four indicators of perceptions towards peer coaching technique. This might be because ALS community implementers may have limited possibilities for professional growth and training, which might impair their self-efficacy. Teachers may struggle to present the curriculum and engage students without proper training and support, which can weaken their confidence and self-efficacy. This indicates that although poor self-efficacy might be a persistent problem, it is not a fixed feature. Individuals may learn to improve self-efficacy and boost their confidence in their talents with the correct assistance and tactics. This further implies that regardless of the criticism, it is vital to believe in oneself and one's abilities. This may be interpreted as having a high sense of self-confidence, and it may also serve as motivation to do the best that you can. One may make mistakes but be prepared to recover. While peer coaching can increase teachers' self-efficacy, respondents' sentiments regarding the method vary depending on their own experiences and thoughts about the practice.

This is consistent with the contention of Berkant and Baysal (2018) and Oco (2022) that teachers are critical for building a long-term approach to teaching-learning processes. Self-efficacy is an important feature in identifying good instructors. Instructors who are confident in their ability to teach and believe that successful teaching accelerates students' knowledge and learning are expected to have a feeling of academic self-optimacy, which is described as an individual's judgment of their skills to accomplish specific tasks.

According to Joseph et al. (2018), reflection is a method for increasing teaching self-efficacy, which refers to a person's confidence in their capacity to successfully carry out activities or jobs linked to teaching young children. Early childhood educators are encouraged to frequently reflect on their teaching techniques, utilizing several strategies such as journaling, self-assessment tools, and peer feedback. According to research, this method can lead to better teaching practices, more work satisfaction, and a stronger feeling of personal and professional fulfillment.

Problem 3: What is the respondents’ level of content knowledge in Learning Strand based on the following:

- 3.1 Scientific and Critical Thinking Skills;
- 3.2 Mathematical and Problem-Solving Skills;
- 3.3 Life and Career Skills;
- 3.4 Understanding the Self and Society; and
- 3.5 Digital Citizenship?

Table 6
Summary of Respondents’ Level of Content Knowledge in Learning Strand

Indicators	Mean	SD	Verbal Description
Scientific and Critical Thinking Skills	4.03	0.857	Very Satisfactory
Mathematical and Problem-Solving Skills	3.92	0.899	Very Satisfactory
Life and Career Skills	4.11	0.888	Very Satisfactory
Understanding the Self and Society	4.27	0.864	Very Satisfactory
Digital Citizenship	4.05	0.890	Very Satisfactory
Overall	4.08	0.880	VERY SATISFACTORY

Legend: 4.51 - 5.00 Outstanding/Role Model, 3.51 - 4.50 Very Satisfactory/Consistently Demonstrate
 2.51- 3.50 Satisfactory/Most of the Times Demonstrate 1.51 - 2.50 Fairly Satisfactory/Sometimes Demonstrate
 1.00 -1.50 Did not meet expectations/Rarely Demonstrate

Table 6 shows the respondents’ level of content knowledge in the learning strand. Overall, results show that the respondents showed a very satisfactory level of content knowledge in the learning strand as indicated by the overall mean of 4.08 (SD=0.880), described as **Very Satisfactory**. This means that the respondents **Consistently Demonstrate** thorough knowledge of the fundamental concepts, principles, and practices associated with a certain subject of study. This further means that the respondents are looking for challenges and chances to broaden their comprehension of the learning strand. Mastering a topic needs dedication, perseverance, and a drive to always study and progress. Everyone may have a thorough grasp of a subject and become an expert in their area with hard work and devotion. Teachers are seen as a source of information. To be a successful and efficient teacher, one must have a thorough comprehension of the subject matter being taught. Successful learning transfer occurs when the teacher can convey the lesson in a way that the students can readily understand.

It was clearly stated by Jacob et al. (2020) that content knowledge refers to the body of knowledge and information that professors teach and students are expected to gain in a certain topic or content area. It is a knowledge domain that includes both conceptual and practical knowledge and is associated with competency in a certain area. It is important because it defines and develops the teachers' teaching content and reflects the instructors' understanding of the subject matter delivered. Teachers must understand not only the 'facts' of their subject matter but also its underlying ideas and structure, as well as the processes used to produce knowledge.

The indicator **Understanding the Self and Society** obtained the highest overall mean rating of 4.27 (SD=0.864), described as **Very Satisfactory**. This means that the majority of the respondents **Consistently Demonstrate** a high level of content knowledge in Learning Strand Understanding the Self and Society. This further means that the majority of the respondents considered the Learning Strand of Understanding the Self and Society to be the most important component in attaining something. When one completely understands himself, can visualize and vividly see where one wishes to go. Understanding the self and society is a lifelong learning process that entails the development of a variety of skills and information. It is necessary for personal development, social awareness, and civic involvement, and it may help individuals lead satisfying lives while

contributing to a better society. Knowing oneself and society is a key component of a well-rounded education. To manage life successfully, one must first understand oneself, including one's values, beliefs, strengths, and shortcomings. It also entails learning about other cultures, traditions, and socioeconomic systems. It is critical to understand how society works, the roles and duties of individuals within it, and how social institutions affect our lives.

Rios et al. (2017) looked at how social identity complexity, or the amount to which an individual's identity is made up of various overlapping social groups, affects the link between intergroup contact (interactions with members of different social groups) and bias. Those with higher degrees of social identity complexity were less likely to have biased views toward members of other social groups, and intergroup interaction was more successful in eliminating prejudice. This shows that having a more sophisticated knowledge of one's own identity and the identities of others might assist in fostering healthy intergroup connections and minimize bias.

While the indicator **Mathematical and Problem-Solving Skills** got the lowest overall mean rating of 3.92 (SD=0.899), described as **Very Satisfactory**. This means that the majority of the respondents still manifested **Consistently Demonstrate** on mathematical and problem-solving skills as part of their daily lives. This further means that even though the indicator was described as very satisfactory, still got the lowest mean rating among the five indicators on the content knowledge in the learning strand. This might be because not all ALS community implementers have a mathematical background or have undergone training in how to teach mathematical and problem-solving abilities. They may struggle to properly teach these abilities if they lack the relevant expertise. ALS community implementers may collaborate with other teachers or groups that have experience teaching mathematics and problem-solving skills. This can give ALS implementers additional resources, training, and assistance. Furthermore, teachers may employ technology and multimedia resources to create interactive learning experiences that allow students to explore mathematical topics in several ways.

According to Abdullah et al. (2018), various variables contribute to the development of mathematical problem-solving skills, including cognitive aspects like working memory and metacognition, as well as non-cognitive elements like motivation and attitudes toward mathematics. They describe techniques for enhancing these abilities, such as allowing students to engage in problem-based learning, employing technology, and giving students feedback and scaffolding to help them build their skills. They also examine numerous research that has looked at the efficacy of problem-solving interventions, such as the use of technology and manipulatives, as well as the effects of teacher professional development. The publication is an excellent resource for math teachers, academics, and policymakers.

