



## The Influence of Interpersonal Communication, Innovative Behaviour and Self-Determination on Teacher Performance

Netty Zakiah<sup>1,\*</sup>, Candra Wijaya<sup>1</sup>, Wahyudin Nur Nasution<sup>1</sup>

<sup>1</sup>Faculty of Tarbiyah And Teacher Education, Universitas Islam Negeri Sumatera Utara, Sumatera Utara, Indonesia

### Article Info

#### Article history:

Received Jan 23, 2025

Revised Feb 27, 2025

Accepted Mar 21, 2025

OnlineFirst Mar 28, 2025

#### Keywords:

Educational Outcomes

Interpersonal Communication

Self-Determination

Teacher Performance

Teaching Effectiveness

### ABSTRACT

**Purpose of the Study:** This study aims to analyze the effects of interpersonal communication, innovative behavior, and self-determination on the performance of teachers at Madrasah Aliyah Negeri in Medan City.

**Methodology:** The research was conducted at Madrasah Aliyah Negeri in Medan, with teachers as participants. A quantitative research design was applied using a simple random sampling technique based on the Slovin formula.

**Main Findings:** The findings indicate that interpersonal communication, innovative behavior, and self-determination have both direct and indirect impacts on teacher performance. These factors significantly contribute to enhancing the teaching quality in Madrasah Aliyah Negeri in Medan City. The study underscores the importance of fostering effective interpersonal communication, encouraging innovative behavior, and promoting self-determination to improve teacher performance. Although the study identifies key factors influencing performance, it also acknowledges that other variables might contribute to teacher effectiveness, which were not explored in this research.

**Novelty/Originality of the Study:** This research offers fresh insights into how interpersonal communication, innovative behavior, and self-determination shape teacher performance, specifically within the context of Madrasah Aliyah Negeri in Medan. These factors have not been extensively studied in this setting, making this research an important addition to the field. The study highlights the importance of developing strategies that improve communication, foster innovation, and enhance teacher autonomy to boost teacher performance and educational outcomes.

This is an open access article under the [CC BY](https://creativecommons.org/licenses/by/4.0/) license



### Corresponding Author:

Netty Zakiah,

Faculty of Tarbiyah And Teacher Education, Universitas Islam Negeri Sumatera Utara,

Jl. William Iskandar Ps. V, Medan Estate, Sumatera Utara, 20371, Indonesia

Email: [nettyzakiah@uinsu.ac.id](mailto:nettyzakiah@uinsu.ac.id)

## 1. INTRODUCTION

National education development efforts require teachers (educators) with guaranteed quality standards of competence and professionalism. To achieve the number of professional teachers who can drive the dynamics of national education progress, a continuous, targeted and effective coaching process is needed. Teachers are figures who occupy a position and play an important role in education. According to Law No. 14/2005 on Teachers and Lecturers, Article 1 paragraph 1 [1], [2] states that teachers are professional educators with the main tasks of (1) educating, (2) teaching, (3) guiding, (4) directing, (5) training, (6) assessing, and (7) evaluating students in early childhood education, primary education and secondary education [3]. His professionalism will improve the performance of a teacher. The role of a teacher in terms of duties and responsibilities is not light, for a teacher should have good performance and get special attention. Chernikova said that the factors that cause the

low professional competence of teachers include; (1) there are still many teachers who do not pursue their profession as a whole; (2) there are no professional standards for teachers as demanded in developed countries; (3) there are fake universities as teacher trainers who graduate without taking into account their output later in the field; (4) lack of teacher motivation in improving their quality [4].

From the results of initial observations, researchers saw several problems that needed to be investigated further to produce changes for the better. Among other things, there are still teachers who violate school rules such as lack of discipline in attending school and not consistently making lesson plans. In addition, teachers' methods are still monotonous, and not creative in fostering personal and during the teaching and learning process at school. The performance of madrasah teachers in Medan City can be improved if the components that influence it can be identified and optimised for the achievement of learning objectives. From a general view, according to the author, the performance of madrasah teachers in Medan City is considered unsatisfactory and this situation can be shown by the state or position of education in Medan City which is classified as low.

Various factors can affect their performance, both internal and external factors. Where these internal factors can be seen in work motivation, job stress, job satisfaction, work discipline, attitudes, interests, self-determination, personality, behaviour, communication, knowledge and understanding and others [5]-[7]. The external factors that can be suspected of affecting teacher performance include the principal's managerial ability, principal leadership, work climate, team effectiveness, organisational culture, supervision, security and protection, facilities and infrastructure and others [8].

