Humanities and Social Sciences Letters
2023 Vol. 11, No. 1, pp. 47-58
ISSN(e): 2312-4318
ISSN(p): 2312-5659
DOI: 10.18488/73.v11i1.3246

Student creativity development: The role of teacher innovation and intrapreneurial school culture

Suparno Suparno[1+]
Agung Firstianto[2]
Siti Nurjanah[3]
Disman Disman[4]
Ratieh Widhiastuti[5]

[1,2,3]*Jakarta State University, Indonesia.*
[1]*Email: suparno@feunj.ac.id*
[2]*Email: agungfirstianto@gmail.com*
[3]*Email: siti.nurjanah@unj.ac.id*
[4]*Indonesian Education University, Indonesia.*
[4]*Email: Disman@upi.edu*
[5]*Semarang State University, Indonesia.*
[5]*Email: ratiehwidhiastuti@unnes.ac.id*

(+ Corresponding author)

Article History
Received: 3 October 2022
Revised: 8 December 2022
Accepted: 26 December 2022
Published: 5 January 2023

Keywords
Higher education
Intrapreneurial leadership
Principal methods
School culture
Student creativity
Teacher innovation.

ABSTRACT

The entrepreneurial leadership of school principals is a top priority for developing teacher innovation. Creativity and innovation in economic learning also need to be developed in an intrapreneurial-based culture. This study aims to investigate the interconnectedness between school principals' intrapreneurial leadership and teacher Innovation, and examine the role of creativity and school culture of public high school teachers in Indonesia. This research was conducted using a survey method in three public high schools in Jakarta of Indonesia. A simple random sampling method was applied to identify the participants of this research, which comprised 100 teachers. Teacher innovation is measured through developing methods, strategy, services, and opportunities. Principal intrapreneurship is measured through leadership daring to take risks, providing opportunity, being proactive, and developing technology. The school culture variables are also measured in values, applicable norms, tradition, and confidence. The data followed validity and reliability analysis, and it was tested using multiple linear regression. The results of the study indicate that the principal's intrapreneurial leadership and school culture positively affect teacher innovation, either partially or simultaneously. Therefore, for the development of teacher innovation, there is a need to develop principal's Intrapreneurial Leadership with risk-related courage, as well as school culture on compliance with applicable norms in work organizations.

Contribution/Originality: This research contributes to creating a culture of innovative students through the entrepreneurial leadership culture of the principal and development of teacher innovation in economic education institutions as a predictor of student creativity in school culture. This finding strengthens the theoretical scientific literature and empirical measurement of innovation-based education.

1. INTRODUCTION

Education is the process of socialization of an individual toward intellectual maturity, social values, and morals according to their ability and dignity as human beings (Ramayulis, 2015). Some academicians agree that education plays a role in establishing humans to be more intelligent, smart, nice, competent, democratic, faithful, and devoted to God (Musanna, 2017; Nuraida, 2010; Sudrajat, 2011; Triyanto, Anitah, & Suryanti, 2013). To achieve these objectives, it is necessary to reform education to make them more qualified. Furthermore, it is substantial to consider that global competition in the 21st century is more massive and competitive.

Teacher training in schools is one of many ways to reform education (Jatirahayu, 2013; Wang, Odell, Klecka, Spalding, & Lin, 2010). In a school environment, teachers are vital to influencing the success of students and communities. The rationale is that when implementing the learning activities, teachers have direct contact with learners (Adirestuty & Wirandana, 2016). In addition, to face the continuous dynamic changes in the community, innovation becomes essential and mandatory in life that should be responded to by the educational side (Lee, 2011; Tohidi & Jabbari, 2012). Therefore, the matter of innovation is a prerequisite for the creation of knowledge as well as the essence of management science (Liao, Fei, & Liu, 2008).

As one of the determinant subjects of success in the learning process, a teacher is required to enlarge knowledge and innovativeness to deal with changes. Some preliminary studies have mentioned that the primary factor in enhancing more qualified learning is improved teachers' quality through innovation (Cvetković & Stanojević, 2017; Kovacs, 2017; Mykhailyshyn, Kondur, & Serman, 2018; Nicolaides, 2012; Sinay, Nahornick, & Graikinis, 2017; Thakur & Shekhawat, 2014). It is therefore concluded that teachers are required to respond to the development of the times through various innovations to perform the learning activities.

One of the problems of national education in Indonesia is the insufficient level of human resources, including the quality of teachers (Mudassir, 2016) which is represented by a low level of innovative teachers. Lamenting on the lack of innovative teachers in Indonesia, Harris Iskandar, the former Director of High School, the Directorate General of Education, and Ministry of Education and Culture has stated that from 5.6 million teachers in Indonesia, only two percent of them are innovative (Bramantyo, 2013). Therefore, it is logical that Indonesia's rank on the Global Innovation Index is in the 85th position among 126 countries indexed in 2018 (Cornel University, INSEAD, & WIPO, 2018). In detail, the innovation rank of South East Asia Countries is provided in Table 1.