Problem 4: Is there a significant effect between the content knowledge on the learning strand towards the peer coaching technique?

Table 7 shows the effect of the respondents' level of content knowledge on the learning strand of the peer coaching technique. Overall, the respondents' level of content knowledge on the learning strand in terms of life and career skills showed a significant effect towards peer coaching technique as indicated by the T-value and probability value less than 0.05 alpha level, which led to the rejection of the null hypothesis. This implies that the respondents' level of content knowledge on the learning strand in terms of life and career skills can affect their level of peer coaching technique. This suggests that the abilities acquired through the life and career skills learning strand may be utilized in a variety of circumstances, making them transportable across sectors and domains. This demonstrates how life and career skills foster a culture of lifelong learning. It encourages individuals to continue learning new talents throughout their lives by teaching them how to learn, adapt, and evolve. The life and career skills learning component is critical for equipping individuals to succeed in the twenty-first century. It gives individuals the skills they need to traverse complicated social and economic situations, make educated decisions, and adapt to changing circumstances.

Labao (2019) discovered that the ALS program had a favorable influence on the life and professional skills of out-of-school youths and adults. Learners noted gains in communication, problem-solving, critical

thinking, and decision-making abilities. They also reported enhanced self-awareness, self-confidence, and drive to pursue additional education or professional options. The study emphasized the need to provide these students with other learning options. The program could favorably affect the lives of its learners by equipping them with the skills and information required to excel in their personal and professional life.

Table 7
Effect of the Respondents' Level of Content Knowledge on the Learning Strand Indicators on Peer Coaching Technique

Respondents' Level of Content Knowledge on the Learning Strand Indicators	Peer Coaching Technique Indicators				OVERALL L T-value p-value
	Teachers' self-efficacy T-value p-value	Understanding of the teaching and learning process T-value p-value	Decision-making T-value p-value	Reflective practice T-value p-value	
Scientific and Critical Thinking Skills	4.42 0.001* S	1.22 0.226 NS	2.90 0.004* S	3.11 0.002* S	3.79 0.001* S
Mathematical and Problem-Solving Skills	-1.41 0.161 NS	-0.48 0.630 NS	-0.65 0.516 NS	-0.09 0.929 NS	0.81 0.421 NS
Life and Career Skills	4.49 0.001* S	4.12 0.001* S	2.94 0.004* S	1.73 0.085 NS	4.28 0.001* S
Understanding the Self and Society	1.02 0.310 NS	0.50 0.614 NS	6.60 0.004* S	2.32 0.022* S	3.43 0.001* S
Digital Citizenship	1.41 0.162 NS	2.44 0.015* S	-1.32 0.189 NS	0.78 0.436 NS	1.12 0.264 NS

Legend: *significant at $p < 0.05$ alpha level S – significant NS – not significant

In particular, scientific and critical thinking skills showed a significant effect on peer coaching technique as indicated by the T-value and probability value less than 0.05 alpha level, which led to the rejection of the null hypothesis. This implies that the respondents' level of content knowledge on the learning strand in terms of scientific and critical thinking skills can affect their level of peer coaching technique. This shows that teachers, overall, acknowledge the value of scientific and critical thinking abilities in educating pupils for success in the modern world. Furthermore, these skills are seen as essential for several jobs as well as informed citizenship. Ultimately, teachers play an important role in encouraging scientific and critical thinking abilities in their students, and their ideas about the value of these skills may substantially influence their student's education and future employment possibilities.

El-Deghaidy et al. (2017) looked at how a professional development program affected teachers' scientific and critical thinking skills. The curriculum was created using a scientific inquiry method and featured seminars, training sessions, and classroom implementation. The results demonstrated that the training had a considerable favorable influence on instructors' skills, with scores improving significantly following the session. Teachers who participated in the program improved significantly in their abilities to design and perform scientific experiments, analyze and interpret scientific data, and utilize critical thinking skills to address scientific challenges. They also showed a greater inclination to employ inquiry-based teaching practices in their classes.

Moreover, the respondents' level of content knowledge on the learning strand in terms of understanding the self and society showed a significant effect towards peer coaching technique as indicated by the T-value and probability value less than 0.05 alpha level, which led to the rejection of the null hypothesis. This implies that the respondents' level of content knowledge on the learning strand in terms of understanding the self and society can affect their level of peer coaching technique. This further implies that

understanding the self and society necessitates delving into one's personality and ideals. Beliefs, experiences, and the social structures and processes that shape lives and communities must all be considered. By knowing themselves better, people can have a greater sense of self-awareness and self-esteem. Additionally, self-awareness may assist people in understanding and regulating their emotions, leading to improved mental health and well-being.

According to Park et al. (2018), higher levels of self-concept clarity were shown to relate to higher levels of relationship satisfaction, which was partially mediated by judgments of partner supportiveness. This shows that having a strong knowledge of one's strengths and qualities helps people communicate more effectively and seek out partnerships that fit their personalities and aspirations, resulting in higher relationship satisfaction. Those with greater self-concept clarity have higher levels of relationship-specific self-esteem, an essential component in predicting relationship satisfaction among emerging adults.

However, the respondents' level of content knowledge on the learning strand in terms of digital citizenship and mathematical and problem-solving skills showed no significant effect on peer coaching technique based on an understanding of the teaching and learning process as indicated by the T-value and probability value less than 0.05 alpha level which led to the acceptance of the null hypothesis. This implies that the respondents' level of content knowledge on the learning strand in terms of digital citizenship and mathematical and problem-solving skills do not affect their level of peer coaching technique based on their understanding of the teaching and learning process. This suggests that the respondents' level of content knowledge on the learning strand digital citizenship and mathematical and problem-solving skills was insufficiently creative or effective to have a significant impact on their judgment of the peer coaching technique.

Although digital citizenship and mathematics and problem-solving abilities have no significant influence on peer coaching techniques, they do have a beneficial association. According to the findings of Lee and Kwon (2018), digital citizenship education improved students' attitudes toward mathematics as well as their digital citizenship competencies, such as their capacity to utilize technology responsibly and ethically. The study demonstrates that including digital citizenship education in mathematics instruction can have a good influence, and it emphasizes the significance of encouraging students to use technology responsibly and ethically, as well as integrating it into larger curricular goals.