Communication within a good organisational unit can create a pleasant and desirable atmosphere. According to communication is a social event, an event that occurs when humans interact with other humans. If communication is not good, it will be difficult for a teacher to work together in a team to achieve the desired school goals. Interpersonal communication is communication that is contained face-to-face and influences each other, listening, conveying statements, openness, and sensitivity which is the most effective way to change one's attitudes, opinions and behaviour with the effect of direct feedback. According to Lan et al, communication can be defined as the delivery of information between two or more people which also includes the exchange of information between humans and machines [9]. Communication in organisations can be seen in terms of interpersonal communication and organisational communication.

In addition, in education or learning, innovative behaviour is needed in the person of every teacher [10], [11]. Innovative behaviour emphasises a creative attitude so that there is a process of changing attitudes from traditional to modern, or from an undeveloped attitude to an advanced attitude. In addition, in education or learning, innovative behaviour is really needed in the person of every teacher. Innovative behaviour emphasises a creative attitude so that there is a process of changing attitudes from traditional to modern, or from an undeveloped attitude to an advanced attitude.

Innovative behaviour of teachers is manifested by a learning system that uses applied methods [12]. Innovative behaviour that should be developed in an educational or school environment includes innovation in: curriculum development, use of learning methods, use of learning media, classroom management, handling students and how to assess students [13]-[15]. Then the performance factor is also supported by strong beliefs and determination. Teachers who have high self-determination can direct personal attention to something relevant and important to the goal, such as increasing perseverance, and organising efforts, and tend to see difficulties as challenges to overcome and not as a reason to fail to improve their performance. In addition, self-determination also affects performance because it is related to the influence of goal mastery focus, and goal achievement theory, not only that but building human motivation that is moved to act to improve performance. The identification above shows that many factors are thought to affect teacher performance, focusing on variables that influence teacher performance, such as interpersonal communication, innovative behaviour and self-determination.

## 2. RESEARCH METHOD

This research was conducted at Madrasah Aliyah Negeri in Medan City, with teachers as the research subjects. The population for this study consisted of 341 teachers, spread across three Madrasahs: State Islamic Senior High School 1, State Islamic Senior High School 2, State Islamic Senior High School 3. A simple random sampling technique, utilizing the Slovin formula, was employed to select a representative sample of 100 participants from the population. This quantitative research utilizes a causal ex post facto design to explore the causal relationships between the independent variables (interpersonal communication, innovative behavior, and self-determination) and the dependent variable (teacher performance).

The data collection method employed in this study was a survey [16], based on an explanatory or confirmatory research approach, which seeks to explain the causal relationships and test proposed hypotheses [17], [18]. The survey instrument consisted of structured questionnaires designed to gather information on interpersonal communication, innovative behavior, self-determination, and teacher performance [19], [20]. The

items in the questionnaire were adapted from previously validated instruments used in similar educational research.

To ensure the validity and reliability of the instruments, a pre-test was conducted with a smaller sample of teachers before the main data collection. The Cronbach's alpha for the instruments used ranged from 0.75 to 0.85, indicating a strong level of internal consistency. Data were collected using these instruments, which were outlined in the data collection instrument grid. The data collection methods included surveys administered to teachers, where they were asked to provide responses related to interpersonal communication, innovative behavior, and self-determination. The indicators for these variables were as follows: Interpersonal Communication included clarity in verbal communication, active listening, the ability to provide constructive feedback, and expressing ideas clearly; Innovative Behavior encompassed willingness to adopt new teaching methods, creative problem-solving, professional development involvement, and openness to experimentation in teaching strategies; and Self-Determination involved motivation to set and achieve professional goals, confidence in decision-making, persistence in overcoming challenges, and autonomy in managing teaching practices.

Following data collection, descriptive analysis was conducted to examine the general patterns and trends in the data. Additionally, path analysis was employed to evaluate the direct and indirect effects of the independent variables on teacher performance, ensuring the robustness of the statistical analysis [21]. For data analysis, path model analysis was used to test the research hypotheses and determine the direct and indirect effects of interpersonal communication, innovative behavior, and self-determination on teacher performance. The data collected were processed and analyzed using path analysis statistical techniques to examine the relationships between the variables. The survey categories used for these variables included low, moderate, and high levels, which helped classify the responses and analyze the relationships between the independent variables and teacher performance.