Table 1. Innovation rank of South East Asia countries.

No.	Country	World ranking	Score (0-100)
1.	Singapore	5	59.83
2.	Malaysia	35	43.16
3.	Thailand	44	38.00
4.	Vietnam	45	37.94
5.	Brunei Darussalam	67	32.84
6.	Philippines	73	31.56
7.	Indonesia	85	29.80

Jakarta despite being the capital city does not represent a good quality of education, as shown in the insufficient level of Teacher Competency Test (TCT) conducted in 2015. The national results of the TCT documented that the province with the highest level of competence of teachers was Yogyakarta province, with a 62.58 average score, while Jakarta only achieved a 58.44 score on TCT (Hafil, 2015). Furthermore, the TCT score of the high school teachers in East Jakarta was only one level above the position of Kepulauan Seribu, which was in the lowest position. Besides, the average score of TCT high school teachers in Jakarta was 69.02, while the score of high school teachers in TCT East Jakarta was 68.65. Thus, it can be said that the TCT score of high school teachers in East Jakarta was in positions below the average (see Table 2).

Table 2. TCT's score of high school teacher in East Jakarta.

No.	City administration	Score (0-100)
1.	Central Jakarta	71.38
2.	North Jakarta	70.98
3.	West Jakarta	70.32
4.	South Jakarta	70.29
5.	East Jakarta	68.65
6.	Kepulauan Seribu	62.52

Innovations can be performed in several ways, including experimenting a treatment in a class (Foster & Yaoyuneyong, 2016) seeking resources from new opportunities (Serrat, 2009) encouraging others to think creatively (De Jager, Muller, & Roodt, 2013) and creating a flexible organization (Maidin & Hamzah, 2010). The most effective method for making the organization more innovative is to capitalize on the ability of the members in the organization to innovate (Jeroen & Deanne, 2007) and the creation of a culture that encourages creativity and innovation (Wibowo & Saptono, 2017).

A prior study noted that the change in innovation and development of the school was born from entrepreneurial leadership (Wibowo. & Saptono, 2018). In this regard, principals who have leadership traits of entrepreneurship are the principal who dare to take risks, are able to see the opportunities, as well as to organize and manage the existing resources. These traits provide space for teachers to develop and enhance the creativity that exists within them, which enables them to become more innovative.

School is an educational institution owned by the government or by a private owner, so there is a regulation that is imperative to every element and aspect contained therein. Meanwhile, an entrepreneur is a person who owns a business and is accepted as a leader in his business. In this case, the term entrepreneur in the education context, especially in organizational schools, is irrelevant. Therefore, the relevant terms used are not entrepreneurs but intrapreneurs (Usman, 2012). Intrapreneurship is represented by initiating and implementing innovative systems within the organization (Maier & Zenovia, 2011). The principal's intrapreneurial leadership refers to the characteristics of the school's principal as an entrepreneur, such as risk-taking, being able to see the opportunities, organizing and managing resources there, and encouraging innovation growth.

School is an organization, and it has a unique culture to support the educational goal or well-known as organizational culture (Manik & Bustomi, 2011). Culture is considered an essential factor in supporting innovativeness among teachers and the emergence of creativity (Wibowo & Saptono, 2017). Innovative schools follow an idea and strategically implement these ideas in the school organizational process, which includes the school's philosophy, curriculum, culture, climate, and structure (Pollock, 2014). On the other hand, learning innovation is about how a teacher reforms through a combination or variation in the learning process. A non-innovative teacher in their daily life when meets an incredible culture performs a variety of innovations will affect to positive manner. This will have implications for the increasing innovation of teachers, which will make the teachers more innovative. Therefore, it is clear that more attention should be given to developing a culture of organizational learning to enhance organizational innovation, primarily among innovation teachers (Škerlavaj, Song, & Lee, 2010).

Based on the facts and the above discourse that has been provided, it can be remarked that the innovation of teachers is a major aspect of the success of learning in school. The low level of innovation of teachers became the main urgency of research on the factors that influence the innovation of teachers. Therefore, the formulation of the problem in this study is presented as follows.

1. The principal's intrapreneur leadership has a positive effect on teacher innovation.
2. School culture has a positive effect on teacher innovation.
3. The principal's intrapreneur leadership and school culture has a positive effect on teacher innovation.

2. LITERATURE REVIEW

2.1. Innovation

Innovation means taking new ideas and turning them into corporate and market realities (Mauzy & Harriman, 2003). New ideas need to be continuously developed to provide some consideration to human problems and provide comfort in life. It is also mentioned that innovation is a useful process for development, production, and hard work to succeed in inventions initiated by perceptions of new market opportunities (Sattler, 2011). Innovation can be shown by renewal in the change of a person, group, or institutional organization that introduced it. Teamwork or participatory management that is introduced in an educational institution is also considered an innovation when it

is new to the institution, regardless of whether the teamwork method has been socialized in other institutions or not (Rusdiana & Hermayati, 2015). A prior study stated that innovation is a faster development process than competitors (Olsen, 2007) and organizations cover all products, inputs, processes, services, or technology (Deswarte, 2004). Innovative behavior is the activity of individuals to create ideas and solutions, work to raise and create support for them, and produce a prototype that can be applied or a model for the use and benefit of the organization or part of the organization (Carmeli, Meitar, & Weisberg, 2006).