Problem 5: Is there a significant relationship between the content knowledge on learning strands and peer coaching technique when grouped according to:

- 5.1 Designation;**
- 5.2 Highest Educational Attainment;**
- 5.3 Length of Service as ALS Implementer; and**
- 5.4 Type of Community Learning Center?**

Table 8 shows the relationship between the respondents' level of content knowledge on learning strands and their profile. Overall, the respondent's designation showed a weak but significant relationship between their level of content knowledge on learning strands as indicated by **the correlation r-value and probability value less than 0.05 alpha level, which led to the rejection of the null hypothesis**. This implies there is a linear relationship, however weak, between the respondent's designation and their level of content knowledge on learning strands. This further implies that teacher expertise and designation are important in the content knowledge of the learning strands. This further reveals that teachers with the higher designation are more likely to have a wider understanding of the subject matter in Alternative Learning System learning strands. The teacher's teaching designation helps to improve the quality of teachers' content understanding of learning strands when instructing 21st-century learners. According to the findings, respondents' designation had a modest but significant link with their degree of topic understanding across learning strands. This demonstrates that ALS implementers with higher designations and personal traits such as empathy, determination, and a real commitment to their learners and communities are more likely to acquire the highest levels of respect and appreciation. As posited by Chiong et al. (2017) it discovers that teachers' affiliation with

intrinsic, altruistic, and perceived professional mastery motivations grows stronger with time, but ironically, so makes their identification with extrinsic ones in some circumstances.

Life and Career Skills and Digital Citizenship show a weak but significant relationship with the respondent's designation. Alternative Learning System Community Implementers with well-developed life and work skills frequently have strong communication and cooperation abilities, which might affect their digital citizenship practices. They may be more likely to engage in courteous and inclusive online interactions, contribute to online communities, and effectively work with others in digital settings. Educators and policymakers may contribute to the holistic development of learners and empower them to become responsible digital citizens in an increasingly digital environment by encouraging the acquisition of these abilities.

Table 8
Relationship between the Respondents' Levels of Content Knowledge on Learning Strands and their Profile

Respondents' Profile	Level of Content Knowledge on Learning Strands					OVERALL L r-value p-value
	Scientific and Critical Thinking Skills r-value p-value	Mathematical and Problem-Solving Skills r-value p-value	Life and Career Skills r-value p-value	Understanding the Self and Society r-value p-value	Digital Citizenship r-value p-value	
Designation	0.115 (WPR)	0.107 (WPR)	0.210 (WPR)	0.077 (NLR)	0.177 (WPR)	0.161 (WPR)
	0.105 NS	0.131 NS	0.003* S	0.280 NS	0.012* S	0.022* S
Highest Educational Attainment	0.049 (NLR)	0.165 (WPR)	0.063 (NLR)	0.148 (WPR)	0.011 (NLR)	0.086 (NLR)
	0.491 NS	0.020* S	0.377 NS	0.036* S	0.882 NS	0.228 NS
Length of Service as ALS Implementer	0.112 (WPR)	0.041 (NLR)	0.002 (NLR)	0.021 (NLR)	0.036 (NLR)	0.008 (NLR)
	0.114 NS	0.561 NS	0.981 NS	0.768 NS	0.617 NS	0.907 NS
Type of Community Learning Center	0.068 (NLR)	0.112 (WPR)	0.017 (NLR)	0.080 (NLR)	0.050 (NLR)	0.087 (NLR)
	0.341 NS	0.115 NS	0.806 NS	0.259 NS	0.482 NS	0.222 NS

Legend: *significant at p<0.05 alpha level

S – significant

NS – not significant

In particular, the respondent's highest educational attainment showed a weak but significant relationship on their level of content knowledge on learning strands in terms of mathematical and problem-solving skills and understanding the self and society as indicated by the **correlation r-value and probability value less than 0.05 alpha level which led to the rejection of the null hypothesis**. This implies there is a linear relationship, however weak, between the respondent's highest educational attainment and their level of content knowledge on learning strands in terms of mathematical and problem-solving skills and understanding the self and society. This further implies that persons with higher levels of education, such as a master's or doctoral degree, are more likely to have a better understanding of the content knowledge in their field of expertise than those with only a bachelor's degree.

When it comes to Mathematical and Problem-Solving Skills, ALS community implementers with a high degree of formal education are more likely to have good mathematics and problem-solving skills. Pursuing higher education frequently necessitates critical thinking and analytical reasoning, both of which are required for issue resolution. Advanced degree programs may include confronting hard challenges and employing advanced problem-solving strategies. ALS community implementers learn to approach challenges systematically, evaluate many viewpoints, and design new solutions.

As to Understanding the Self and Society, the ALS community implementers' highest educational attainment indicates their personal dedication to lifelong learning and self-improvement. They exhibit their commitment to acquiring information, skills, and competencies that will boost their professional capacities by achieving higher degrees of education. This personal development has a favorable influence on their self-esteem, self-confidence, and overall sense of contentment.

Moreover, Janssen (2017) examined how people's educational backgrounds and topic knowledge in biology and chemistry affected their skills in those disciplines. Those with greater levels of educational achievements, such as doctorates, tended to have higher levels of knowledge in their professions, according to the findings. Furthermore, there were differences in the types of expertise that individuals with different educational backgrounds and content knowledge possessed, with those with doctoral degrees more likely to have theoretical expertise and those with less formal education but more extensive practical experience having more practical expertise. Overall, the study demonstrates that both are key variables in acquiring competence in an area and that different forms of expertise may relate to varying degrees of schooling and content knowledge.

In the same table, the respondents' length of service as an ALS implementer and type of community learning center had no significant relationship with the content knowledge in the Alternative Learning System learning strand. This reveals that the length of service as an ALS implementer and the type of community learning center may not be a strong determinant. These may not be the key elements influencing content knowledge in the learning strand. This further reveals that the level of content knowledge on the learning strand may not be directly related to the length of service and the type of community learning center. While highly motivated and active implementers may seek opportunities to expand their knowledge and abilities, the length of service as an ALS implementer may not be substantially related to content expertise on the learning strand. Conversely, because the learning environment varies greatly within each kind of community learning center, the type of community learning center may not substantially influence a respondent's level of content knowledge on learning strands.

The findings reveal that the respondents' content knowledge of Alternative Learning System's learning strands is unaffected by the length of service as an ALS implementer or the type of community learning center. As posited by Liu (2019), findings revealed that teacher experience was associated with effective classroom management techniques such as creating clear norms and expectations, offering positive feedback, and employing active teaching tactics. Also, teacher gender and degree of education were significant predictors of classroom management strategies. Overall, the study sheds light on the connection between teacher experience and classroom management strategies in elementary schools. It emphasizes the necessity of giving teachers professional development opportunities to help them improve their classroom management abilities and support their continuous professional development.

Table 8 shows the relationship between the respondents' level of peer coaching techniques and their profile. Overall, the respondent's designation showed a weak but significant relationship with their level of peer coaching techniques as indicated by **the correlation r-value and probability value less than 0.05 alpha level which led to the rejection of the null hypothesis**. This implies there is a linear relationship, however weak, between the respondent's designation and their level of peer coaching techniques. This further implies that respondents with higher job categories may be tasked with coaching and counseling their peers. As a result, they may have developed more effective coaching tactics over time. Those with higher designations may have greater experience, expectations, training, and growth opportunities to build coaching skills and abilities.

