Digital principal instructional leadership in new normal era

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Article Info

ABSTRACT

The needs for new knowledge and skill are driven by several factors and two most general are indefinite nature of SARS-CoV-2 and the need for alternative ways for students' instruction during pandemic era. The two factors require principal to take their role differently. This study aimed to describe model of digital principal instructional leadership in new normal era. This was a quantitative study by using structural relation model, involved 290 teachers as sample of this study. Data were analyzed by using structural equation model (SEM) of AMOS 24.0. The study findings provided solid evidence that model of digital principal instructional leadership in new normal era is supported by field data. They also showed that respondents identify three crucial factors influencing the success of digital principal instructional leadership in new era. They are supporting online learning, proactive reducing issues of learning from home, and leading and managing virtual schools. Instructional leader should have adaptive capacity and flexibility to learn and develop during crisis. They should be able to give more effective response to overcome future challenges faced by the school institution.

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1. INTRODUCTION

COVID-19 pandemic has shaken the world for the last past year including Indonesia [1], [2]. This certainly has an impact on the uncertainty of the end of the COVID-19 pandemic. In general, the Indonesian government has not granted permission for fully face-to-face learning instruction at school. Pandemic has given massive impact on education at school [3], [4] forcing governments around the world to stop schooling [5], [6]. On the implementation of education policy during pandemic COVID-19, government of Indonesia requires that all students study at home to reduce the risk of students being exposed to COVID-19. It means that distance instruction should be implemented.

However, distance instruction has several drawbacks such as cheating when completing given task, reducing ethics or good behavior and making students lazy to learn [7], [8]. Another problem is that not all students have supporting devices for online instruction such as laptop and handphone. Therefore, there should be support from related institution, active communication between principals and teachers, school staffs, students and their parents to optimize students' online instruction [9], [10]. COVID-19 pandemic has driven fundamental transformation on the task of principals around the world. They need different approach to lead and manage the school. Nowadays, principals should turn themselves to be extraordinary manager

and excellent leader during prevailing exponential change [11], [12]. They are also expected not only to be able to make use their skill and knowledge to meet instructional and leadership challenges during pandemic but also to be able to improve their knowledge and skills which facilitate them to transform their current role.

Indefinite nature of severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2) and the need to explore alternative ways requires principal to master new knowledge and skills in order to facilitate their new role [13], [14]. Nowadays, principals have explored best practice for their school to create ideal conditions for students to learn and for teachers to teach. Simultaneously, they are also trying to find ways to support online instruction and to manage their school by implementing the so-called "extensive digital leadership" [12]. Prevailing crisis or threat doesn't entirely give adverse impact for schools [3], [15]. On the other hand, it might encourage school to achieve future betterment. For instance, numerous number of schools have undergone digital transformation by using online-based application to facilitate instructional process, meeting and managerial coordination when working at home [16], [17]. Institutions applying collective collegial leadership model are able to make fast decision to shift their instruction mode into distance learning mode because the leadership model gives flexibility, innovation and excellent collaboration.

Study conducted by Fernandez and Shaw [18] highlights three best practices of leadership to meet unexpected adaptive challenges resulting from pandemic. The first gives priority on empowerment, involvement and collaboration of academic leaders having emotional intelligence and stability that enable them to put common interest before their own. Secondly, the academic leaders should be able to distribute their leadership responsibility to related team in the organization in order to improve quality of decision made. Thirdly, the leaders should build intense and clearer communication to all stakeholders through various means of communication.

High response on changing environment encourages schools to adapt and to accelerate their activities [19], [20]. On the other hand, low response on other phenomenon result in slowdown on the organization. Leaders should take crucial role in every organizational events [17], [21]. In addition, they are required to have high awareness on problems faced by their institution [18], [22]. COVID-19 pandemic has resulted in opportunities for positive changes [14], [16].

The use of information and communication technology (ICT) and social media has grown exponentially as schools have physically closed, and learning has shifted to virtual engagement. As learning leaders, principals are responsible for supporting and ensuring that effective pedagogical practices and successful student learning occur. In this rapid process, teachers in several jurisdictions are being asked to deliver learning programs online [23], [24]. Online teaching and learning are not just changing face-to-face programs but also delivering them through internet-based platforms. Considerations for students include hardware and software issues (Wi-Fi accessibility and learning devices) as well as the skills required to navigate the software and new knowledge of how to interact on those platforms [8]. These considerations are also not exclusive to students but also include teachers and principals themselves.