The immersion of technology, education, and Industry must eliminate the mismatch between supply and demand. Schools as educational institutions need to provide major innovations, including how teachers educate, principals in leading, and students as young entrepreneurs who can lead the future. This includes changes of new ideas applied to initiate or improve a product, process, and service (Griffin & Moorhead, 2007; Robbins & Judge, 2011). The teachers' innovations are directed at producing, introducing, or applying new findings in the form of ideas and solutions that benefit the organization, which come from the exploration of opportunities, generativity, informative investigations, fighting for, and applications (Widodo, 2018) while innovation requires creativity (Evans, 2013).

Based on expert opinion, it can be said that innovation is an update of activities in the form of creating, modifying, and combining new ideas to be developed both in terms of methods, strategies, services, and opportunities, resulting in something different both in terms of view, ideas, and processes which was applied to the goods, services, and processes to increase the value of it for the better.

2.2. Intrapreneurial Leadership

Previous studies define leadership as the ability to guide and influence the opinions, attitudes, and behavior of others (Leonard, 2010) toward achieved goals (Kreitner & Kinicki, 2008), and as a joint result (Usman, 2013). This is done through the process of building ideas and visions that live by the values that support and influence their behavior to make decisions about resources (Hellriegel & Slocum, 2011) facilitating goals that are relevant to organizational goals (Ivancevich, Konopaske, & Matteson, 2014). A leader should have the ability to influence people to voluntarily follow a direction or be loyal to a decision (Rue & Byars, 2010).

Leadership requires togetherness in the organization as the capability of an individual to exercise influence and control must pay attention to what he/she is doing so that he can influence the group and achieve common goals, motivate, and enable others to contribute towards the effectiveness and success of the organization (George & Jones, 2002; Robbins & Coulter, 2012; Yukl, 2010). Leadership is also independent, daring to take risks and opportunities, and able to manage the organization and work. Like entrepreneurial leadership, intrapreneurship is entrepreneurship within the organization, and those who dare to do business in the organization where they work (work as an employee) are labeled as intrapreneurs (Abraham, 2010; Lowe & Mariott, 2006). These activities include processes of innovation, proactivity, self-renewal, and risk-taking to improve and sustain organizational and financial performance (Karimi, Malekmohamadi, Daryani, & Rezvanfar, 2011).

Intrapreneurship is entrepreneurship within the corporate scope that involves innovation, effort, and strategic renewal activities in the organization (Woo, 2018). Education as a proactive innovation plays a role in product development and entrepreneurship technology. Therefore, entrepreneurship is also a proactive venture, and takes risks with product and technology development (Eyal & Kark, 2004).

Intrapreneur leadership also occurs in schools as an organization. The principal, as a manager, is an individual who directly leads the development and progress of the institution. This requires innovative and creative thinking oriented toward future. Intrapreneurship at the individual level involves network behavior, thinking out of the box, initiative, taking over, winning, and taking some degree of risk (Moriano, Molero, Topa, & Mangin, 2014). A preliminary study explains intrapreneur leadership in leadership school organizations with characteristics such as entrepreneurs who are used to achieving organizational goals in this context at school (Wibowo & Saptono, 2017).

An intrapreneur is open-minded, able to influence and drive, work in a team, dare to take risks and be responsible, having innovative spirit, and be a creative visionary to bring the organization to achieve common technology-based goals.

2.3. School Culture

Culture is all human power and activities to cultivate and change nature (Soekanto, 2003). It is a complex pattern or norm, attitude, behavior, value, ceremony, tradition, and myth deeply embedded in every core of an organization (Barth, 2004). Meanwhile, in the context of school culture, school culture is a guideline of values in terms of the operationalization of schools within the scope of schools (Fullan, 2007). Fiore (2002) emphasized that school culture is the culmination of common results consisting of beliefs, values, norms, and expectations. It also covers traditions, rituals, and expectations that are formed and strengthened in the school culture (Boyle, 2012). Furthermore, it is also argued that a school is an organization, but its culture exists only at the school level (Manik & Bustomi, 2011). Thus, it can be simplified that school culture is a specific organizational culture.

Organizations have rules and norms. Applicable regulations bind members strictly, while norms guide how to carry out work and have a good social culture. Organizational culture includes the rules, norms, and values that shape employee attitudes, as well as major components of organizational culture (Colquitt, LePine, & Weson, 2013). Organizational culture is an essential part of solving problems, as well as being introduced to new members, and this requires social control (Schein, 2004). It is also emphasized that organizational culture is an identity for the organization and makes a difference with other organizations with clear boundaries (McShane & Glinov, 2010; O'Donnell & Boyle, 2008). This reveals that the school as a cultural organization must provide direction in attitudes and behavior, good learning, and progress that becomes a common identity. In this regard, school culture is a characterization of the moral, educational, and value management aspects (Cheng, 2012).