This is consistent with Bhatti's (2017), findings revealed that teacher experience was positively

associated with classroom management methods such as creating clear norms and expectations, offering positive feedback, and employing active teaching tactics. Also, teacher gender and education level were significant determinants of classroom management strategies. Overall, the study sheds light on the link between teacher experience and classroom management strategies in elementary schools. It emphasizes the need to offer professional development opportunities for teachers to improve their classroom management abilities and support their continuous professional progress.

Table 9
Relationship between the Respondents’ Level of Peer Coaching Techniques and their Profile

Respondents Profile	Peer Coaching Technique Indicators				OVERALL r-value p-value
	Teachers’ self- efficacy r-value p-value	Understanding of the teaching and learning process r-value p-value	Decision- making r-value p-value	Reflective practice r-value p-value	
Designation	0.102 (WPR)	0.079 (NLR)	0.174 (WPR)	0.178 (WPR)	0.159 (WPR)
	0.151 NS	0.268 NS	0.014* S	0.012* S	0.024* S
Highest Educational Attainment	0.097 (NLR)	0.089 (NLR)	0.119 (WPR)	0.120 (WPR)	0.087 (NLR)
	0.174 NS	0.212 NS	0.094 NS	0.090 NS	0.219 NS
Length of Service as ALS Implementer	0.131 (WPR)	0.123 (WPR)	0.040 (NLR)	0.139 (WPR)	0.112 (WPR)
	0.046* S	0.028* S	0.574 NS	0.050* S	0.013* S
Type of Community Learning Center	0.001 (NLR)	0.086 (NLR)	0.044 (NLR)	0.026 (NLR)	0.057 (NLR)
	0.997 NS	0.228 NS	0.534 NS	0.711 NS	0.419 NS

Legend: *significant at p<0.05 alpha level S – significant NS – not significant

On the other hand, respondents’ length of service as ALS implementers showed a weak but significant relationship on their level of peer coaching techniques as indicated by **the correlation r-value and probability value less than 0.05 alpha level which led to the rejection of the null hypothesis**. This implies that there is a linear relationship, however weak, between the respondent’s lengths of service to their level of peer coaching techniques. This further implies that respondents with longer periods of service as ALS implementers may have greater experience engaging with and mentoring their colleagues. More service experience means greater experience, which can improve one’s ability to effectively train colleagues. Seasoned teachers may have successfully negotiated a range of problems, making them better qualified to assist their colleagues. In the context of ALS, where ALS community implementers interact with children who have specific learning needs and difficulties, the benefits of experience may be especially essential. Teachers who have been working in the ALS for a longer amount of time may be better able to modify their teaching to suit the different needs of their learners, as well as create ways for engaging learners who may be disinterested or struggling in a typical classroom setting.

This agrees with the statement by Berger et al. (2018), which has demonstrated that teachers’ classroom management strategies are related to their years of teaching experience. Experienced instructors are

more effective at classroom management than inexperienced ones. Years of teaching experience are significant factors to consider since they are connected to teaching methods, attitudes, and general ideas about teaching and learning. Seasoned instructors hold positive views and are confident in their ability to manage the classroom and encourage student participation.

4. Conclusion and Recommendations

Based on the findings of the study, the following conclusions are drawn:

The teacher respondents' level of content knowledge on the learning strand in terms of scientific and critical thinking skills, life and career skills, and understanding the self and society showed significant effect towards peer coaching technique. Furthermore, the weak but significant relationship between the designation of the teacher-respondent and the length of service as an ALS implementer implies that more experienced teachers and those in leadership roles may be more effective in adopting peer coaching strategies. This might be because they have more teaching experience and are better able to give useful criticism and direction to their colleagues.

In light of the above findings, the following recommendations are offered:

1. Community Learning Center (CLC) refers to local learning environments that are not part of the official education system. Teachers must make sure that the learners feel safe and secure in their learning space. Create a pleasant working atmosphere. A pleasant work environment can improve teacher satisfaction and performance significantly. Teachers are more inclined to stay at a school if they experience a sense of belonging. Encourage team-building events, collaboration, and idea-sharing opportunities for teachers.

2. There should be ample training and seminars for teachers to continue their professional development. Training, seminars, and activities that would harness the skills of the ALS Implementers. Educational stakeholders may enable ALS implementers to constantly improve their teaching techniques and provide the best possible learning experiences for ALS learners by emphasizing the provision of comprehensive training, seminars, and activities. Continuous professional development improves teachers' abilities and knowledge and contributes to the Alternative Learning System's overall quality and efficacy.

3. Mathematical and Problem-Solving concepts conferences, seminars, and training sessions should be given to Alternative Learning System Community Implementers. This will allow ALS Implementers to discover new tactics, strategies, and approaches to utilize in their teaching. In addition, encouraging ALS implementers to actively engage in mathematics and problem-solving conferences, seminars, and training sessions helps them remain on top of advancements in the field.

4. Alternative Learning System Community Implementers can work together to discuss ideas and tactics for strengthening mathematics and problem-solving skills. Those who have the highest designation can also collaborate with their colleagues to create lesson plans and activities that focus on these abilities.

5. Invest in training and development initiatives to help employees improve their skills and expertise. This can result in enhanced productivity, better work performance, and increased job satisfaction. Offering options for progress and growth inside the firm might also encourage employees to remain longer.

REFERENCES

- Abasolo Jr. (2017). Developing a Scheme of Action for an Enhanced Alternative Learning System. academia.edu. Retrieved February 28, 2023, from <https://scholar.google.com/scholar>.
- Abdullah, S., Alias, N., & Ariffin, N. F. M. (2018). Mathematical Problem Solving: A Review of Literature. *Journal of Education and Learning*, 7(1), 58-66.
- Alibakhshi, G., Asadi, F., Akbari, O., & Arshad, M. (2020). Exploring the consequences of teachers' self-efficacy: A case of teachers of English as a foreign language. *Asian-Pacific Journal of Second and Foreign Language Education*, 5(1), 1-16. doi:10.1186/s40862-016-0015-7