The pandemic has brought enormous unresolved issues in our education system (and society in general). Principals indicated that they were concerned about how existing problems were exacerbated by emerging issues surrounding access to quality education for students and parents [4], [25]. For example, some students do not have the technology to follow online learning. Others may have the technology, but where they live do not have accessible Wi-Fi. Others may have the necessary requirements but not a physical space conducive to active learning. Other students may be disproportionately affected by COVID-19 because family members are essential workers, or because they have a sick family member, or a variety of complex factors affect their ability to learn during a pandemic. Principals were asked to help address this problem [12], [24].

In this new normal era, the work of principals as learning leaders has changed, priority activities have changed and, in terms of time allocation, what they spend their working time on has shifted. When it comes to managing their work, principals need to think about which shareable document platform to use and the complexities surrounding its use (e.g. ease of use and data protection) [17], [26]. When thinking about leading a virtual school, the principal's role also centers on concentrating on supporting educators, students, and parents in the transition to a different way of schooling. This supporting role also includes being an active information driver and policy translator as new rules and regulations are at one point released each day with little or no warning. In cyberspace, principals need to consider things such as managing physical distance between school members, establishing effective communication strategies, motivating staff, and building trust [22].

Principal leadership before the pandemic was influenced by several factors, such as local context, policies, and program reform [27], [28]. While these factors continue to exist today, changes in school structure during the pandemic have shifted principals' attention to online learning and leading schools virtually. It should be noted that although online, virtual schools, and school networks existed before the COVID-19 pandemic [12], [29], teachers in teaching as well as staff were hired specifically to work in contexts of virtual school. During the COVID-19 pandemic, many schools and school systems have engaged

in online virtual learning to varying degrees [6], [30], and in most of these cases, few educators or students have control over delivery of virtual public education. Basically, the entire school system is suddenly transformed into some forms of virtual or distance education for which many educators and leaders are not well-prepared. This sudden structural change raises many questions about leading and supporting learning in a digital work environment.

2. RESEARCH METHOD

2.1. Research design

This was quantitative study by using structural relation model. The model is used to find out factors influencing digital principal instructional leadership in new normal era. This study covered development of confirmatory factors which are based on literature review.

2.2. Research sample

Population of this study was 1,180 teachers at public elementary school in Malang regency, Batu city and Malang city in East Java, Indonesia. Sample size was 290 teachers who determined by using Krejci and Morgan formula with 95% confidence limit. They were selected by using proportional random sampling. Description of population and sample are presented in Table 1.

Table 1. Population and sample

No.	City/regency	Population	Sample
1	Malang regency	915	225
2	Batu city	68	48
3	Malang city	197	17
	Total	1,180	290

2.3. Research instruments and procedures

In this study, data are taken by using closed-answered questionnaire consisting of 25 items. The questionnaire is developed based on theories underlying study variables [31], [32]. Product moment Pearson correlation technique of SPSS 24.0 is used to determine validity level of item. Statement item is valid if its significance value <0.05 [33]. The result of validity test showed that all statements items are valid. Hence, reliability test is then conducted. Cronbach's alpha of SPSS 24.00 is used for reliability test in which instrument is deemed as reliable if the its Cronbach's alpha score is >0.60 [33]. Score of Cronbach's alpha for each factor is: i) Supporting online learning was 0.936; ii) Proactive reducing issued of learning from home was 0.937; and iii) Leading and managing virtual schools was 0.955.

2.4. Data analysis

Statistical analysis of structural equation modelling (SEM) causality model is employed and it is operated through AMOS 24.0 program. Confirmatory factor analysis (CFA) is used for measurement model analysis. Prior to applying SEM, items are categorized based on each construct (factor). All items are divided into three categories namely supporting online learning, proactive reducing issues of learning from home and leading and managing virtual schools. Then, item internal consistency is measured by using Cronbach alpha coefficient. Then, equation modelling procedures is conducted by CFA to validate model construct. İt is to show whether data supports factor structure hypothesized in measurement model developed in this study. Measurement model of this study is started by identifying fitness between construct and indicators [33], [34]. Then, each variable observed is measured to find out whether it load latent factor or not. Hypothesized model shows good fit during loading factor with minimum score of 0.30 [33].