The features of school culture conveyed by Levin (2007) are expectations about children, expectations about school experiences, expectations about the role of adults in schools, and opinions about educational practice. By referring to the definitions that have been quoted from various experts above, it can be concluded that school culture or school organizational culture is everything related to values, prevailing norms, traditions, and beliefs that exist and are inherently inherent and applicable to every resident who is within the scope of the school.

3. METHODOLOGY

This research used quantitative methods with a survey approach. The indicators of the study were provided from prior studies and relevant theories. The collected data were further processed on a numerical scale and analyzed descriptively to answer research problems.

3.1. Participants

The population in this study were teachers from three schools in East Jakarta with a total of 140 teachers. A simple random sampling method was designed to consider every respondent to have the same opportunity to be a part of this research. The sample group comprised 100 teachers. The sampling technique used was random sampling. We determined the number of samples in this study using the formula recommended by Cecilia (2018), which resulted in 100 high school teachers. A total of three schools in East Jakarta were selected as an affordable population – these three represent the larger and most outstanding schools of the total schools.

3.2. Data Collection Process

To measure how innovation is determined by intrapreneurial leadership and school culture, the author adapted four indicators for each variable. Likert scale was used for each indicator, with 1 as strongly disagree and 5 as strongly agree. The dependent variable in this research was teacher innovation (Y), while the independent variables

were intrapreneurial leadership (X_1) and school culture (X_2). All variables like innovation, intrapreneurial leadership, or school culture were measured using a total of 20 items of questionnaire which were developed from theoretical studies and previous researchers. The innovation variable consisted of four indicators: developing method, strategy, service, and opportunity. In addition, the intrapreneurial leadership variable consisted of four indicators: encouraging to take a risk, giving opportunities, being proactive, and developing technology. Lastly, the school culture variable consisted of four indicators: values, applied norms, tradition, and beliefs.

3.3. Data Analysis

The data collected in this study consisted of innovation, intrapreneurial leadership, or school culture. Hence, descriptive data analysis was used to find out and answer the empirical research gap. Furthermore, parametric statistical tests were carried out to answer the theoretical gap in research through hypothesis testing and regression. Lastly, processing data was performed using research software Statistical Product and Service Solutions (SPSS) Version 25.

4. RESULTS

The data in this study were obtained by distributing questionnaires to respondents. Based on the trial study, of the 20 items of the teacher's innovation (Y) questionnaire was declared valid, 20 items of the principal intrapreneur leadership (X1) were determined valid items, and 20 items of school culture were also concluded to be valid. The validity test indicated that each item r-arithmetic was higher than 0.195, and the reliability test resulted in items of Cronbach's Alpha value was higher than 0.05. Thus, each instrument item was determined to be valid and reliable. Based on the normality test, it was known that the significance of intrapreneurial leadership is 0.512, school culture is 0.953, and teacher innovation is 0.687; and all three of them were significantly greater than 0.05 to achieve the normality test.

Table 3. Tabulation of data on teacher innovation, principal's intrapreneur leadership, and school culture.

No.	Indicator	Score	Total score	Mean	Percentage
Teacher innovations					
1	Developing methods	350	1758	351.6	25.49%
2	Developing a strategy	345	1744	348.8	25.29%
3	Developing services	346	1718	343.6	24.91%
4	Developing opportunities	327	1676	335.2	24.31%
Principal intrapreneur leadership					
1	Daring to take risks	367	1795	359	25.57%
2	Providing opportunity	337	1725	345	24.58%
3	Being proactive	354	1764	352.8	25.14%
4	Developing technology	346	1734	346.8	24.71%
School culture					
1	Values	353	1744	348.8	25.48%
2	Applicable norms	356	1762	352.4	25.74%
3	Tradition	347	1707	341.4	24.93%
4	Confidence	312	1633	326.6	23.85%

Based on Table 3, it can be seen that teacher innovation was mainly influenced by the indicator of developing methods, with a percentage of 25.49%. The indicator that gave the slightest effect of teacher innovation is developing opportunities with a percentage of 24.30%. The principal intrapreneur leadership is affected by the risk-taking indicator with a percentage of 25.57%. The indicators that have the most negligible influence on the principal's intrapreneur leadership variable were the indicators of providing opportunities, namely 24.58%. The school culture variable shows that the school culture variable was mainly influenced by the prevailing norm indicators, which is equal to 25.73%. The indicator that gave the smallest effect was confidence, which was 23.85%.

From the linearity test, the deviation from linearity for X_1 to Y is 0.116, and X_2 to Y is 0.664 which has meaning when both of the output is greater than 0.05 therefore the data is linear. The calculation of multiple regression using SPSS 25 is presented in Table 4.

Table 4. Multiple regression analysis result.