- Almaiah, M. A., Alismaiel, O. A., Alghamdi, R. M., Almahamid, S. M., & Al-Mutairi, M. A. (2022). Determinants Influencing the Continuous Intention to Use Digital Technologies in Higher Education. *Electronics*, 11(18), 2827. <https://doi.org/10.3390/electronics11182827>
- Alternative Learning System – Education and Skills Training Handbook for Implementers (2019) https://www.deped.gov.ph/als-est/PDF/ALS-EST_Handbook_for_Implementers.pdf
- Alternative Learning System K to 12 Basic Education Curriculum (ALS K to 12 Curriculum) (2019)
- Ariaso (2020). Concept of Good Teaching and Learning among Instructors in Philippine State Universities. *International Journal of Innovative Science and Research Technology*.
- Bautista, J. R., Cruz, K. R., Gatchalian, A. V., & Miranda, J. B. (2019). Length of Service and the Teaching Performance of Alternative Learning System Teachers. *Journal of Social Sciences and Humanities Research*, 7(2), 33-44.
- Bearden, R. A., Bowman, N. A., Hopkins, J., & Milligan, M. A. (2017). Teacher perceptions of peer coaching: A mixed methods study. *Journal of Educational Research & Policy Studies*, 17(1), 1-19.
- Berger, J. L., de la Fuente Arias, J., Pekrun, R., & Elliot, A. J. (2018). Teaching Experience, Teachers' Beliefs, and Self-Reported Classroom Management Practices: A Coherent Network. *SAGE Open*, 8(1), 215824401775411. <https://doi.org/10.1177/2158244017754119>
- Berkant, & Baysal (2018). An Analysis of the Changes in Pre-service Teachers' Perceptions towards Teacher Self-Efficacy and Academic Self-Efficacy and their Relations with Several Variables. *International Online Journal of Educational Sciences*. Retrieved March 3, 2023, from <https://www.researchgate.net/profile/Seda-Perceptions-towards-Teacher-Self-Efficacy-and-Academic-Self-Efficacy-and-their-Relations-with-Several-Variables.pdf>
- Bhatti, M. A. (2017). Exploring the effect of teacher's designation on peer coaching practices in Pakistani schools. *International Journal of Education and Development using Information and Communication Technology*, 13(3), 97-112.
- Blazar, D. (2017). The Relationship between Teacher Performance and Student Learning: A Review. *Review of Educational Research*, 87(2), 255-298. doi:10.3102/0034654316672069
- Böckler, A., Tusche, A., Schmidt, P., & Singer, T. (2017). Know thy selves: Learning to understand oneself increases the ability to understand others. *Journal of Cognitive Enhancement*, 1(2), 197-209. doi: 10.1007/s41465-017-0019-6.
- Ceschi, A., Demerouti, E., Sartori, R., & Weller, J. (2017). Decision-making processes in the workplace: How exhaustion, lack of resources and job demands impair them and affect performance. *Frontiers in Psychology*, 8, 313. <https://doi.org/10.3389/fpsyg.2017.00313>
- Chiong, Y. H., Sumintono, B., Subekti, N., & Misbach, I. (2017). Why do long-serving teachers stay in the teaching profession? Analyzing the motivations of teachers with 10 or more years of experience in England. *British Educational Research Journal*, 43(6), 1083-1110. <https://doi.org/10.1002/berj.3302>
- Cordero, J. A., Javier, R. J. C., Espanola, M. A. B., Mariano, M. A. P., & Apdohan, J. A. (2020). Enhancing Content Knowledge and Critical Thinking Skills of Alternative Learning System Learners through Inquiry-based Learning. *Journal of Educational Research and Evaluation*, 1(1), 11-18
- Dawson, E. & Turk, A. (2018). *Developing Scientific Thinking Skills in the Primary Classroom: A Theoretical Framework and a Practical Guide*. Routledge.
- Dayagbil, R. (2021). Community Learning Centers in the Philippines: Issues and Challenges in the Provision of Alternative Learning Opportunities. *Journal of Education and Learning*, 10(2), 181-191. doi: 10.5539/jel.v10n2p181
- Dayao, M. J. (2020). Principal: LAC sessions benefit students and teachers – Aparri School of Arts and Trades (ASAT). Principal: LAC Sessions Benefit Students and Teachers – Aparri School of Arts and Trades (ASAT). Retrieved October 27, 2022, from <https://asat-edu.com/index.php/2020/01/10/principal-lac-sessions-benefit-students-and-teachers/>
- DepEd Order No. 013, s. 2019 Policy Guidelines on the Implementation of Enhanced Alternative Learning System 2.0 <https://www.deped.gov.ph/2019/06/25/june-25-2019-do-013-s-2019-policy-guidelines-on-the-implementation-of-enhanced-alternative-learning-system-2-0/>
- DepEd Order no. 35 s. 2016 The Learning Action Cell (LAC) as a K to 12 Basic Education Program School-Based Continuing Professional Development Strategy for the Improvement of Teaching and Learning <https://www.deped.gov.ph/2016/06/07/do-35-s-2016-the-learning-action-cell-as-a-k-to-12-basic-education-program-school-based-continuing-professional-development-strategy-for-the-improvement-of-teaching-and-learning/>
- Dewi, P. Y. A., & Primayana, K. H. (2019). Effect of Learning Module with Setting Contextual Teaching and Learning to Increase the Understanding of Concepts. *International Journal of Education and Learning*, 1(1), 19-26. <https://doi.org/10.31763/ijele.v1i1.26>
- Deye & Brangoccio (2017). Promoting Digital Literacy and Citizenship in School. Promoting Digital Literacy and Citizenship in School
- Dogru, M., Yücel, İ., Kılıç, A. Ç., & Yıldız, İ. (2022). Development of Life and Career Skills Scale for University Students. *Asian Journal of Contemporary Education*, 6(1), 30-43.
- Doyle, A. (2019). The Importance of Interpersonal Skills in the Workplace. *The Balance Careers*. Retrieved from <https://www.thebalancecareers.com/importance-of-interpersonal-skills-2059673>
- El-Deghaidy, H., & Abdel-Hameed, A. (2017). The effect of scientific inquiry-based professional development on teachers' scientific and critical thinking skills. *International Journal of Science Education*, 39(3), 295-314.
- Fairuz, F., Azizah, N., Wardani, S., & Mudzakir, A. (2019). Enhancing critical thinking skills and information literacy of students through integrated science teaching materials. *IOP Conference Series: Materials Science and Engineering*, 509(1), 012017. doi: 10.1088/1757-899X/509/1/012017