The last step is by measuring goodness of fit model by using fit indexes covering χ^2/df (χ^2 divided by number of degrees of freedom), goodness-of-fit-index (GFI), Tucker-Lewis's index (TLI), comparative fit index (CFI) and root mean square error of approximation (RMSEA). Measurement model functions is good when RMSEA value is approaching 0. İf the value is 0.08 or less, then it reflects natural fit [35]. The χ^2/df ratio with score of less than five for model involving large sample shows that the model fits or has acceptable match between hypothesized model and sample data [35], [36]. Another criteria (GFI, TLI, and CFI) shows good fit for model when obtained index is similar or close to 0.90 [35], [36].

3. RESULTS AND DISCUSSION

3.1. Results

CFA is a technique to test how variables are able to represents a construct [33]. CFA is used to determine whether hypothesized model or factor structure of model proposed are in line with field data [33], [36]. It is used to develop measurement items based on prevailing theories [33], [34]. Formulated model is then tested by examining loading factor and observed variables [36], [37].

SEM is a procedure to operate CFA in order to take on the development and measurement validation as well as to test correlation among variables by using path analysis technique. In this study, SEM is employed because it facilitates researchers to formulate a complex relation model. In line with research objectives, model of three hierarchy factors is used to represent second-order factor as model construct of digital principal instructional leadership in new normal era. In addition, SEM is also used to validate proposed model in this study because its procedures are relevant with previous studies [38], [39]. For limited scope, the model is applied only to represent construct model of hierarchy factor. Three-factor hierarchy model is used to represent Second-order Factor as construct of digital principal instructional leadership in new normal era. The result of CFA is taken from individual response confirming hypothesized structure.

To measure model fitness, loading factors of each observed variable for every latent variable are firstly examined. Loading (λ) shows correlation (r) among observed variables (x) and latent factors (ζ). Squared coefficient correlation (r2) is measured to estimate total variant (δ) given by observed variables to latent factors. The higher loading factor score for each item, the more contribution of loading factor to explain matrix factor [33]. In this study, model of digital principal instructional leadership in new normal era is constructed into three sub-variables namely supporting online learning, proactive reducing issues of learning from home, and leading and managing virtual schools.

As shown in Figure 1 and Table 2, all first-order factors are loaded significantly on common factor (digital principal instructional leadership in new normal era). All factors covering supporting online learning, proactive reducing issues of learning from home, and leading and managing virtual schools are strongly loaded on maximum loading factors (1.00). Figure 1 shows that common factor from model of digital principal instructional leadership in new normal era is determined by three first-order factors in the model. Score Cronbach's alpha for the three factors in model is from 0.936 to 0.955 showing reliable scale of measurement. Then, the model has score of $\chi2/df$ which is less than 2.0. It shows that the model has good fit with data. İt is also confirmed by score of RMSEA which is 0.069 and TLI and CFI which are around 0.961-0.973. It shows that structural model of digital principal instructional leadership in new normal era is accepted. The fit index of the model is presented in Table 3. Simultaneously, the result of procedures also estimated loading factors from first order and item of model as presented in Table 2.
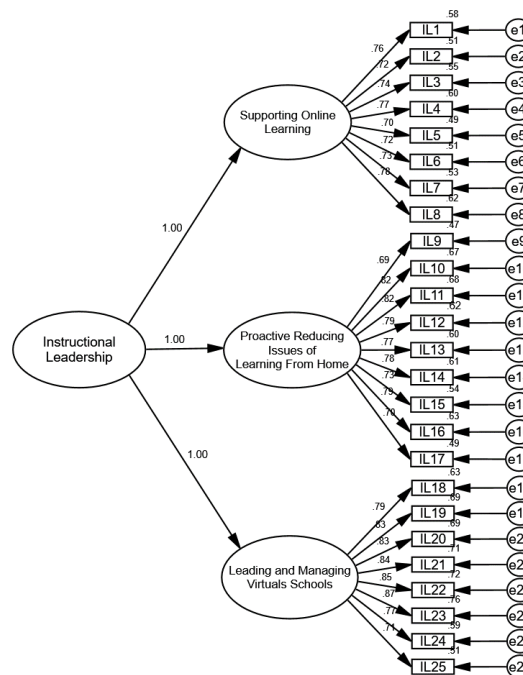

Figure 1. The hierarchical factor model of digital principal instructional leadership in new normal era

