School Health as the Mediator Variable: Determinants of the Principal Instructional Leadership Behavior

Sukarmin* ID
Universitas Sebelas Maret, INDONESIA

Ishak Sin
Universiti Utara Malaya, MALAYSIA

Abstract: The primary purpose of this research was to determine the effect of principal instructional leadership behavior on several determinants: organizational commitment, efficacy, and teacher satisfaction through school health. Five instruments that had been used are the principal instructional management rating scale (PIMRS); organizational health inventory for elementary schools (OHI-E); online course questionnaire (OCQ); teacher satisfaction scale (TSS); teacher efficacy scale (TES). All of these instruments had high validity and reliability; with Cronbach's alpha values of each was PIMRS (.83), OHI-E (.81), OCQ (.80), TSS (.86), and TES (.79). A total of 350 public primary school teachers in Surakarta had been selected as respondents in this study with satisfied random sampling. AMOS software version 6.0 is used to analyze CFA and SEM. The results of SEM analysis to the structural model built by the researcher was good, with Probability = .001; RMSEA = .043; GFI = .941; AGFI = .907; CMIN/DF = 1.522), so the relationship between the variables in the constructs was interpreted; (1) The Principal instructional leadership behavior had a significant direct influence on the school health, (2) The school health parameter had a significant direct influence on organizational commitment, efficacy, and teacher satisfaction, (3) The principal instructional leadership behavior did not have a significant direct effect on organizational commitment, efficacy, and teacher satisfaction through the variables and school health.

Keywords: *Instructional leadership, school health, organizational commitment, teacher efficacy, and teacher satisfaction.*

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Introduction

The concept of school-based management has been successfully developed in some developed countries, but it is still a new concept for education management in Indonesia. Therefore, education practitioners should improve under the circumstances and schools need in Indonesia. Usman (2006)suggested that school-based management will play a good role when considering the following principles: (1) the principal and all school members must make a firm commitment to the implementation of school-based management, (2) all school residents should implement School-based management to prepare them physically and psychologically; (3) Effective education is education involving all parties; (4) School is the most crucial institution in education management; (5) Make all school decisions to truly understand education; (6) Teachers should be conscious of assisting the principal making educational plan decisions and curriculums; (7) The school should be given the most excellent autonomy to be independent in decision-making and financial management; (8) If the school's interests Stakeholders participate, and the change will last longer (Marchalina, 2019).

The principals' leadership in the school management model of school-based management is important so that the principal can apply a renewal effort in education (Iksan, 2002). Moreover, the quality of a school depends on the principal's professional ability as a manager. Therefore, principals' leadership behavior has an essential role in regulating school activities (Garg & Rastogi, 2006). In addition, the principal has a vital role in formulating the curriculum and developing program progress to archive successful school (Mahmood, 1993).

Some studies of educational and management figures suggest that leaders play an essential role in advancing an organization such as a school (Cheng & Cheung, 1997; Drucker, 1984; Edmonds, 1979; Halpin, 1967; Levin & Lockheed, 1991; Mortimore et al., 1995; Scheerens & Bosker, 1997; Sergiovanni, 1987; Ubben et al., 2001). Other latest studies (Bush & Glover, 2014; Harris & Jones, 2018; Kalkan et al., 2020) related to educational and management figures to

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* **Corresponding author:**
Sukarmin, Universitas Sebelas Maret, Physics Education of Magister Program, Indonesia. ✉ sukarmin67@staff.uns.ac.id

school organizations were done in the last decade. The findings are summarized to describe the shocking changes in education on a global scale. The focus is to standardize learning and teaching through testing and measuring the effectiveness of schools. Even the entire education has motivated school development and teachers to focus on their core tasks. Shocking adverse effects, schools teach and educate students (Asuga et al., 2016; Bâlc, 2017; Edoru & Adebayo, 2019; Hong & Kangaslahti, 2017; Ishmuradova et al., 2020; Tolibovna, 2019).