Model	Dependent variable	Independent variables		F	R^2
	Teacher innovation	Intrapreneurial leadership	School culture		
Coefficient	6.042	0.143	0.773	698.447	0.935
SE	1.707	0.061	0.065		
t-test	3.540	2.357	11.836		
Sig.	0.001	0.002	0.000		

Table 4 provides the results of the multiple regression test, with a coefficient of 6.042 for teacher innovation, 0.143 for intrapreneurial leadership, and 0.773 for school culture, with a significance level of less than 0.05. Thus, both intrapreneurial leadership and school culture have a positive impact on teacher innovation. In the term of mathematics equation, it will be $Y= 6.042+0.143X_1+ 0.773X_2$. Based on the F-value score of 698.447, which is greater than f-table 3.09, it can be concluded that both intrapreneurial leadership and school culture variables simultaneously affect teachers' innovation. R-square indicates that 93.5 percent tested independent variables, intrapreneurial leadership and school culture, able to explain the innovation variable, while the remaining 6.5 percent is influenced by other variables not examined.

5. DISCUSSION

The results of this study indicate that intrapreneur leadership has a direct positive effect on innovation through data analysis with a coefficient of 0.143. This finding is in line with research conducted by Hecker (2017) which stated that intrapreneurship is a process of opening individual interactions and their organizational environment, completing levels of ideal-typical and core activities. Furthermore, these levels and activities converge into a comprehensive process model of organizational innovation. The difference between Hecker (2017) and this research is that the former focuses on the role of the organization as the locus of organizational innovation development and its members as a drive while the current research focuses on intrapreneur leadership as a determinant factor that encourages innovation development of organizational members.

Similarly, Olokundun et al. (2018) revealed that intrapreneurs played a significant role in motivating employees as well as creating a podium for employees to express their vision and creative abilities aimed at increasing innovative performance. However, the finding of the prior study used technology engagement indicators, product differentiation, improved business processes, and an enhanced market offering. The intrapreneur leadership variable in this study involved indicators of risk-taking, providing opportunities, being proactive, and developing technology. Even so, there is a similarity in indicators of technological development. For this reason, there is also a positive influence between intrapreneur leadership and teacher innovation. Thus, the higher the level of the principal's intrapreneur leadership, the more innovative the teachers will be.

The next finding indicates that school culture has a direct positive effect on innovation through data analysis with a coefficient of 0.773. The results support an earlier study by Zhu and Engels (2014) which stated that innovation is formed based on norms, values, and beliefs, which are components of organizational culture. Therefore, it can be said that there is an influence between school culture and teacher innovation. The difference finding indicates that there is a higher desire for instructional innovation. This research shows that innovation is supported by a culture of an organizational environment that is supportive of the innovation itself, not instructional.

McCharen, Song, and Martens (2011) explained how school culture affects teacher innovation. The three variables studied in their research, namely the creation of knowledge, departmental creativity, and job autonomy,

are components of a school culture that are the main factors in influencing innovation, so it can be concluded that there is an influence between school culture and teacher innovation. Unlike a prior study, this research puts forward the formation of school culture through strong principal leadership by designing the school culture itself through school job autonomy, departmental creativity, and organizational knowledge creation. This research considers school culture as an indeterministic factor, and this is evident from the indicators used namely values, prevailing norms, traditions, and beliefs. Based on the explanation above, it can be concluded that there is a positive influence between school culture and teacher innovation.

Furthermore, the result of this study indicates that intrapreneur leadership and school culture have a direct positive effect on innovation through data analysis with a coefficient of 0.935. This research is in line with Wibowo and Saptono (2017) who stated that intrapreneurship leadership and school culture had a positive direct effect on the innovation performance of public elementary school teachers in East Jakarta. Thus, there is an influence between intrapreneur leadership and school culture on innovation. The different finding from the prior study is that the degree of simultaneous influence of intrapreneur leadership and school culture on innovation in public elementary school teachers in East Jakarta is 78.4 percent. As in this study, where the respondents were public high school teachers, the degree of simultaneous influence of intrapreneur leadership and school culture on the innovation of public high school teachers was 93.5 percent. This concludes that the variables of intrapreneur leadership and school culture give greater meaning to public high school teachers than public elementary school teachers, with validation based on the value of the coefficient of determination that has been described.

6. CONCLUSION

This study concludes that there is an influence between the principal's intrapreneur leadership and school culture on the innovation of senior high school teachers in East Jakarta. In detail, the first finding showed a positive and significant influence between the principal's intrapreneur leadership and teacher innovation. The higher the level of the principal's intrapreneur leadership, the more the teacher's innovation will increase and vice versa. Second, there is a positive and significant influence between school culture and teacher innovation. The higher the level of school culture, the more teacher innovation will raise, and vice versa. Third, there is a positive and significant influence between the principal's intrapreneur leadership and school culture on teacher innovation. If the principal's intrapreneur leadership and school culture increase, then teacher innovation will enhance. This study implies that good principal intrapreneur leadership will have implications for increasing teacher innovation in carrying out learning activities. This can be provided by encouraging an increase in indicators in the principal's intrapreneur leadership, namely taking risks, providing opportunities, being proactive, and developing technology. A good school culture will also have implications for increasing teacher innovation in carrying out learning activities. This can be provided by encouraging an increase in indicators contained in school cultures, such as values, prevailing norms, traditions, and beliefs. Things that need to be considered so that teacher innovation can increase, include school principals' improved intrapreneurial leadership in leading schools, as well as creating and supporting a school cultural climate that supports innovation. Furthermore, the action that needs to be considered to enhance teacher innovation, includes the principal increasing the leadership of the intrapreneur in leading schools and creating and supporting a school cultural climate that supports innovation.