Table 2. Factor loadings of the hierarchical factor model and item statements

Second-order factor	First-order factors (loadings)	Indicators (Item code)	Item statements	Loadings
Digital principal instructional leadership	Supporting online learning (1.0)	IL1	Principals show exemplary leadership on excellent material management for teachers when students learn from home.	0.76
		IL2	Principals show exemplary leadership on effective communication for teachers when students learn from home.	0.72
		IL3	Principals show exemplary leadership on instructional material mastery for teacher when students learn from home.	0.74
		IL4	Principals show exemplary leadership on enthusiasm on instructional material to the teachers when students learn from home.	0.77
		IL5	Principals show exemplary leadership to teachers on positive attitude to students when students learn from home.	0.70
		IL6	Principals show exemplary leadership to teachers on giving fair score when students learn from home.	0.72
		IL7	Principals show exemplary leadership to teachers on flexibility of instructional approach when students learn from home.	0.73
		IL8	Principals show exemplary leadership to teachers on good learning achievement on the part of students when they are learning from home.	0.79
	Proactive reducing of learning from home (1.0)	IL9	During COVID-19 pandemic and when students learn at home, principals continuously monitor instructional process.	0.69
		IL10	During COVID-19 pandemic and when students learn at home, principals conduct instructional monitoring.	0.82
		IL11	During COVID-19 pandemic and when students learn at home, principals conduct instructional monitoring for the benefit of schools	0.82
		IL12	During COVID-19 pandemic and when students learn at home, principals conduct instructional monitoring for the benefit of students' parents.	0.79
		IL13	During COVID-19 pandemic and when students learn at home, principals conduct instructional monitoring in order to motivate teachers.	0.77
		IL14	During COVID-19 pandemic and when students learn at home, principals conduct instructional monitoring in order to improve students' achievement.	0.78
		IL15	During COVID-19 pandemic and when students learn at home, principals conduct instructional monitoring based on prevailing regulations.	0.73
		IL16	During COVID-19 pandemic and when students learn at home, principals conduct objective instructional monitoring.	0.79
		IL17	During COVID-19 pandemic and when students learn at home, principals conduct instructional monitoring referring to instructional objectives.	0.70
	Leading and managing virtual schools (1.0)	IL18	During COVID-19 pandemic and when students learn at home, principals have active dialogue with teachers to improve the quality of students' instruction.	0.79
		IL19	During COVID-19 pandemic and when students learn at home, principles have interactive discussion with teachers concerning result of assessment to improve students' instruction.	0.83
		IL20	During COVID-19 pandemic and when students learn at home, principles have effective dialogue with teachers to discuss the result of performance assessment to improve the quality students' instruction.	0.83
		IL21	During COVID-19 pandemic and when students learn at home, principles have aspiration dialogue with teachers to discuss the result of performance assessment to improve the quality of students' instruction.	0.84
		IL22	During COVID-19 pandemic and when students learn at home, principals have inspirative dialogue with teachers to discuss the result of performance assessment to improve the quality of students' instruction.	0.85
		IL23	During COVID-19 pandemic and when students learn at home, principals have productive dialogue to discuss the result of performance assessment to improve the quality of students' instruction.	0.87
		IL24	During COVID-19 pandemic and when students learn at home, principals have active dialogue with teachers to discuss the result of performance assessment to improve the quality of students' instruction.	0.77
		IL25	During COVID-19 pandemic and when students learn at home, principals have dialogue with teachers to discuss the result of performance assessment to improve the quality of students' instruction.	0.71

Table 3. The fit indices of the model

No.	Goodness of fit indices	Result of model test	Cut-off value	Description
1	X² Chi Square	216.724	≤239.45	Good
2	Probability	0.056	≥0.050	Good
3	RMSEA	0.069	≤0.080	Good
4	GFI	0.923	≥0.900	Good
5	AGFI	0.910	≥0.900	Good
6	CMIN/DF	1.912	≤2.000	Good
7	TLI	0.961	≥0.950	Good
8	CFI	0.973	≥0.950	Good

3.2. Discussion

As top leader of school, the most crucial task of principals is to facilitate maximum instructional activities to develop each individual student. Focus of principal is solely on how to make instructional activities successfully. İt means that the ultimate objective of all school programs is to develop students' potentials through instruction. İt is due to that instruction is main indicator of successful performance of principals [21], [40]. Among all principals' efforts in executing his leadership role, during COVID-19 pandemic, instruction should be main priority through distant learning making use of massive technology usage [41], [42].