Wildy and Dimmock (1993) state that the research on principal leadership in teaching, which is done in most countries, found that principals who have proficiency in the teaching and learning process can bring changes in teacher learning and students' achievement changes. In terms of educational leadership, four main projects launched since the beginning of the 21st century; the International Success School Principal Ship Project, the principal's preparation for international studies, learning leadership, and international school leadership development. These projects cover seven to more than 20 countries and have been in operation for more than five years. Discussions of these projects provided insights for major effectiveness studies and some guidance for those seeking to collaborate with colleagues at home and abroad (Edoru & Adebayo, 2019; Gurr et al., 2020; Li et al., 2016; Liu et al., 2016; Ozdemir, 2019; Player et al., 2017).

Nevertheless, the role of leaders in the education field has not yet addressed the critical issue that should be the role of the principal. Until now, the role of principals has remained limited as managers and mediators with the community, in which nowadays trends tend to emphasize the role of principals as instructional leaders (Hallinger & Heck, 1998; Heck et al., 1990). Other factors that significantly influence students' achievement are the health factors of school organization (Goddard et al., 2000; Hoy & Sabo, 1998; Leithwood & Riehl, 2003). Smith (2002) suggests that School Health is believed to affect the quality of school management, including influencing the behavior and attitudes of the community within the school and lateral surroundings (Hoy & Miskel, 1987).

Research from Leithwood and Jantzi (1999, 2000) suggests an everlasting influence on principal leadership, students' achievement, and school organizational climate. Leadership can also increase teacher expectations for joint work (Leithwood & Riehl, 2003; Tolibovna, 2019). In addition to leadership and health factors of school organizations, teacher factors also play a considerable role in improving the quality of education. Studies in western countries found that student's pretensions were related to organizational commitment, teacher satisfaction, and teacher efficacy (Colichi et al., 2020; Junior et al., 2019; Molthan-Hill, 2017; Pérez-Macías et al., 2020; Pertiwi et al., 2019; Rizwan et al., 2020).

Bryk and Driscoll (1988) examine the relationship between students' pretensions and teacher organizational commitment. They find that students' achievement can be enhanced by the increased commitment of teacher organizations in schools. Moreover, Rosenholtz (1989) found that highly committed teachers enjoy working with the students in additional activities to increase the motivation of students and attract them to spend more time at school. This continues to affect the achievement of students (Colichi et al., 2020; Molthan-Hill, 2017; Rizwan et al., 2020). Conversely, students with teacher attention to low disciples can lead to low student achievement and can even lead to very high student absence rates (Dworkin, 1985).

While related to teachers' satisfaction, Ouellette et al. (2018), Troesch and Bauer (2017), and Dworkin (1985) conducted a study to find that teachers with low teaching satisfaction will lead to low student achievement and high student absence rates. The results are supported by research conducted by the US Department of education of the United States from Spring (1994) that found most teachers in America have low satisfaction, resulting in poor school organizational and students' motivation (Zembylas & Papanastasiou, 2004). In addition, Dinham and Scott (2000) also found that teachers with job satisfaction were less likely to be creative and depressed.

In addition to teacher satisfaction, teacher efficacy is also a contributing factor to improve students' achievement. Ashton and Webb (1986) found that students' achievement was associated with teacher efficacy. Similar research conducted by Imants et al. (1993) found that teacher efficacy and students' achievement had a dynamic relationship. The teacher's emotional factors will affect the classroom environment. The purpose of this study is to use a multi-level logistic regression model to study the relationship between teacher emotional exhaustion, teacher effectiveness, and student office discipline referral (ODR), intramural suspension (ISS), and out-of-school suspension (OSS). Studies have shown that higher teacher effectiveness is also related to reduce OSS, not ODR or ISS. The results indicate that improving teacher effectiveness and reducing teacher emotional exhaustion may support reducing exclusive subject practice(Eddy et al., 2020; Voelkel Jr & Chrispeels, 2017; Yoo, 2016).