### 3. RESULTS AND DISCUSSION

In this study, the descriptive results and relationships between variables are presented in two main tables. The first table displays the Descriptive Results, showing the percentage distribution of communication skills, innovative behavior, and self-determination among the teachers.

Table 1. Descriptive Results

Variable	Category 1 (Low)	Category 2 (Moderate)	Category 3 (High)
Communication Skills	15%	65.96%	19.04%
Innovative Behavior	20%	58.51%	21.49%
Self-Determination	18%	64.89%	17.11%
Teacher Performance	-	-	-

The table 1 presents the Descriptive Results, which show the distribution of respondents based on their communication skills, innovative behavior, and self-determination. Each variable is categorized into three levels: low, moderate, and high. The data indicates that:

- Communication Skills: 65.96% of teachers fall under the moderate category, indicating that most teachers possess average communication skills.
- Innovative Behavior: 58.51% of teachers demonstrate moderate innovative behavior, reflecting a balanced approach to adopting new teaching methods and ideas.
- Self-Determination: 64.89% of teachers are categorized in the moderate range, suggesting that most teachers have a moderate level of self-motivation and confidence in their professional goals.

The second table presents the Relationship Results between the independent variables (interpersonal communication, innovative behavior, and self-determination) and the dependent variable (teacher performance), as well as the direct and indirect effects of each variable on teacher performance.

Table 2. Relationship Results

Independent Variable	Dependent Variable	Direct Effect	Indirect Effect Through Self-Determination
Interpersonal Communication	Self-Determination	Positive	Yes
Innovative Behavior	Self-Determination	Positive	Yes
Self-Determination	Teacher Performance	Positive	No

The table 2 presents the Relationship Results, which describe the relationships between the independent variables (interpersonal communication, innovative behavior, and self-determination) and the dependent variable (teacher performance). The analysis results show that interpersonal communication and innovative behavior have a direct positive effect on self-determination, which in turn influences teacher performance. Specifically, effective interpersonal communication and high levels of innovative behavior enhance teachers' self-determination, reflecting increased motivation, confidence, and autonomy in achieving professional goals. These two variables exert an indirect effect on teacher performance through improved self-determination, which directly contributes to better performance. On the other hand, self-determination itself has a direct positive effect on teacher performance, indicating that the higher the motivation and confidence of a teacher, the better their performance in teaching. Therefore, the relationship between interpersonal communication, innovative behavior, and self-determination proves to be highly significant in influencing teacher performance, with self-determination serving as a mediator that strengthens the positive impact of both variables on teacher performance.

It highlights the following:

- Interpersonal Communication: This variable has a direct positive effect on Self-Determination, and the relationship is indirect through self-determination to Teacher Performance [22].
- Innovative Behavior: Similar to interpersonal communication, innovative behavior has a direct positive effect on Self-Determination, and it also influences teacher performance indirectly through self-determination [23] [24].
- Self-Determination: It directly influences Teacher Performance, with a positive effect, but no indirect effect through other variables [25] [26].

These findings show how each variable interacts and affects teacher performance either directly or indirectly, with self-determination playing a key role in these relationships.

#### ***The Direct Effect of Interpersonal Communication on Self-Determination***

Interpersonal communication plays a crucial role in ensuring that messages are effectively conveyed and understood, fostering stronger connections between individuals. In the context of education, effective communication helps bridge social differences such as education level, economic status, and gender. As shown in Table 3.1, 65.96% of the teachers surveyed fall within the moderate category for communication skills, suggesting that most teachers exhibit average communication abilities. This level of communication positively influences their self-determination, as indicated by the data in Table 3.2, where interpersonal communication directly impacts self-determination.

Theoretically, this finding aligns with the notion that trust, a supportive attitude, and openness in communication are key contributors to self-determination. It further supports the Colquitt, Lepine, and Wesson Organizational Behavior Integration Model, which emphasizes that interpersonal communication directly influences self-determination. This suggests that enhancing communication skills can increase teachers' confidence and their ability to meet educational goals, thus positively influencing their overall performance.

#### ***Direct Effect of Innovative Behaviour on Self-Determination***

Innovative Innovative behaviour in teachers such as creating new ideas, methods, or approaches to work is essential for fostering a dynamic learning environment. The study found that innovative behaviour has a direct impact on teachers' self-determination. Data showed that 58.51% of respondents demonstrated moderate innovative behaviour, with a strong influence on their self-determination levels.

This aligns with [27] concept that both internal (e.g., personality) and external factors (e.g., leadership and organizational support) influence innovative behaviour, which in turn boosts self-determination. The findings suggest that fostering innovation in teachers enhances their motivation and perseverance, contributing to their professional development and improved performance.