- Fauth, J., Decristan, J., Rieser, S., Klieme, E., & Büttner, G. (2019). The effects of teacher competence on student outcomes in elementary science education: The mediating role of teaching quality. *Teaching and Teacher Education*, 86, 102882. <https://doi.org/10.1016/j.tate.2019.102882>
- Fedorov, A., Ilaltdinova, E., & Frolova, S. (2020). Teachers' Professional Well-Being: State and Factors. *Universal Journal of Educational Research*, 8(5), 1698–1710. <https://doi.org/10.13189/ujer.2020.080506>
- Fourtané (2021). Higher Education Institutions Need to Adopt Digital Citizenship Practices. *Fierceducation.com*
- Giancaspro, M. L., & Manuti, A. (2021). Learning to Be Employable Through Volunteering: A Qualitative Study on the Development of Employability Capital of Young People. *PubMed Central (PMC)*. <https://doi.org/10.3389/fpsyg.2021.574232>
- Goddard, Y. L., Goddard, R. D., Kim, E., & Miller, R. (2018). The role of lead teachers in supporting instructional improvement in elementary schools. *Journal of Educational Administration*, 56(4), 387–401. doi: 10.1108/JEA-10-2016-0126
- Goeke, J. L., Shin, M., & Scharmann, L. C. (2018). A systematic review of evidence-based practices in K-12 education. *Review of Educational Research*, 88(2), 205-242. doi: 10.3102/0034654317740332
- Gomez, J., Vega, V., de la Torre, J., & Vega, L. (2021). Exploring Teachers' Technology Integration Self-Efficacy through the 2017 ISTE Standards. *TechTrends*. Advance online publication. <https://doi.org/10.1007/s11528-021-00639-z>
- Gonzalez, C., & Balanon, F. (2020). Exploring the Relevance of Community Learning Centers in Delivering Basic Education to Disadvantaged Communities in the Philippines. *Journal of Social Sciences Research*, 12(2), 4604-4616. <https://doi.org/10.32861/jssr.122.4604>
- Guo, X., Wang, J., & Liu, Y. (2020). The impact of content knowledge and pedagogical content knowledge on teaching: A meta-analysis. *Educational Research Review*, 29, 100312. doi: 10.1016/j.edurev.2019.100312
- Gutierrez, S., & Kim, H. (2018). Peer Coaching in a Research-Based Teachers' Professional Learning Method for Lifelong Learning: A Perspective. https://www.researchgate.net/publication/326198036_Peer_Coaching_in_a_ResearchBased_Teachers'_Professional_Learning_Method_for_Lifelong_Learning_a_Perspective.
- Habib (2017). A Study of Reflective Practice and its role for Teachers. *ResearchGate.Net*. Retrieved March 2, 2023, from <https://www.researchgate.net/profile/HadiyaHabib/publication/334466>
- Hammond, L., Hyler, M. E., & Gardner, M. (2019). Effective teacher professional development. Learning Policy Institute. <https://learningpolicyinstitute.org/product/effective-teacher-professional-development-report>
- Herrity (2019). Life Skills for Career Success (And How To Improve Them). *Indeed*. Retrieved October 11, 2022, from <https://www.indeed.com/career-advice/career-development/life-skills>
- Humphreys, L. (2017). *Mobile communication: Bringing us together and tearing us apart*. Routledge.
- Hussain, & Ali Khan (2022). Self-efficacy of Teachers: A Review of the Literature. *ResearchGate*. Retrieved October 22, 2022, from <https://www.researchgate.net/publication/358368223>
- Ihekoronye, C. C. (2020). Conducive school environment: A necessary factor for effective teaching and learning in public secondary schools in Gwagwalada area council of Abuja. *Journal of Education and Multidisciplinary Research*, 2(1), 193-206. <https://www.bsum.edu.ng/journals/files/jem/vol2n1/article20.pdf>
- Jacob, John, & Gwany (2020). Teachers' Pedagogical Content Knowledge and Students' Academic Achievement: A Theoretical Overview. *Journal of Global Research in Education and Social Science*. Retrieved March 4, 2023, from <https://www.researchgate.net/profile/Jacob-Filgona-2/publication/344199882>
- Janssen, F. J. J., Westbroek, H. B., & Van Driel, J. H. (2017). Expertise in biology and chemistry: The role of educational background and content knowledge. *International Journal of Science Education*, 39(9), 1216-1237. doi: 10.1080/09500693.2017.1357477
- Johnson, R. T., & Johnson, D. W. (2017). Understanding student learning differences in the classroom: One size doesn't fit all. *Theory Into Practice*, 56(2), 94-101.
- Joo, H., & Lee, S. (2019). The relationship between length of service and job satisfaction among elementary school teachers in Korea. *Asia Pacific Education Review*, 20(1), 1-10.
- Joseph, G. E., Li, M., DeCuir-Gunby, J. T., Williams, B. L., & Xu, M. (2018). Using reflection to enhance teaching self-efficacy in early childhood education. *Early Childhood Education Journal*, 46(4), 365-374. <https://doi.org/10.1007/s10643-017-0866-1>
- Kadioglu, O., & Tufan, M. (2018). Mathematics in everyday life: A study of the relationships between mathematics attitudes, self-efficacy beliefs, and mathematical literacy. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(1), 217-227.
- Kintu, M. J., Zhu, C., & Kagambe, E. (2017). Blended learning effectiveness: the relationship between student characteristics, design features and outcomes. *International Journal of Educational Technology in Higher Education*, 14(1), 7. <https://doi.org/10.1186/s41239-017-0042-4>
- Koh, J. H. L., Chai, C. S., & Tsai, C.-C. (2018). Examining the roles of content knowledge and pedagogical content knowledge in lesson planning. *Educational Technology Research and Development*, 66(2), 309-327. doi: 10.1007/s11423-017-9550-3
- Komal (2022). Basic Processes of Teaching and Learning, CDP Study Notes, Material. *Basic Processes of Teaching and Learning, CDP Study Notes, Material*.
- Koshy, K., Limb, C., Gundogan, B., Whitehurst, K., & Jaffee, D. J. (2017). Reflective practice in health care and how to reflect effectively - *PMC*. *PubMed Central (PMC)*. Retrieved September 14, 2022, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5673148/>
- Koutouzis, M., & Malliara, K. (2017). Teachers' job satisfaction: the effect of principal's leadership and decision-making style. *International Journal of Education*, 9(4), 71. <https://doi.org/10.5296/ije.v9i4.10272>
- Kwok, L., & Lee, S. S. (2018). Digital citizenship education for global learners: Examining the importance of digital literacy and

