Analysis of Digital-Based Education Leadership at The State Junior High School Levels

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Abstract— **This study analyzes digital-based educational leadership skills at the junior high school level in the Northern Region of Bandung City. As well as exploring the supporting and inhibiting factors for implementing digital-based leadership at the State Junior High School level in the Northern Region of Bandung City during the COVID-19 pandemic. This research is limited to seven digital-based leadership skills: Digital Attitude, Leadership Ability, Communication Skill, Social Skill, Team Building Skill, Change Management Skill, and Trustworthiness. The method used is a descriptive and qualitative approach obtained through interviews with the principals of junior high schools in Bandung. Data processing and analysis using Nvivo 12 Software. The results showed that principals at the State Junior High School level in the Northern Region of Bandung City already have digital-based leadership skills characterized by being able to respond to technological advances in schools, namely utilizing the role of technology in managing schools. Involvement of the principal in formulating and communicating the technology-based Vision and Mission. Strong communication skills, marked by school programs and policies that can be conveyed well by school residents through virtual media, and holding virtual meetings, even amid a pandemic that results in restrictions on face-to-face meetings, show that one of the changes made by the top school during a pandemic is the use of technology in education. Learn the use of technology so that teachers and school members have an understanding of the use of technology in education, after that the principal makes changes.**

Keywords— *digital leadership, principal*

INTRODUCTION

The rapid development of information technology is one of the main characteristics of global growth in the 21st century, marked by the industrial revolution 4.0 when significant socio-economic and cultural changes are accompanied by great technological advances. Facing various changes in the era of globalization requires human resources who can adapt and empower different competencies more effectively to overcome various challenges that are and will occur [5] The challenge in the field of 21st century education is to increase competitiveness and competitive advantage by relying on the capabilities of human resources, technology, and management without reducing the comparative advantage of our nation [3].

The Industrial Revolution era is when people live their daily lives faced with the use of technology that changes the way they work, communicate and socialize, and make decisions in their daily activities. The industrial revolution 4.0 was born in Germany in 2011, which is the state of the 21st century industry when massive changes in various fields through a combination of technologies reduce the barriers between the physical, digital and biological worlds [4]. The industrial revolution is marked by the emergence of artificial intelligence, nanotechnology, supercomputers, genetic engineering, automatic cars, and innovations that are very different from the previous era. The internet has become a real second life.

The era of education influenced by the industrial revolution 4.0 is called Education 4.0, characterized by the use of digital technology in the learning process known as the cyber system. It can make the learning process take place continuously without space and time limits [8]. Meanwhile, Ward and Peppard [5]. state that significant changes in the world impact the education system, including aspects of leadership.

Leadership faces various challenges that are not easily predictable in the era of the Industrial Revolution 4.0. This era has ignited challenges and, at the same time, provides new opportunities to innovate in terms of leadership because a leader plays a vital role in bringing organizational progress by empowering resources in the form of information technology or digital systems. Digital technology has changed almost every aspect of

our lives over the last few decades, including how we communicate, shop, and read. Digital technology has the potential to offer the solutions needed for human life if supported by adequate investment and regulatory support. [9]

Principals have an essential role in preparing their institution's response to all changes, and in practice, principals are required to remain able to build trust and collaborative leadership in all situations as a driving force for school life and must be able to understand the duties and functions as a teacher, not only play a role only as a leader, but apart from being a formal official, manager, and leader, the principal also has a role as an educator and staff [8]