Other research shows that the principal's teaching leadership impressed teachers' attitudes (Fook & Sidhu, 2004); leadership influences teacher organizational commitment (Geijsel et al., 2003; Krug, 1992; Sun, 2004); teacher job satisfaction (Geijsel et al., 2003; Krug, 1992; MacNeil, 1993; Sun, 2004), and teacher efficacy (Keith, 1990; Lubbers, 1990). Research from Dale and Fox (2008) found that leadership has a positive relationship to employee commitment. Most of the research compilation from the Handbook of the Employee Committee focused on leadership performance, and the potential impact of organizational leadership on employee engagement has not gone unnoticed (Trivisonno & Barling, 2016). Other studies have also found that the results show a positive relationship between change leadership and employee commitment. It changes the collective identity at the team level and self-efficacy at the individual level. It also greatly regulates the relationship between change leadership and employee relationships. And then, they

committed (Hao et al., 2018; Ling et al., 2018; Mayfield & Mayfield, 2002; Trivisonno & Barling, 2016; Wallace et al., 2013).

Other studies have found that School Health also affects students' achievements at school (Hoy & Sabo, 1998; Uline & Tschannen-Moran, 2008). Moreover, it is said that the health of school organization would affect the management quality of the entire school, including the behavior and attitudes of the community within the school(Eddy et al., 2020; Hoy & Miskel, 1987). Study 1 shows that the physical theory of personality measured the first month of grade 9 predicts that adverse reactions to social adversity will be greater than the end of the year. As a result, stress will increase, health conditions will worsen, and school performance will be lower. Studies 2 and 3 are both experiments, testing short-lived intervention methods that teach the malleable (increasing) theory of personality-beliefs that people can change. The progressive theory group's immediate response to social adversity showed lower adverse reactions, and after eight months, reported overall stress and physical illnesses decreased. They also achieved better academic performance in a year(Balkıs et al., 2016; Fiorilli et al., 2017; Minkkinen et al., 2017; Sepulveda Jr, 2020).In 2014, the WHO Health Promotion School Framework improved the health and their academic performance (Langford et al., 2014; Yeager et al., 2014). We found some positive interventions: body mass index (BMI), physical exercise, physical health, fruit and vegetable intake, tobacco use, and bullying behavior. The intervention effect is generally small, but it may produce public health benefits (Allen & Meyer, 1990; Ashton & Webb, 1986; Asuga et al., 2016; Bâlc, 2017; Edoru & Adebayo, 2019; Hong & Kangaslahti, 2017; Ishmuradova et al., 2020; Tolibovna, 2019).

Based on the opinions of experts and also scientific studies, it clearly shows that the quality of education and achievement of students in schools is influenced by leadership principal teaching factors, School Health factors, and teacher factors including organizational commitment, efficacy, and teacher satisfaction when they are committed to the job. The findings on this research can be reflected on school principal management to become better evaluation. The research gap from this study has been focused on the mediator variable, which is, in this case, is school health. Therefore, we shall determine the key of the big picture to become the primary purpose of the research to place school health as a preserved mediator variable in affecting other variables as determinants with a more profound analysis.

This study has three objectives, namely to determine: (1) The influence of principal instructional leadership behavior on school health, organizational commitment, efficacy, and teacher satisfaction, (2) The influence of school organizations health on organizational commitment, efficacy, and teacher satisfaction, and (3) Whether the School Health is a variable between the principal instructional leadership behavior on organizational commitment, efficacy, and teacher satisfaction (the determinants of mediator variable) or not.

Methodology

Research Goal

The main purpose of this research was to determine the influence of principal instructional leadership behavior on several determinants: organizational commitment, efficacy, and teacher satisfaction through school health.

Sample and Data Collection

This research was conducted in Surakarta which is one of big city in Central Java Province-Indonesia. The Population of this study were 2.276 elementary school teachers, spread over 273 primary schools. The samples of the study were chosen using stratified random sampling technique, involving 320 elementary school teachers who were 97 men and 223 women in exact amount. This study uses a large amount of data (Kline, 2010), the sample is already in the good category, as mentioned by Curran et al., (2002) when N > 200, then the root mean square error of approximation is accurate for models with moderate specification error. This is also supported by the statement from Tabachnick and Fiddell (2013) that a sample of 300 has also been suggested, because it is in the sufficient and good category (DeVellis, 2017).