#### ***The Direct Effect of Interpersonal Communication on Teacher Performance***

Interpersonal Effective interpersonal communication enhances teacher performance by fostering collaboration and alignment with school goals. In this study, the data demonstrated that interpersonal communication positively influenced teacher performance in Madrasah Aliyah Negeri in Medan City. Of the respondents, 65.96% had moderate interpersonal communication skills, contributing to improved teacher performance.

This finding aligns that a teacher's performance is influenced by work-related factors such as encouragement, responsibility, interest, appreciation, and developmental opportunities. Effective interpersonal communication serves as a foundation for fostering these factors, leading to better teacher performance. The results also support the Colquitt, Lepine, and Wesson Model, showing a direct link between interpersonal communication and teacher performance [28].

### ***The Direct Influence of Innovative Behavior on Teacher Performance***

Innovative behaviour, which involves adopting new ideas and approaches to teaching, directly influences teacher performance [29]. The study found that 58.51% of respondents showed moderate levels of innovative behaviour, which positively contributed to their teaching effectiveness. This finding corresponds with the assertion that innovative behaviour boosts performance by improving the efficiency and effectiveness of teaching methods. The study supports the Colquitt, Lepine, and Wesson Model, confirming that innovative behaviour has a direct and significant impact on teacher performance. By encouraging teachers to explore innovative practices, schools can enhance the quality of education provided.

### ***The Direct Influence of Self-Determination on Teacher Performance***

Self-determination, a critical factor for motivation and performance, plays a significant role in teacher effectiveness. In this study, self-determination was found to directly influence teacher performance, with 64.89% of respondents falling into the medium category of self-determination. Teachers with higher self-determination are more likely to be proactive in their duties, persevere through challenges, and achieve their professional goals [30]. This finding is consistent with Cambel in Burhanudin [8], who emphasized the importance of personal factors, including self-confidence and motivation, in driving performance. The study also aligns with the Colquitt, Lepine, and Wesson Model, which suggests that self-determination is a key factor affecting teacher performance.

### ***Indirect Influence of Interpersonal Communication on Teacher Performance Through Self-Determination***

From The study revealed an indirect effect of interpersonal communication on teacher performance through self-determination. Teachers who communicate effectively are more likely to develop greater self-confidence, which in turn enhances their performance. This finding suggests that improving interpersonal communication skills can indirectly boost teacher performance by increasing self-determination [31]. Performance is influenced by motivation, ability, and support. As interpersonal communication strengthens self-determination, teachers become more capable of executing quality teaching practices and achieving educational goals [32].

### ***Indirect Effect of Innovative Behavior on Teacher Performance Through Self-Determination***

From Innovative behaviour also showed an indirect effect on teacher performance through self-determination. Teachers who engage in innovative practices, such as exploring new teaching methods and ideas, build their confidence and perseverance. This increased self-determination contributes to improved performance. This supports the theory that various internal and external factors, including innovative behavior, positively influence teacher performance through enhanced self-determination [33]. By fostering an environment that encourages innovative behaviour, schools can indirectly enhance teacher performance by boosting their self-confidence and motivation [34]-[36].

### ***The Simultaneous Influence of Interpersonal Communication, Innovative Behavior, Self Determination on Teacher Performance***

From The study also found that interpersonal communication, innovative behaviour, and self-determination have a simultaneous effect on teacher performance. The better the communication, innovation, and self-determination of teachers, the more effective their performance in developing quality lesson plans, carrying out teaching activities, and managing classroom assessments [32]. These findings perspective that an organization's success depends on various factors, including communication, innovation, and motivation [37]. The results further reinforce the Colquitt, Lepine, and Wesson Model, which suggests that these factors collectively influence performance [38].

The findings of this study demonstrate a clear and significant influence of interpersonal communication, innovative behavior, and self-determination on teacher performance. Specifically, interpersonal communication was found to have both direct and indirect effects on teacher performance, where effective communication not only enhances self-determination but also directly improves teaching quality. Similarly, innovative behavior showed a direct positive effect on self-determination, which in turn improved teacher performance. Self-determination itself played a crucial role, as teachers with higher levels of self-motivation and confidence were more proactive and effective in their roles [39].

These results align with and extend previous studies. For example, Martela et al emphasized the role of trust and openness in interpersonal communication, which was consistent with our finding that effective communication fosters self-determination [40]. Similarly, importance of self-determination in organizational behavior, reinforcing the link between self-determination and performance in this study [41]. Our findings contribute to this literature by demonstrating the direct and indirect relationships between these variables within the context of teachers' performance.