The success or failure of a school is fundamentally strongly influenced by the principal's leadership [7]. Digital leadership is the art of directing and controlling others, initiating sustainable change through access to information, and building relationships to anticipate changes critical to future school success. For that, it takes a dynamic combination of mindsets, behaviors, and skills to change or improve school culture through the help of technology [11]. Therefore, digital leadership has dimensions or aspects of skills that leaders need to possess, namely Digital Attitude and Leadership Skills, which include: (1) Technological skills—aspects of technical skills related to digital technology that the leader must master, (2) Communication skills— skills to use technology to communicate more effectively in a scope that is not limited by time or place, (3) Social skills—skills to build a social system that is conducive to supporting changes towards better digital maturity, (4) Team building skills—the ability to building and directing virtual work teams to achieve the desired synergies, (5) Change management—the ability to manage culturally strategic changes within the organization, and (6) Trustworthiness—the ability to develop, improve, and maintain the trust of followers and partners to continue to synergize and collaborate in developing what the goals of the organization are. [10]

METHODOLOGY

The research method used in this study is a descriptive method with analytical techniques using a quasi-qualitative approach. Descriptive research is research on a particular phenomenon or condition obtained by researchers from the subject in the form of individual, organizational or other perspectives. This study focuses on efforts to analyze and describe digital-

based educational leadership, with the analytical method applying quasi-qualitative which is used to obtain information on the condition of natural objects, where the researcher is the key instrument, the data collection technique is done by triangulation (combined), the data analysis is descriptive. Inductive, qualitative research results emphasize meaning rather than generalization (

A qualitative approach is a research paradigm to describe an event, a behavior, or a condition in a particular place in detail and depth in the form of a narrative. In practice, research is emergent (can change), developing as research progresses. So that the initial design can be revised, completed, and expanded. This study took samples at the Junior High School level in the Northern Region of Bandung City. Researchers took this location because there are still several principals who need special attention in implementing information technology to support educational services' effectiveness. The following is a sample of schools that are the focus of the research.

Table 1 List of Research Locations at the Junior High School Level in the Northern Region of Bandung City

No	School name	Address
1	State Junior School 12	Jl. Dr. Setiabudhi No. 195
2	State Junior School 15	Jl. Setiabudi No. 89
3	State Junior School 29	Jl. Geger Arum no. 11 A
4	State Junior School 7	Jl. Ambon No.23, Citarum

Source: the results of research data

Many problems qualitative researchers face. The first problem is related to data collection. Collecting qualitative data requires intensive work and usually takes a long time. Because the problems faced by qualitative researchers can be overcome using an application developed by QSR International, NVivo. NVivo is a set of tools to manage data from various sources, such as books, research reports, historical documents, journal articles, website content, online news, conference proceedings, memos, field notes, bibliographic annotations, and even a researcher's daily journal. NVivo is continuously developed to support qualitative researchers in managing data, conducting literature reviews quickly, efficiently, and effectively, and triangulating and making presentations/visualizations of research results.

FINDING AND DISCUSSION

Research data from interviews and documentation studies are then processed using Nvivo 12 software to be classified based on the research variables and indicators that have been compiled. To make it easier to understand the research findings, here is a list of codes and their descriptions

1. Digital Attitude

Several findings related to Digital Attitude skills were obtained based on the data collection results. The results of the interviews showed that participants gave answers related to Digital Attitudes. The results of the interviews were analyzed and processed using Nvivo 12 to obtain data in the form of Figure 1, which visualizes the various meanings expressed by the participants.
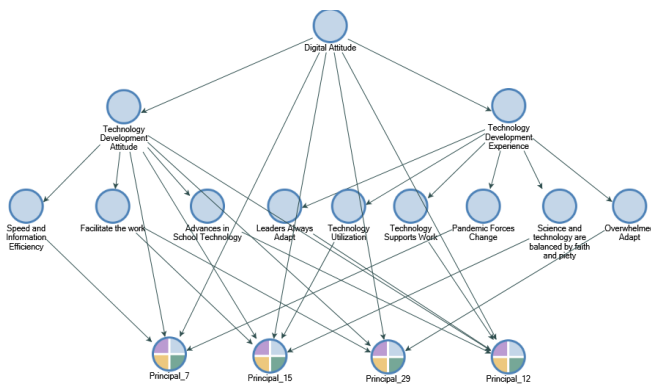

Figure 1 Visualization of Digital Attitude
Source: the results of research data

From the above results obtained the following data:

a) Attitude of Technological Development

This Technology Development Attitude is an indicator of the skills of a leader in Digital Attitude.

b) Experience of Technological Development

Experience in Technological Development is one indicator of Digital Attitude.