Data Analysis

There are five instruments used in this study, namely Principal Instruction Management Rating Scale (PIMRS) from Hallinger and Heck (1996, 1998) to measure the principal instructional leadership behavior, Organizational Health Inventory (OHI-E) from Hoy and Tarter (1997) to measure the organizational health of the school, Organizational Commitment Questionnaire (OCQ) of Allen and Meyer (1990) to measure teacher organization commitment, Teacher Efficacy Scale (TES) from Hoy and Woolfolk (1993) to measure teacher efficacy and Teacher Satisfaction Scale (TSS) from Ho and Au (2006) to measure teacher satisfaction. All of these instruments have been tested with very reliable results that have been validated before (Cronbach's alpha > .70) (Allen & Meyer, 1990). These five instruments do not cause bias, because the measured components are different. These five instruments only complement each other so that the objectives of this study can be achieved.

This study included multivariate research, so to test the relationship between variables and examine the acceptability of the models (Goodness-of-fit-Indices Structural Modeling) of the relationship (Figure 1), we used Structural Equation

Modeling (SEM) in Analysis of Moment Structures (AMOS) software version 6.0. The correct sequence of SEM steps consists of a measurement model and a structure model. Measurement model is shown to confirm a dimension or factor based on empirical indicators. Structural model is a model regarding the structure of the relationship that forms or explains causality between factors/constructs/variables. According to Kline (2010), the basic steps of SEM modeling begin with collecting data of the right size, the number of samples, normality, and independence. After that, the right model is determined according to the variables, then the suitability quality is tested and evaluated. The last stage is that interpreting the obtained data (Dragan & Topolsek, 2014). The technique chosen in this study is maximum likelihood estimation or generalized least square estimation because the sample size are 320. The structure of the variables used in this study shown in Figure 1.
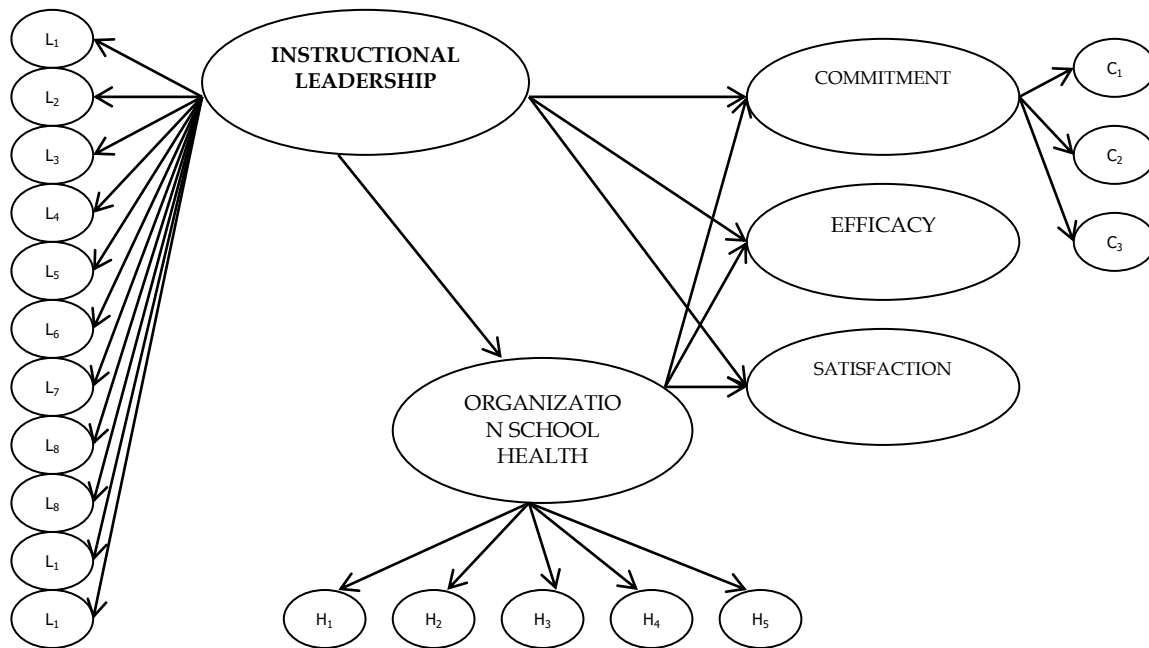