- citizenship in a globalized world. *International Journal of Information and Learning Technology*, 35(2), 77-88.
- Labao, J. V., & Mola, A. F. (2019). Enhancing Life and Career Skills through Alternative Learning System (ALS) Program. *International Journal of Scientific and Research Publications*, 9(9), 651-655.
- Lee, J., & Kwon, K. (2018). Digital Citizenship Education and its Impact on Mathematics Achievement and Problem-Solving Skills. *Educational Technology & Society*, 21(4), 227-237.
- Lee, S. W., & Lee, E. A. (2020). Teacher qualification matters: The association between cumulative teacher qualification and students' educational attainment. *International Journal of Educational Development*, 77, 102218. <https://doi.org/10.1016/j.ijedudev.2020.102218>
- Liu, J., & Ahtee, M. (2020). Teachers' educational qualifications and student achievement: Evidence from a natural experiment in China. *Journal of Educational Research*, 113(2), 131-143. <https://doi.org/10.1080/00220671.2018.1566251>
- Liu, Y., Huang, Y., & Liang, L. (2019). Teacher Experience and Classroom Management Practices: Exploring Relationships in Primary Schools. *Frontiers in Psychology*, 10, 2537. doi: 10.3389/fpsyg.2019.02537
- Mahler, S. J. Groves, and T. E. Cook (2017). Opportunities to Learn for Teachers' Self-Efficacy and Enthusiasm. *International Journal of Education*, 9(3), 63-73. <https://doi.org/10.1155/2017/4698371>
- Malagsic, J. A., Adlaon, C. M., Jumawan, D. L., & Go, J. P. (2021). Self-efficacy and Work Commitment of the Private Senior High School Teachers in Time of Pandemic. *ResearchGate*. https://www.researchgate.net/publication/352015267_Self-efficacy_and_Work_Commitment_of_the_Private_Senior_High_School_Teachers_in_Time_of_Pandemic
- Mangulabnan, E. A. (2018). Length of Service and the Performance of Alternative Learning System Implementers in the Philippines. *International Journal of Social Sciences and Humanities Research*, 6(2), 1-7.
- Many, J. E., Howard, K. E., & Sorrell, J. M. (2018). The importance of teachers' understanding of the learning process: A review of the literature. *American Journal of Education*, 124(2), 163-173. doi: 10.1086/696861
- Mathew, B., Ramakrishnan, K., & Wilson, A. (2017). *Reflective Practices: A Means to Teacher Development*. Asia Pacific Institute of Advanced Research.
- McCombes, S. (2019). *Descriptive Research | Definition, Types, Methods & Examples*. Scribbr. Retrieved September 17, 2022, from <https://www.scribbr.com/methodology/descriptive-research/>
- Mendoza, J. J. N. (2022). *Pre-Service Teachers' Reflection Logs: Pieces of Evidence of Transformative Teaching and Emancipation*. Tarlac City: Sciedu Press.
- Monda-Amaya, J. A., & Mulki, S. (2018). Using Reflective Practice as a Formative Evaluation Tool for Identifying Areas of Need in Teachers. *Journal of Educational Research and Practice*, 8(1), 26-37. doi: 10.5590/jerap.2018.08.1.03
- Munna, & Kalam (2021). *Teaching and Learning Process to Enhance Teaching Effectiveness: A Literature Review*. Eric.Ed.
- Nguyen, H. T., Nguyen, H. T., & Nguyen, T. T. (2019). The effects of reflective practice on teacher self-efficacy and job satisfaction. *Teaching and Teacher Education*, 86, 102896. doi: 10.1016/j.tate.2019.102896
- Nurindah, Akil, & Jafar (2019). *Teachers' Self-efficacy and Performance in Teaching Literature in the Interest-based Classes at Senior High School*. Academy Publication
- Obi, & Agwu (2017). *Effective Decision-Making and Organizational Goal Achievement in a Depressed Economy*. Core.Ac.Uk.
- Oco, Richard M. (2022). Student's Exposure on Synchronous-Asynchronous-Tutorial Aided Distance Learning: Impact on Academic Performance in Mathematics. *Global Scientific Journals*. EOI: 10.11216/gsj.2022.01.57745
- Osman, S., Zakaria, E., Rahman, N. A. A., Salleh, S. M., & Ahmad, M. (2018). Enhancing Students' Mathematical Problem-Solving Skills through Bar Model Visualisation Technique. *International Electronic Journal of Mathematics Education*, 13(3).
- Pamungkas, Z. S., Aminah, N. S., & Nurosyid, F. (2018). Analysis of Students' Critical Thinking Ability in Solving Scientific Literacy based on Metacognition Ability. *EDUSAINS*, 10(2), 254-264.
- Panpatte, & Takale (2019). To Study the Decision-Making Process in an Organization for its Effectiveness. *The International Journal of Business Management and Technology*.
- Park, L., Kaplan, A., & Radin, S. (2018). Self-Concept Clarity and Relationship Satisfaction in Emerging Adults. *Journal of Personality*, 86(1), 88-102. doi: 10.1111/jopy.12305
- Passarelli, A. M., & Bailes, L. A. (2019). Peer coaching as a vehicle for professional development: A systematic review. *Teaching and Teacher Education*, 81, 191-205. <https://doi.org/10.1016/j.tate.2019.02.014>
- Paul, M. Milcah and Kumari, D. Ratna (2017). Physical conditions of a classroom – Dynamic elements promoting mental health and conducive learning in students. *Internat. J. Appl. Soc. Sci.*, 4 (7 & 8) : 211-215.
- Permata, R. A., Suryadi, D., & Sujadi, I. (2018). Mathematical problem-solving skills analysis about word problems of the linear program using IDEAL problem solver. *Journal of Physics: Conference Series*, 1108, 012025. doi: 10.1088/1742-6596/1108/1/012025
- Phillips, & Boyd (2022). *Self-Concept: Understanding the Self*. Study.com. Retrieved October 14, 2022, from <https://study.com/learn/lesson/understanding-the-self-overview-significance-how-to-understand-yourself.html>
- Prajapati, Sharma, & Sharma (2017). *Significance Of Life Skills Education*. Eric.Ed.Gov. Retrieved October 11, 2022, from <https://files.eric.ed.gov/fulltext/EJ1126842.pdf>
- Primasari, Miarsyah, & Rusdi. (2020, July). Science literacy, critical thinking skill, and motivation: A correlational study. *Research Gate*. https://www.researchgate.net/publication/343110561_Science_literacy_critical_thinking_skill_and_motivation_A_correlation_study
- Republic Act 10533 An Act Enhancing the Philippine Basic Education System by Strengthening its Curriculum and Increasing the Number of Years for Basic Education, Appropriating Funds therefor and for other purposes <https://www.officialgazette.gov.ph/2013/05/15/republic-act-no-10533/>
- Republic Act 11510 Alternative Learning System Act <https://www.officialgazette.gov.ph/2020/12/23/republic-act-no-11510/>