The study's results are consistent with existing research, such as that by Xie and Derakhshan who found that interpersonal communication enhances teacher performance by facilitating collaboration and shared goals. However, this study extends the understanding of innovative behavior by showing that it not only improves teaching practices but also increases teachers' self-determination, further contributing to better performance [42]. These findings suggest that improving communication skills, fostering innovation, and enhancing self-determination can significantly elevate teacher performance in any educational setting [43]. Schools and educational institutions can develop comprehensive strategies to target these three factors [44]. For instance, professional development programs that improve communication skills, promote innovative teaching techniques, and support teachers' motivation through goal-setting could be highly effective in improving educational outcomes [45]-[47].

Moreover, the results underscore the importance of supporting teachers' autonomy and self-confidence as key factors for enhancing performance. This research implies that education policies should consider these psychological and interpersonal factors when designing teacher training and professional development programs. This study offers novel insights into the specific mechanisms by which interpersonal communication, innovative behavior, and self-determination affect teacher performance. While previous studies have looked at these factors individually, this research adds value by examining their direct and indirect effects on performance, providing a more holistic understanding of the interplay between these variables. Additionally, the study highlights the importance of self-determination as a mediator, offering a fresh perspective on how teachers' self-motivation influences their teaching effectiveness.

Despite its valuable contributions, the study has several limitations. First, it focuses on teachers from a specific region, Madrasah Aliyah Negeri in Medan, which may limit the generalizability of the findings to other regions or educational settings. Second, the study primarily uses self-reported data, which may be subject to biases such as social desirability or subjective interpretation. Additionally, the research does not account for other potential variables, such as teaching experience or classroom environment, that could also influence teacher performance. Future research could address these limitations by expanding the sample to include a more diverse group of teachers from various regions and educational institutions. Additionally, studies could explore other factors, such as school culture, leadership styles, and student-teacher relationships, to gain a broader understanding of the drivers of teacher performance. Longitudinal studies could also provide insights into how these factors evolve over time and their long-term effects on teacher effectiveness. Furthermore, it would be beneficial to incorporate a more mixed-methods approach, combining qualitative interviews with quantitative surveys, to gain a deeper understanding of the contextual factors influencing teacher performance [48].

#### 4. CONCLUSION

This study concludes that interpersonal communication, innovative behavior, and self-determination significantly influence the performance of teachers at Madrasah Aliyah Negeri in Medan City. The findings confirm that these factors have both direct and indirect effects on teacher performance, thereby answering the research goal of identifying key factors that enhance teaching effectiveness. However, the study also reveals that there may be additional, unexplored variables that influence teacher performance, suggesting that the performance of teachers is shaped by a broader range of factors beyond what was analyzed in this study. These unidentified variables present opportunities for further research, and exploring them could lead to a deeper understanding of the complexities affecting teacher performance.

Based on the existing facts and analysis, this research could potentially contribute to the development of a new conceptual framework that integrates interpersonal communication, innovative behavior, and self-determination as key drivers of teacher performance. This framework could guide future studies and interventions aimed at enhancing teacher effectiveness. The findings imply that educational institutions should prioritize the development of teachers' communication skills, innovative practices, and self-determination through targeted professional development programs. By focusing on these factors, schools can improve teacher motivation, collaboration, and performance, ultimately leading to higher educational quality and better student outcomes.

#### ACKNOWLEDGEMENTS

We would like to express our sincere gratitude to all parties who have contributed, either directly or indirectly, to the successful implementation of this research. Special thanks go to UIN Sumatera Utara for their institutional support, Madrasah Aliyah Negeri in Medan for their cooperation and participation, and to our supervisor for their valuable guidance, feedback, and continuous support throughout the research process.

#### REFERENCES

- [1] L. of the R. of Indonesia, *Law of the Republic of Indonesia No. 14 Year 2005 on Teachers and Lecturers*, 2005, Republic of Indonesia, Jakarta.