7. RECOMMENDATIONS

This study provides suggestions that are expected to be helpful and valuable for the principal. It is forecasted that the principal will improve his/her intrapreneurial leadership to increase teacher innovation, this is important so that learning can be more optimal. Increasing intrapreneurial leadership is mainly carried out on indicators of providing opportunities, which are the lowest indicators in this study. For school residents, especially school principals can concern with improving a cultural climate

that supports innovation. This is essential, considering that school culture can have implications for increasing teacher innovation. The improvement of school culture is mainly carried out on the indicator of belief, which is the lowest indicator in this study. Future researchers are expected to examine other factors such as creating new classes, looking for new opportunities, creating flexible organizations, and other factors that can influence teacher innovation so that further research is more valuable and increases the scope of knowledge. This research has several limitations, such as teacher innovation is not only influenced by intrapreneur leadership and school culture, but other variables can influence teacher innovation which is not researched.

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study.

REFERENCES

Abraham, R. (2010). The relationship of vertical and horizontal individualism and collectivism to intrapreneurship and organizational commitment. *Leadership & Organization Development Journal, 18*(4), 179-186. https://doi.org/10.1108/01437739710182278

Adirestuty, F., & Wirandana, E. (2016). The influence of teacher self-efficacy and teacher creativity on student motivation and its implications for learning achievement in economics subjects. *Social Science Education Journal Website, 3*(2), 158–165.

Barth, R. (2004). *Learning by heart.* San Fransisco: Jossey-Bass.

Boyle, J. (2012). *It's all about people skills: Surviving challenges in the classroom.* Lanham: Rowman & Littlefield Education.

Bramantyo. (2013). *Wow, only 2% of innovative teachers!* Retrieved from https://news.okezone.com/read/2013/03/18/373/777289/wah-baru-2-guru-yang-inovatif.

Carmeli, A., Meitar, R., & Weisberg, J. (2006). Self-leadership skills and innovative behavior at work. *International Journal of Manpower, 27*(1), 75-90. https://doi.org/10.1108/01437720610652853

Cecilia, A. I. (2018). Effect and snags of provision of in-service education and training for teachers in basic schools for the deaf. *International Journal of Educational Administration and Policy Studies, 10*(10), 128–134. https://doi.org/10.5897/ijeaps2018.0568

Cheng, Y. C. (2012). *School effectiveness and school-based management: A mechanism for development.* New York: Falmer Press.

Colquitt, J. A., LePine, J., & Weson, M. J. (2013). *Organization behavior, improving performance, and commitment in the workplace.* New York: McGraw-Hill/Irwin.

Cornel University, INSEAD, & WIPO. (2018). *The global innovation index 2018: Energizing the world with innovation. Ithaca, Fontainebleau, and Geneva.* Retrieved from https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2018.pdf.

Cvetković, B. N., & Stanojević, D. (2017). Educational needs of teacher for introduction and application of innovative models in educational work to improve teaching. *International Journal of Cognitive Research in Science, Engineering and Education, 5*(1), 49–56. https://doi.org/10.5937/IJCRSEE1701049N

De Jager, C., Muller, A., & Roodt, G. (2013). Developing creative and innovative thinking and problem-solving skills in a financial services organisation. *SA Journal of Human Resource Management, 11*(1), 1-10. https://doi.org/10.4102/sajhrm.v11i1.502

Deswarte, Y. (2004). *Information security management, education, and privacy.* Boston: Springer Science.

Evans, J. R. (2013). *Quality performance excellence, management, organization, and strategy.* New Jersey: Cengage Learning.

Eyal, O., & Kark, R. (2004). How do transformational leaders transform organizations? A study of the relationship between leadership and entrepreneurship. *Leadership and Policy in Schools, 3*(3), 211-235. https://doi.org/10.1080/15700760490503715

Fiore, D. (2002). *Creating connections for better schools: How leaders enhance school culture.* California: Praeger.

Foster, J., & Yaoyuneyong, G. (2016). Teaching innovation: Equipping students to overcome real-world challenges. *Higher Education Pedagogies, 1*(1), 42-56. https://doi.org/10.1080/23752696.2015.1134195

Fullan, M. (2007). *The new meaning of educational change*. New York: Teacher College Press.

George, J. M., & Jones, G. R. (2002). *Understanding and managing organizational behavior* (6th ed.). New Jersey: Pearson Education.