- Reyes, R.M.A., & Glaraga, J.P. (2017). The Roles and Challenges of ALS Literacy Volunteers in the Philippines. *Journal of Education and Practice*, 8(15), 52-60.
- Rios, K., Cheng, Z. H. J., & Zou, X (2017). The Role of Social Identity Complexity in the Relationship between Intergroup Contact and Prejudice. *Personality and Social Psychology Bulletin*, 43(3), 364-377. <https://doi.org/10.1177/0146167216689511>
- Roos, S., & Victorén, M. (2017). The reflective practice among Swedish teachers: perceptions, conditions, and use. *Professional Development in Education*, 43(4), 634-651.
- Roose, H., Van den Noortgate, W., Onghena, P., & Petrovic, M. (2019). Beliefs as filters for comparing inclusive classroom situations: Connecting teachers' beliefs about teaching diverse learners to their noticing of inclusive classroom characteristics in videos. *Contemporary Educational Psychology*, 56, 140-151. <https://doi.org/10.1016/j.cedpsych.2019.01.002>
- Saadah, A. S., Yusoff, R. M., Osman, K., Zainuddin, Z., & Aripin, R. (2020). Life and Career Skills amongst Technical and Vocational Education and Training (TVET) Students. *Research Gate*. https://www.researchgate.net/publication/340575375_Life_and_Career_Skills_amongst_Technical_and_Vocational_Education_and_Training_TVET_Students
- Sadachar, A., Chatterjee, S., Jain, A., & Gupta, R. (2019). Financial knowledge, attitudes, and behaviors among college students: Implications for student financial wellness. *Journal of Financial Counseling and Planning*, 30(2), 169-182.
- Sancar, R., Atal, D., & Deryakulu, D. (2021). A new framework for teachers' professional development. *Teaching and Teacher Education*, 101, 103305. <https://doi.org/10.1016/j.tate.2021.103305>.
- Sandoval-Almazan, R., Gil-Garcia, J. R., & Luna-Reyes, L. F. (2019). The impact of citizen participation in local governance on democratic quality: Evidence from Mexico. *Public Administration Review*, 79(2), 247-259.
- Saygılı, S. (2017). Examining The Problem-Solving Skills and The Strategies Used by High School Students in Solving Non-routine Problems. *E-International Journal of Educational Research*, Vol: 8, No: 2, 2017, pp. 91-114.
- Schulze, S., & Hargreaves, L. (2018). Peer coaching as a professional development model for teachers: A review of the literature. *Teaching and Teacher Education*, 76, 107-122. doi: 10.1016/j.tate.2018.08.007
- Schwab, K., & Samans, R. (2017). The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution. *World Economic Forum*. Retrieved from <https://www.weforum.org/reports/the-future-of-jobs>
- Sebello (2019). Logical Decision-Making in Public Higher Institution in the Philippines: A Sound and Critical Judgement. *Asia Pacific Journal of Multidisciplinary Research*. Retrieved October 23, 2022, from <http://www.apjmr.com/wp-content/uploads/2020/02/APJMR-2019-7.4.04.04.pdf>
- Senthilkumar, S., & Sumathi, K. (2019). Mathematical Problem-Solving Skills of Prospective Teachers in Relation to Their Achievement Motivation. *Journal of Education and Practice*, 10(27), 100-106.
- Shih, M., & Ko, H. C. (2017). Reflective practice as a tool for enhancing communication, critical thinking, and devotion to the aims of teaching. *European Journal of Teacher Education*, 40(3), 385-399.
- Sibiya, Z. G., & Lelliott, A. (2020). Investigating the influence of teacher education on the teaching of science in South African rural schools. *South African Journal of Education*, 40(4), 1-11. <https://doi.org/10.15700/saje.v40n4a1877>
- Sun, L., Zhang, Y., Yang, H., & Zhu, J. (2018). The Effect of Peer Coaching on Teacher Performance: A Meta-Analysis. *Journal of Educational Research*, 111(1), 22-33. <https://doi.org/10.1080/00220671.2016.1257145>
- Swart, R. (2017). Critical thinking instruction and technology enhanced learning from the student perspective: A mixed methods research study. *Nurse Education in Practice*, 23, 30-39. <https://doi.org/10.1016/j.nepr.2017.02.003>
- Szelei, N., Tinoca, L., & Pinho, A. S. (2019). Professional development for cultural diversity: the challenges of teacher learning in context. *Professional Development in Education*, 46(5), 780-796. <https://doi.org/10.1080/19415257.2019.1642233>
- Tangub, J. C., Ceballos, R. A., Ramos, J. P., & Javelosa, L. B. (2021). Job Satisfaction and Performance of Alternative Learning System (ALS) Teachers in the Philippines: A Study on the Moderating Role of Length of Service. *International Journal of Instruction*, 14(1), 1649-1662.
- UNICEF (2022). Strengthen Alternative Learning Systems toward quality, relevant second chance basic education. DepEd, UNICEF Strengthen Alternative Learning System toward Quality, Relevant Second Chance Basic Education. Retrieved August 30, 2022, from <https://www.unicef.org/philippines/press-releases/depd-unicef-strengthen-alternative-learning-system-toward-quality-relevant-second>
- Van der Heijden, E. A., Bulte, A. M., & Pilot, A. (2019). Teaching mechanics in higher education: A systematic review of research. *European Journal of Physics*, 40(6), 065702.
- Vanlommel, K., Vanhoof, J., Van Petegem, P., & Van den Noortgate, W. (2018). Teachers' high-stakes decision making: How teaching approaches affect rational and intuitive data collection. *Teaching and Teacher Education*, 71, 108-119. <https://doi.org/10.1016/j.tate.2017.12.011>
- Vansteenkiste, M., Sierens, E., Goossens, L., Soenens, B., & Mouratidis, A. (2019). Teachers' content knowledge and student engagement in mathematics: A multidimensional perspective. *British Journal of Educational Psychology*, 89(2), 275-293. doi: 10.1111/bjep.12251
- Verdejo, A., & Moreno-López, M. (2018). The role of emotions in decision-making: A cognitive neuroscience perspective. *Current addiction reports* 5(3), 276-285. doi: 10.1007/s40429-018-0208-1
- Villamin, J. A., Empizo, M. M., & Billedo, R. G. (2019). Enhancing the Life and Career Skills of Out-of-School Youth through Alternative Learning System in the Philippines. *International Journal of Instruction*, 12(3), 115-130.
- Winger, M., & Myers, C. (2019). Exploring the effects of mentorship programs on teacher retention and job satisfaction. *Journal of Education for Teaching*, 45(1), 3-17. doi: 10.1080/02607476.2018.1517112

- Wong, A. F. L., Chua, B. L., Tan, A. L., & Lee, W. O. (2019). Developing scientific thinking abilities through real-life problem solving: A study of middle school students in Singapore. *Journal of Research in Science Teaching*, 56(2), 237-259. <https://doi.org/10.1002/tea.2145>
- Yusuf Eryandi, K., & Nuryanto, A. (2020). 21st Century Skills of Life Career Skills in Productive Learning of Vocational High School of Technical Expertise Engineering in Yogyakarta City. *American Journal of Educational Research*, 8(7), 480-484. <https://doi.org/10.12691/education-8-7-5>
- Zeer, F., Semenova, I., Gusarova, O., Vakhnina, V., & Chernyshova, O. (2019). Teachers' Competitiveness at Different Stages of Professional Development. *Humanities & Social Sciences Reviews*, 7(4), 1108-1119. <https://doi.org/10.18510/hssr.2019.74151>
- Zhu, W., Li, Y., & Zhang, K. (2020). Exploring the effectiveness of peer coaching in promoting teacher professional growth: A systematic review. *Teaching and Teacher Education*, 95, 103-116. <https://doi.org/10.1016/j.tate.2020.103116>