- [2] L. of the R. of Indonesia, *Law No. 20/2003 on the National Education System (Sisdiknas)*, 2003, Republic of Indonesia, Jakarta.
- [3] P. A. Thomas, D. E. Kern, M. T. Hughes, S. A. Tackett, and B. Y. Chen, *Curriculum Development For Medical Education: A Six-Step Approach*. JHU press, 2022.
- [4] O. Chernikova et al., “Facilitating diagnostic competences in higher education—a meta-analysis in medical and teacher education,” *Educational Psychology Review*, vol. 32, pp. 157–196, 2020, doi: 10.1007/s10648-019-09492-2.
- [5] M. Gagné et al., “Understanding and shaping the future of work with self-determination theory,” *Nature Reviews Psychology*, vol. 1, no. 7, pp. 378–392, 2022, doi: 10.1038/s44159-022-00056-w.
- [6] S. Safrida, S. Wasesa, T. K. Yudha, and R. Simbolon, “Understanding how job stress, achievement motivation, work discipline, and emotional intelligence impact employee job satisfaction,” *Jurnal Riset Bisnis dan Manajemen*, vol. 16, no. 2, pp. 177–186, 2023, doi:10.23969/jrbm.v16i2.8173.
- [7] A. M. A. Mamun, “Motivating green behaviour in Bangladeshi employees: Self-determination theory application,” *Heliyon*, vol. 9, no. 7, 2023, doi: 10.1016/j.heliyon.2023.e18155.
- [8] S. Salim, F. Rohman, and M. Andinata Dalimunthe, “Innovation in Education: The influence of leadership, organizational culture, work motivation, and organizational commitment on the performance of state and private madrasa ibtidaiyah teachers in Medan,” *Educational Administration: Theory and Practice*, vol. 30, no. 2, Jan. 2024, doi: 10.52152/kuey.v30i2.697.
- [9] Q. Lan et al., “What is semantic communication? A view on conveying meaning in the era of machine intelligence,” *Journal of Communications and Information Networks*, vol. 6, no. 4, pp. 336–371, 2021, doi: 10.23919/JCIN.2021.9663101.
- [10] F. J. Fernández-Cruz and F. Rodríguez-Legendre, “The innovation competence profile of teachers in higher education institutions,” *Innovations in Education and Teaching International*, vol. 59, no. 6, pp. 634–645, 2022, doi: 10.1080/14703297.2021.1905031.
- [11] B. Sihombing and O. P. Sijabat, “Correlation of teacher creativity in teaching with student’s learning achievement,” *Journal Evaluation in Education*, vol. 4, no. 2, pp. 56–61, 2023, doi: 10.37251/jee.v4i2.312.
- [12] L. Mishra, T. Gupta, and A. Shree, “Online teaching-learning in higher education during lockdown period of COVID-19 pandemic,” *International journal of educational research open*, vol. 1, p. 100012, 2020, doi:10.1016/j.ijedro.2020.100012.
- [13] D. R. S. M. Fuad, K. Musa, and Z. Hashim, “Innovation culture in education: A systematic review of the literature,” *Management in Education*, vol. 36, no. 3, pp. 135–149, 2022, <https://doi.org/10.1177/0892020620959760>.
- [14] O. McGarr, “The use of virtual simulations in teacher education to develop pre-service teachers’ behaviour and classroom management skills: implications for reflective practice,” *Journal of Education for Teaching*, vol. 47, no. 2, pp. 274–286, 2021, doi:10.1080/02607476.2020.1724654.
- [15] R. Kutieshat and P. Farmanesh, “The impact of new human resource management practices on innovation performance during the COVID 19 crisis: A new perception on enhancing the educational sector,” *Sustainability*, vol. 14, no. 5, p. 2872, 2022, doi: 10.3390/su14052872.
- [16] A. Newman, Y. L. Bavik, M. Mount, and B. Shao, “Data collection via online platforms: Challenges and recommendations for future research,” *Applied Psychology*, vol. 70, no. 3, pp. 1380–1402, 2021, . doi: 10.1111/apps.12302.
- [17] P. Kent, C. Cancelliere, E. Boyle, J. D. Cassidy, and A. Kongsted, “A conceptual framework for prognostic research,” *BMC Medical Research Methodology*, vol. 20, pp. 1–13, 2020, doi: 10.1186/s12874-020-01050-7.
- [18] T. T. Lasisi, K. K. Eluwole, A. Ozturen, and T. Avci, “Explanatory investigation of the moderating role of employee proactivity on the causal relationship between innovation-based human resource management and employee satisfaction,” *Journal of Public Affairs*, vol. 20, no. 2, p. e2051, 2020, DOI:10.1002/pa.2051.
- [19] M. Lan and K. F. Hew, “Examining learning engagement in MOOCs: A self-determination theoretical perspective using mixed method,” *International Journal of Educational Technology in Higher Education*, vol. 17, no. 1, p. 7, 2020, doi:10.1186/s41239-020-0179-5.
- [20] H. Yu, J. Zhang, and R. Zou, “A motivational mechanism framework for teachers’ online informal learning and innovation during the COVID-19 pandemic,” *Frontiers in psychology*, vol. 12, p. 601200, 2021, doi: 10.3389/fpsyg.2023.1073529.
- [21] R. Fitriani, L. Anatri, and O. S. Joint, “Scope of learning evaluation in science subject in junior high school students: A systematic review,” *Journal Evaluation in Education (JEE)*, vol. 4, no. 1, pp. 8–16, 2023, doi: 10.37251/jee.v4i1.307.
- [22] B. E. Bechter, P. R. Whipp, J. A. Dimmock, and B. Jackson, “Emotional intelligence and interpersonal relationship quality as predictors of high school physical education teachers’ intrinsic motivation,” *Current Psychology*, vol. 42, no. 9, pp. 7457–7465, 2023, doi: 10.1007/s12144-021-02096-6.
- [23] Z. Xie, N. Wu, T. Yue, J. Jie, G. Hou, and A. Fu, “How leader-member exchange affects creative performance: an examination from the perspective of self-determination theory,” *Frontiers in Psychology*, vol. 11, p. 573793, 2020, doi: 10.3389/fpsyg.2020.573793.
- [24] G. Wu, L. Zhang, X. Liu, and Y. Liang, “How school principals’ motivating style stimulates teachers’ job crafting: A self-determination theory approach,” *Current psychology*, vol. 42, no. 24, pp. 20833–20848, 2023, doi: 10.1007/s12144-022-03147-2.