Griffin, R. W., & Moorhead, G. (2007). *Organizaiotnal behavior: Managing people and organizations*. New York: Houghton Mifflin Company.

Hafil, M. (2015). *Yogyakarta teacher receives the highest UKG score*. Retrieved from https://republika.co.id/amp_version/o07q886

Hecker, A. (2017). The intrapreneurial nature of organizational innovation: Toward a new process model. *International Journal of Innovation, 5*(3), 375-398. https://doi.org/10.5585/iji.v5i3.208

Hellriegel, D., & Slocum, J. W. (2011). *Organizational behavior*. South-Western: Cengage Learning.

Ivancevich, J. M., Konopaske, R., & Matteson, M. T. (2014). *Organization behavior and management*. New York: McGraw Hill.

Jatirahayu, W. (2013). Quality teachers are the key to quality education. *Teacher's Scientific Journal "COPE", 2*(17), 46–53.

Jeroen, P. J. D. J., & Deanne, N. D. H. (2007). How leaders influence employees' innovative behavior. *European Journal of Innovation Management, 10*(1), 41–64. https://doi.org/10.1108/14601060710720546

Karimi, A., Malekmohamadi, I., Daryani, M. A., & Rezvanfar, A. (2011). A conceptual model of intrapreneurship in the Iranian agricultural extension organization: Implications for HRD. *Journal of European Industrial Training, 35*(7), 632-657. https://doi.org/10.1108/03090591111160779

Kovacs, H. (2017). Learning and teaching in innovation: Why it is important for education in 21st century. *Neveléstudomány, 5*, 45-60. https://doi.org/10.21549/NTNY.18.2017.2.4

Kreitner, R. & Kinicki, A. (2008). *Organizational behavior: Key concepts, skills & best practices*. New York: McGraw Hill.

Lee, Y.-J. (2011). A study on the effect of teaching innovation on learning effectiveness with learning satisfaction as a mediator. *World Transactions on Engineering and Technology Education, 9*(2), 92-101.

Leonard, E. C. (2010). *Concepts and practices of management supervision*. South-Western: Cengage Learning.

Levin, H. M. (2007). *Learning from school reform, edited by John Chi-kin Lee, Lestlie Nai-kwai Lo, and Alla Walker*. Hong Kong: The Chinese University Press.

Liao, S.-H., Fei, W.-C., & Liu, C.-T. (2008). Relationships between knowledge inertia, organizational learning and organization innovation. *Technovation, 28*(4), 183-195. https://doi.org/10.1016/j.technovation.2007.11.005

Lowe, R., & Mariott, S. (2006). *Enterprise: Entrepreneurship and innovation concepts, contexts, and commercialization*. Oxford: Elsevier Ltd.

Maidin, N. F., & Hamzah, M. I. M. (2010). Learning to develop creativity and innovation: A case study of selected schools. *Procedia-Social and Behavioral Sciences, 7*, 24-31. https://doi.org/10.1016/j.sbspro.2010.10.004

Maier, V., & Zenovia, C. P. (2011). Entrepreneurship versus intrapreneurship. *Review of International Comparative Management, 12*(5), 971–976.

Manik, E., & Bustomi, K. (2011). The influence of principal leadership, organizational culture, and work motivation on teacher performance at SMP Negeri 3 Rancaekek. *Journal of Economics, Business & Entrepreneurship, 5*(2), 97–107.

Mauzy, J., & Harriman, R. (2003). *Creativity, Inc: Building an inventive organization*. Massachusets: Harvard Business School Press.

McCharen, B., Song, J., & Martens, J. (2011). School innovation: The mutual impacts of organizational learning and creativity. *Educational Management Administration & Leadership, 39*(6), 676-694. https://doi.org/10.1177/1741143211416387

McShane, S. L., & Glinov, M. A. V. (2010). *Organizational emerging knowledge and practice for the real world*. New York: McGraw Hill.

Moriano, J. A., Molero, F., Topa, G., & Mangin, J.-P. L. (2014). The influence of transformational leadership and organizational identification on intrapreneurship. *International Entrepreneurship and Management Journal, 10*(1), 103-119. https://doi.org/10.1007/s11365-011-0196-x

Mudassir, M. (2016). Development of educational resources at Madrasah Aliyah Negeri (MAN) Bireun Regency. *DIDAKTIKA Scientific Journals*, *16*(2), 255–272. https://doi.org/10.22373/jid.v16i2.599

Musanna, A. (2017). Indigenization of education: The rationality of the revitalization of educational practices of Ki Hadjar Dewantara. *Journal of Education and Culture*, *2*(1), 117-133.

Mykhailyshyn, H., Kondur, O., & Serman, L. (2018). The innovation of education and educational innovations in conditions of modern higher education institution. *Journal of Vasyl Stefanyk Precarpathian National University*, *5*(1), 9-16. https://doi.org/10.15330/jpnu.5.1.9-16

Nicolaides, A. (2012). Innovative teaching and learning methodologies for higher education Institutions. *Educational Research*, *3*(8), 620-626.