The result of CFA provides solid evidence that digital model of principal instructional leadership in new normal era is confirmed by field data. İn addition, it shows that three factors namely supporting online learning, proactive reducing issues of learning from home, and leading and managing virtual schools are identified as crucial factors of successful implementation of digital principal instructional leadership in new normal era. Thus, this study strengthens the results of previous research conducted by Pollock [12], this study contributes to the literature by including three factors in the model. Item treatment for each scale is relevant to model principle of item response theory (IRT) assuming that each latent variable in measurement model is unidimensional [36], [37]. It is because concept measured through study of latent variable is closely related to each single dimension [33], [38]. Common factor of digital principal instructional leadership in new normal era model is statistically determines as the cause of three first-order factor in model of hierarchy factor and all factors obtains higher α coefficient. Therefore, the findings confirm conclusion that model formulated in this study might be used as implementation model of digital principal instructional leadership in new normal.

The shift from face-to-face instruction to distant instruction requires effective leadership on the part of principal to design effective distance learning to ensure the quality of instruction. As top leader, principals should be creative and innovative to improve instructional quality and to give excellent service for school stakeholders [43], [44]. Principals are responsible for effective implementation of instruction to help students develop their competence [11], [13]. Furthermore, school management should ensure positive moral and character development on the part of students during their learning at home [45], [46]. Principals should also be creative in managing the schools in order to ensure education quality during COVID-19 pandemic.

Effective instruction occurs only at well-managed school. Thus, it is not only principals playing crucial roles for school but also other leaders of school. They are vice principals, head of department and senior teacher [47], [48]. They are effective only if they function as a team. İn this case, principals who are like a locomotive and top leader of school are responsible either directly or indirectly for instructional process at school. Therefore, principals should be ready and have capability to motivate their subordinate especially teachers for them to improve their teaching performance [24], [49].

Principals play important role in formulating policy on crisis management in order to ensure the quality of instruction during crisis or emergency situation [17], [18]. During COVID-19 pandemic, principals should be able to make policy on quality instruction and still take students' safety into serious account. Principals should direct, lead, implement, control and evaluate instructional process at school as well as supervise and evaluate teachers' performance [50]–[52]. Principals leadership influences the quality of instruction at school [11], [53]. Quality is essential part of education. The aim of every instructional education is excellent instructional process. Educational quality is reflected from qualified graduates and excellent service for stakeholders. Qualified graduate should have excellent grade (cognitive, affective and psychomotor) and they are able to continue their study at higher level of education. Service quality is related to satisfying service given to students, teacher and staffs as well as community. Thus, teachers have important role to improve educational quality in order to achieve stated objectives.

After stating the importance of good relation among stakeholders and building public trust, distributing leadership responsibility to team member, and creating clear and order path of communication, principals as instructional leader may come to conclusion that they are not expected to be perfect leader but to be flexible leader having adaptive capacity to learn and develop amidst prevailing crisis or pandemic [14], [21], [53]. Thus, principals are able to give effective response to tackle future challenges for the school.

With commitment on best practices of leadership, principals are able to survive from crisis to rebuild and strengthen their role, to improve their credibility and even to improve their performance as instructional leader.

4.   CONCLUSION

In this new normal era, the work of principals as instructional leaders has changed. Their priority activities have changed slightly and, in terms of time allotment, how they spend their working time has also changed. When thinking about leading a virtual school, the principal's role also centers on concentrating on supporting educators, students, and parents in the transition to a different way of schooling. Based on the research results of the digital principal instructional leadership model in the new normal era, three important behaviors in leadership were constructed, namely supporting online learning, proactively reducing issues of learning from home, and leading and managing virtual schools. During the COVID-19 pandemic, school principals should have the ability to take various policies to ensure the implementation of a quality education process and continue to prioritize student safety. The learning process in schools must continue to run so that the principal has a role in directing, leading, implementing, and controlling and evaluating, related to the implementation of learning by teachers.

This research was conducted in elementary schools in three regencies/cities in East Java, Indonesia. Future research is expected to take a larger population to have a wider generalization of the findings. This study only focused on principals' leadership as instructional leader in new normal era. Future researchers can follow up on this research by focusing their studies on excellent instructional leadership in various contexts (urban/remote areas). They can add factors that can also affect the principals' leadership as instructional leader in new normal era, such as clarity of vision and mission, instructional supervision, and organizational climate. It is expected that their findings may enrich findings of this study either theoretically or practically.

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