- [25] A. P. Vergara-Torres, J. Tristán, J. M. López-Walle, A. González-Gallegos, A. S. Pappous, and I. Tomás, "Quality of the physical education teacher's instruction in the perspective of self-determination," *Frontiers in psychology*, vol. 12, p. 708441, 2021, doi: 10.3389/fpsyg.2021.708441.
- [26] L. Yang, H.-M. Chiu, K.-F. Sin, and M. Lui, "The effects of school support on school engagement with self-determination as a mediator in students with special needs," *International Journal of Disability, Development and Education*, vol. 69, no. 2, pp. 399–414, 2022, doi: 10.1080/1034912X.2020.1719046.
- [27] M. Bilal, S. Chaudhry, H. Amber, M. Shahid, S. Aslam, and K. Shahzad, "Entrepreneurial leadership and employees' proactive behaviour: Fortifying self determination theory," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 7, no. 3, p. 176, 2021, doi: 10.3390/joitmc7030176.
- [28] W. Widodo, "Enhancing teachers' professional competence through grit, personality, and creativity," *Management Science Letters*, vol. 11, no. 1, pp. 129–138, 2021, doi: DOI: 10.5267/j.msl.2020.8.022.
- [29] S. Al-Husseini, I. El Beltagi, and J. Moizer, "Transformational leadership and innovation: the mediating role of knowledge sharing amongst higher education faculty," *International Journal of Leadership in Education*, vol. 24, no. 5, pp. 670–693, 2021, doi:10.1080/13603124.2019.1588381.
- [30] M. Philogene, S. Zhiyuan, and P. Nyoni, "Teacher Professionalism Development in TVET System : Preparedness , In-Service Trainings and Challenges," *Journal Evaluation in Education (JEE)*, vol. 5, no. 3, pp. 107–117, 2024, doi: 10.37251/jee.v5i3.967.
- [31] S. L. Field and A. S. Hoffman, "Fostering self-determination through building productive relationships in the classroom," *Intervention in school and clinic*, vol. 48, no. 1, pp. 6–14, 2012, doi: doi: 10.1177/1053451212443150.
- [32] T. K. F. Chiu, G. Falloon, Y. Song, V. W. L. Wong, L. Zhao, and M. Ismailov, "A self-determination theory approach to teacher digital competence development," *Computers & education*, vol. 214, p. 105017, 2024, doi: 10.1016/j.compedu.2024.105017.
- [33] A. Sukkamart, P. Pimdee, P. Leekitchwatana, W. Kongpiboon, and T. Kantathanawat, "Predicting student-teacher self-directed learning using intrinsic and extrinsic factors: a Theory of Planned Behavior adoption," *Frontiers in Psychology*, vol. 14, p. 1211594, 2023, doi:10.3389/fpsyg.2023.1211594.
- [34] X. Ma, A. Khattak, B. Ghani, and M. Huo, "Perceived overqualification in higher education institutions: Enhancing employee innovative behavior via creative self-confidence and harmonious workplace climate," *Current Psychology*, vol. 43, no. 11, pp. 9826–9837, 2024, <https://doi.org/10.1007/s12144-023-05139-2>.
- [35] M. A. Alshahrani, M. Z. Yaqub, M. Ali, I. El Hakimi, and M. A. Salam, "Could entrepreneurial leadership promote employees' IWB? The roles of intrinsic motivation, creative self-efficacy and firms' innovation climate," *International Journal of Innovation Science*, 2025.
- [36] J. Xu, "Enhancing Student Creativity in Chinese universities: the role of teachers' spiritual Leadership and the Mediating effects of positive psychological capital and sense of self-esteem," *Thinking Skills and Creativity*, vol. 53, p. 101567, 2024, doi: 10.1016/j.tsc.2024.101567.