Nuraida, D. (2010). The need for education, learning, and technology reform in the age of knowledge. *El-Hayah*, *1*(2), 1–7.

O'Donnell, O., & Boyle, R. (2008). *Understanding and managing organizational culture*. Ireland: The Institue of Public Administration.

Olokundun, M., Falola, H., Ibidunni, S., Ogunnaike, O., Peter, F., & Kehinde, O. (2018). Intrapreneurship and innovation performance: A conceptual model. *Academy of Strategic Management Journal*, *17*(2), 1-5.

Olsen, E. (2007). *Strategic planning for dummies*. Canada: Wiley Publishing.

Pollock, K. (2014). The four pillars of innovation: An elementary school perspective. *The Public Sector Innovation Journal*, *13*(2), 1–17.

Ramayulis. (2015). *Education basics: An introduction to education science*. Jakarta, Indonesia: Kalam Mulia.

Robbins, S. P., & Judge, T. A. (2011). *Organizational behavior* (14th ed.). New Jersey: Pearson Educational Inc.

Robbins, S., & Coulter, M. (2012). *Management* (11th ed.). New Jersey: Prentice-hall.

Rue, L. W., & Byars, L. L. (2010). *Supervision, key link to productivity* (10th ed.). New York: McGraw-Hill/Irwin.

Rusdiana, & Hermayati, Y. (2015). *Teacher professional education*. Bandung, Indonesia: Pustaka Setia.

Sattler, M. (2011). *Excellence in innovation management: A meta-analytic review on the predictors of innovation performance*. Heidelberg: Gabler Verlag.

Schein, E. H. (2004). *Organizational culture and leadership* (3rd ed.). San Fransisco: John Wiley & Sons.

Serrat, O. (2009). *Harnessing creativity and innovation in the workplace*. Washington, DC: Asian Development Bank.

Sinay, E., Nahornick, A., & Graikinis, D. (2017). *Fostering global competencies and deeper learning with digital technologies research series: Creativity and innovation in teaching and learning: A focus on innovative intelligence (I2Q) pilot program*. Retrieved from Research Report No. 17/18-11. Toronto, Ontario, Canada: Toronto District School Board:

Škerlavaj, M., Song, J. H., & Lee, Y. (2010). Expert systems with applications organizational learning culture, innovative culture, and innovations in South Korean firms. *Expert Systems With Applications*, *37*(9), 6390–6403. https://doi.org/10.1016/j.eswa.2010.02.080

Soekanto, S. (2003). *Sociology an introduction*. Jakarta, Indonesia: Grafindo.

Sudrajat, A. (2011). Why character education? *Journal of Character Education*, *1*(1), 47–58. https://doi.org/10.21831/jpk.v1i1.1316

Thakur, D., & Shekhawat, M. (2014). Importance of teaching innovation & creativity in engineering and management. *International Journal of Engineering Trends and Technology*, *14*(3), 153-157. https://doi.org/10.14445/22315381/ijett-v14p230

Tohidi, H., & Jabbari, M. M. (2012). The important of innovation and its crucial role in growth, survival and success of organizations. *Procedia Technology*, *1*, 535-538. https://doi.org/10.1016/j.protcy.2012.02.116

Triyanto, E., Anitah, S., & Suryanti, N. (2013). The role of principal leadership in using learning media as efforts to improve the quality of the learning process. *Journal of Educational Technology*, *1*(2), 226–238.

Usman, H. (2012). *Vocational education leadership*. Yogyakarta, Indonesia: UNY Press.

Usman, H. (2013). *Management: Theory, practice, and educational research* (4th ed.). Jakarta, Indonesia: PT. Ikrar Mandiri.

Wang, J., Odell, S. J., Klecka, C. L., Spalding, E., & Lin, E. (2010). Understanding teacher education reform. In (Vol. 61, pp. 395-402). Los Angeles, CA: Sage Publications Sage CA.

Wibowo, A., & Saptono, A. (2017). Intrapreneurship leadership, school culture and teacher innovation performance. *Journal of Economics and Business Education*, *5*(2), 176-193. https://doi.org/10.21009/jpeb.005.2.5

Wibowo., A., & Saptono, A. (2018). Does entrepreneurial leadership impact on creativity and innovation of elementary teachers? *Journal of Entrepreneurship Education*, *21*(2), 1-9.

Widodo, W. (2018). The role of learning organizations in optimizing teacher innovation. *Therapeutics: Guidance and Counseling Journal*, *1*(3), 220-224. https://doi.org/10.26539/1377

Woo, H. R. (2018). Personality traits and intrapreneurship: The mediating effect of career adaptability. *Career Development International*, *23*(2), 145-162. https://doi.org/10.1108/cdi-02-2017-0046

Yukl, G. (2010). *Leadership in organization.* New Jersey: Pearson Educational Inc.

Zhu, C., & Engels, N. (2014). Organizational culture and instructional innovations in higher education: Perceptions and reactions of teachers. *Educational Management Administration & Leadership*, *42*(1), 136-158. https://doi.org/10.1177/1741143213499253