Figure 1. Relationship among research variables model

Findings / Results

Each indicator of the construction variables can be used to explain the results of this study. The impact of these indicators on the primary principal instructional leadership behavior on school health, organizational commitment, efficacy, and teacher satisfaction, influence of school organizations' health on organizational commitment, efficacy, and teacher satisfaction, and whether School Health is one of the factors affecting between those two variables.

To begin the discussion of this study, the inferential analysis result towards Goodness-of-fit-Indices of full construct model was interpreted, and the results are shown in Table 1.

Table 1. Goodness-of-fit-indices Structural Model

The goodness of Fit Indices	Cut-off Value	Model			Criteria		
		Basic	**Modification**	**Retest**	**Before**	**After**	**Retest**
Chi-Square		323.852	147.68	136.387	High	Low	Low
Probability	≥ 0.05	0	0.001	0.005	Poor	Poor	Poor
RMSEA	≤ 0.08	0.08	0.043	0.052	Poor	Good	Good
GFI	≥ 0.90	0.873	0.941	0.907	Poor	Good	Good
AGFI	≥ 0.90	0.829	0.907	0.854	Poor	Good	Poor
CMIN/DF	≤ 2.00	2.841	1.522	1.406	Poor	Good	Good
TLI	≥ 0.95	0.849	0.957	0.943	Poor	Good	Good
CFI	≥ 0.95	0.873	0.969	0.959	Poor	Good	Good

Since the main model has not met the Goodness of Fit index criteria, this can be seen in the high chi-square value that marks a bad indicator. This is similar to the probability value which is less than 0.005, so the category becomes not good. Modifying the model by adding covariance between residues (error) was suggested in the modification indices result (D'Agostino, 1986). To ensure that the modified model is accepted, it needs to be retested (consistency test)

against the model (Allen & Meyer, 1990). This retrospective uses 150 pieces of data taken randomly from the research data. Table 1 shows that after modifying the primary model, there is an increase in the Goodness of Fit index. The results of this modification seem consistent after a retest done due to modification.

Therefore, the relationship between variables in this model may be interpreted as the result. Modified structure of research model can be seen in Figure 2 showing pattern on construct variables.
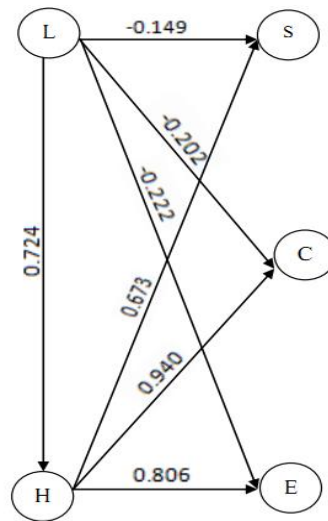

Figure 2. Research Structure Model Modification

Figure 2 shows that the research structure model modification was performed when the results of Goodness of fit have not met the criteria. The modification of the structural model was done using AMOS Software. These results were used to analyze the influence of the research variables relationship.

For analyzing the influence of the research variables relationship can be seen in Table 2.

Table 2. SEM Analysis towards Research Structure Model

Relation between Variables			Estimate	C.R.	p
School health	–>	Instructional leadership	0.724	3.991	0.000
Organization commitment	–>	Instructional leadership	-0.202	-1.723	0.085
Teacher efficacy	–>	Instructional leadership	-0.222	-1.976	0.048
Teacher satisfaction	–>	Instructional leadership	-0.149	-1.312	0.190
Organization commitment	–>	School health	0.940	3.988	0.000
Teacher efficacy	–>	School health	0.806	3.702	0.000
Teacher satisfaction	–>	School health	0.673	3.521	0.000

The interpretation of the above SEM analysis results is based on three criteria, namely Estimates, Critical Ratio, and Probability. For example, to test the hypothesis with critical ratio is more significant up to 2.58, at the significance level of 1 percent or greater than 1.96 for a significance level of 5%.