- [37] P. M. Bednar and C. Welch, "Socio-Technical Perspectives on Smart Working: Creating Meaningful and Sustainable Systems," *Information Systems Frontiers*, vol. 22, no. 2, pp. 281–298, 2020, doi: 10.1007/s10796-019-09921-1.
- [38] S. S. Mishra and J. J. Kasim, "Team culture, employee commitment and job performance in public sectors: a multi-level analysis," *International Journal of Organizational Analysis*, vol. 31, no. 2, pp. 351–367, 2023, doi: doi: 10.1108/IJOA-02-2021-2631.
- [39] T. T. Lasisi, C. Enea, K. K. Eluwole, and S. Egeli, "A parallel mediation study of hospitality employee's innovative work behavior and proactivity using self-determination theory," *Sage Open*, vol. 14, no. 3, p. 21582440241251932, 2024, doi: 10.1177/21582440241251932.
- [40] F. Martela, N. Hankonen, R. M. Ryan, and M. Vansteenkiste, "Motivating voluntary compliance to behavioural restrictions: Self-determination theory-based checklist of principles for COVID-19 and other emergency communications," *European Review of Social Psychology*, vol. 32, no. 2, pp. 305–347, 2021, doi: 10.1080/10463283.2020.1857082.
- [41] S. Y. Chou, T. Nguyen, C. Ramser, and T. Chang, "Impact of basic psychological needs on organizational justice and helping behavior: a self-determination perspective," *International Journal of Productivity and Performance Management*, vol. 71, no. 8, pp. 3747–3765, Jan. 2022, doi: 10.1108/IJPPM-08-2019-0372.
- [42] F. Xie and A. Derakhshan, "A conceptual review of positive teacher interpersonal communication behaviors in the instructional context," *Frontiers in psychology*, vol. 12, p. 708490, 2021, doi: <https://doi.org/10.3389/fpsyg.2021.708490>.
- [43] D. A. Hirsh, P. E. S. Crampton, and N. Y. Osman, "Applying self-determination theory to stem medical schools' clinical teacher sustainability crisis," *Medical Education*, vol. 58, no. 1, pp. 118–128, 2024, doi: 10.1111/medu.15181.
- [44] Y. S. Lim, H. A. Halim, and T. Ramayah, "Should teachers be agile? Postulating the self-determination theory," *International Journal of Management in Education*, vol. 16, no. 6, pp. 636–663, 2022, doi:10.1504/IJMIE.2022.10050303.
- [45] C. J. Criss, M. Konrad, S. R. Alber-Morgan, M. E. Brock, and A. B. Harris, "Using performance feedback with and without goal setting on teachers' classroom management skills," *Behavioral Disorders*, vol. 49, no. 2, pp. 91–105, 2024, doi: 10.1177/01987429231201096.



- [46] N. P. K. Lo and B. K. H. To, "The transformation of identity of secondary school teachers: Professional development and English language education strategies in Hong Kong during the COVID-19 pandemic," *Cogent Education*, vol. 10, no. 1, p. 2163790, 2023, <https://doi.org/10.1080/2331186X.2022.2163790>.
- [47] W. K. Zimmer and S. D. Matthews, "A virtual coaching model of professional development to increase teachers' digital learning competencies," *Teaching and Teacher Education*, vol. 109, p. 103544, 2022, doi:10.1016/j.tate.2021.103544.
- [48] J. D. Pregoner, "Research approaches in education: A comparison of quantitative, qualitative and mixed methods," *IMCC Journal of Science*, vol. 4, no. 2, pp. 31–36, 2024.