For observing Direct Effects, Indirect Effects, and Total Effects among the variables in the study, it can be seen in Table 3.

Table 3. Direct Influence, Indirect Influence, and Total Influence

	Instructional Leadership			School Health		
	Direct	Indirect	Total	Direct	Indirect	Total
School Health	0.724	0.000	0.724	0.000	0.000	0.000
Organization Commitment	-0.202	0.681	0.479	0.940	0.000	0.940
Teacher Efficacy	-0.222	0.584	0.362	0.806	0.000	0.806
Teacher Satisfaction	0.149	0.487	0.338	0.673	0.000	0.673

Based on the inferential analysis results from Table 2 and Table 3, it can be explained from this study that 1) The principal instructional leadership has a direct influence on the school health, 2) the school health has a direct influence on organizational commitment, efficacy, and teacher satisfaction, and 3) the principal instructional leadership does not have a direct influence on organizational commitment, and teacher efficacy, but it has an indirect effect on school

health, namely as a mediator of school health organizations. The indirect effect has been created and measured by the researcher, it is useful to facilitate the principal to improve the organization commitment, teacher efficacy and teacher satisfaction.

Discussion

The first results of this study indicate that principal instructional leadership has a significant positive impact on school health. It means that the primary schools in Surakarta, whose principals carry out instructional leadership, have good organizational health. In contrast, schools whose principals do not implement instructional leadership have low organizational health and, in this case, is school health.

This study supports the research that has been done by Heck et al. (1990), who have tested the model of casual influence between instructional leadership, school health, and students' achievement. He found a significant influence between leadership on students' achievement, either directly or indirectly influencing students'. This study also states that school health is a variable between the influences of principal instructional leadership on students' achievement.

Since then, the research is consistent with the research conducted by Frederick (2007) and Lord (2002) at the American Embassy School (AES) in New Delhi, India. This study found that the principal instructional leadership behaviors have a significant effect on school health.

The results of this study are also in line with the results of the study conducted by Kelley et al. (2005), who found that the effectiveness of the principal's leadership has a significant impact on school health. Mendel et al. (2002) also found that leadership behavior has a strong influence on school health. This also happens in counterfactual terms.

In addition, this study is also in line with research by Leithwood and Riehl (2003), who found that principal leadership affected school health and students' achievement. Similarly, Sazali et al. (2007) found that instructional leadership positively affected the teachers' efficacy and school health. Again, this reflected on the research findings.

Nevertheless, some studies contradict the results of this study, i.e., Dollah (2004) and Grizzard (2007) found that there is no significant influence between the principal's leadership behavior on school health. Other studies have also found no such relationship between transformational leadership and students' achievement, school climate and students' achievement. When determining the quality of a relationship and his/her teacher's perception of these same qualities, only two of the 25 correlations found to be statistically significant. This can be counterfactual to our findings and enhance the results (Allen et al., 2015; Calik et al., 2012; Price et al., 2015).

Furthermore, there is something to explain why teaching leadership will have a significant impact on school health. This can be understood because some of the dimensions summarized in instructional leadership are also in the health school health to emphasize collaboration, organizational independence, and an emphasis on academic achievement (Hoy & Miskel, 1987). Even Heck et al. (1990) states that the dimensions of compiling and explaining school goals, guiding and assessing learning, which are functions in instructional leadership, are named and defined as school health. Before Hoy and Clover (1986) also stated that the principals' leadership strongly influences the health of the school organization as a set of measurements of the state of the working environment. Therefore, to realize school health as a mediator, the principal must play effective teaching at school (Allen et al., 2015).

The two studies show that school health has a significant positive impact on organizational commitment, teacher effectiveness, and teacher satisfaction. The results of this study are in line with Hoy et al. (1991), which states that the five dimensions in School Health have a direct influence on organizational commitment. In a healthy school, there are highly committed teachers. Good and Weinstein (1986) have conducted research in which healthy school strongly influences teacher commitment. Another study conducted by (Hoy & Woolfolk, 1993) suggests that School Health influences teacher efficacy. Although Hoy and Miskel (1987) argue that School Health is believed to affect the quality of schools, including influencing their behaviors and attitudes, even Hoy et al. (2003) suggest that School Health is determined by teacher behavior at schools.

On the other hand, Goddard et al. (2000) and Hoy and Sabo (1998) argue that the health of a conducive school organization influences students' achievement in school, and the School Health affects the overall quality of school management, teachers, and students in the school. In other words, School Health has an important role in increasing organizational commitment, efficacy, and teacher satisfaction in schools.

The third result in this study is that School Health is a variable between instructional leadership behavior on organizational commitment, teacher satisfaction, and teacher efficacy. The results of this study are consistent with the results of Hallinger and Heck (1996), Hao et al. (2018), and Zheng et al. (2017), who have created a model called mediated-effects framework. This model can explain that leadership has an indirect influence on school performance through the intermediate state of the school organization, and the mediating factor will determine the score between variables (Abubakar et al., 2017; Dwivedi & Merrilees, 2013). The circumstances of this school organization include school goals, school culture, social network, community, and organizational culture (Hallinger & Heck, 1998; Leithwood, 1994; Leithwood & Jantzi, 2000; Ogawa & Bossert, 1995).

Furthermore, the results of this study also in line with the results of research done by Leithwood and Jantzi (1999), which states that school conditions as a mediating variable on the influence of leadership on students' achievement. Furthermore, Leithwood and Jantzi (2000) stated that the organizational conditions are also a mediating variable on the influence of leadership on students' achievement (Wong et al., 2020).

Another study in line with the results of this research done by Yu et al., (2002) from Hong Kong Institute of Education, together with Kenneth Leithwood and Doris Jantzi in primary schools in Hong Kong in early 2002, stated that there is a very significant influence on the transformational leadership with the in-school condition. There is a weak but significant influence on the research of transformational leadership with teachers' commitment to change (Yu et al., 2002). This research puts in-school conditions as mediating variables, including school culture, strategic change, school structure, and school environment. In contrast, organizations' commitment to change (teachers' commitment to change) is personal. There are teacher commitments, capacity beliefs in which there is self-efficacy, and context beliefs in which there is satisfaction.

Based on the results of this study and other studies that were described, it can be seen that principal instructional leadership does not always have a positive impact on organizational commitment, effectiveness, and teacher satisfaction. However, school health always has a positive effect on organizational commitment, efficacy, and teacher satisfaction. However, principal instructional leadership has a powerful positive effect on school health. It is believed that School Health is a mediating variable on the influence of principal instructional leadership behavior on organizational commitment, efficacy, and teacher satisfaction.

Conclusion

This study indicates that principal instructional leadership does not always have a positive effect on organizational commitment, efficacy, and teacher satisfaction. However, the relationship between structural variables is that the principal instructional leadership has a strong positive impact on school health. Furthermore, it can be believed that school health plays an intermediary role in affecting the principal's instructional leadership behavior.

Recommendations

The results of this study have provided an overview of the principal instructional leadership behavior that will indirectly affect organizational commitment, efficacy, and teacher satisfaction. Therefore, it is necessary to conduct other studies, either with different variables or with the same research subject at different educational levels or with different samples and populations. It is because the principal instructional leadership behavior is significant for the school's sustainability, especially with the existence of school health as a mediator that makes all components run well. So the education in Indonesia can be even more advanced in the future.

Limitations

This study is limited to data collected in Surakarta, Indonesia, using teachers at the elementary and primary education levels since this research is carried out by quantitative methods, limited to data collected in a particular place and in a short time.

Authorship Contribution Statement

Sukarmin: Contributed to conceptualizing and designing research, conducting research to processing data, and analyzing it until the article was finished. Sin: Contributed as a consultant or research supervisor in preparing/compiling research instruments.

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