2. Leadership Skills

Based on the results of data collection, several findings related to Leadership Skills were obtained. The interview results showed that the participants gave answers related to Leadership Ability. The interview results showed that the participants gave answers related to Leadership Ability. The results of the interviews were analyzed and processed using Nvivo 12 to obtain data in the form of Figure 2 which visualizes the various meanings expressed by the participants
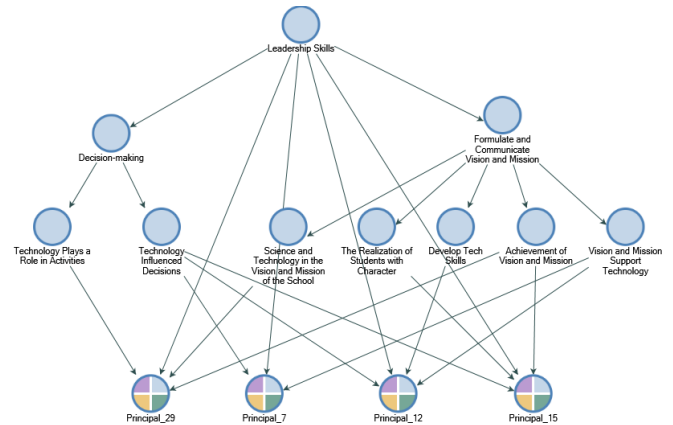

Figure 2 Visualization of Leadership Skills
Source: the results of research data

a) Formulate and Communicate the Vision and Mission

Formulating and Communicating Vision and Mission is one of the Leadership Skills.

b) Decision Making

Decision Making is one indicator of Leadership Skill (Leadership Ability).

3. Communication Skill

Based on the results of data collection, several findings related to communication skills were obtained. The results of the interviews showed that participants gave answers related to communication skills. The results of the interviews were analyzed and processed using Nvivo 12 to obtain data in the form of Figure 3 which visualizes the various meanings expressed by the participants.
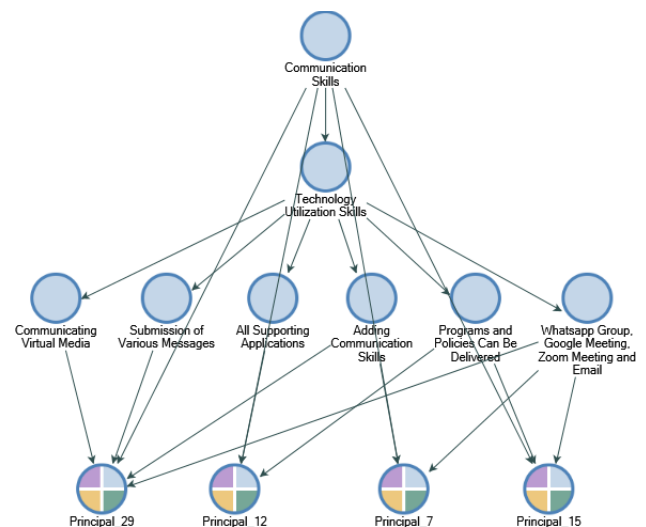

Figure 3 Visualization of Communication Skill
Source: the results of research data

a) Skills in Using Technology

Skills to utilize technology is one indicator of Communication Skill (Communication Skills).

4. Social Skills

Based on the results of data collection, several findings related to Social Skills were obtained. That the results of the interview showed that the participants gave answers related to social skills. The results of the interviews were analyzed and processed using Nvivo 12 to obtain data in the form of Figure 4 which visualizes the various meanings expressed by the participants.
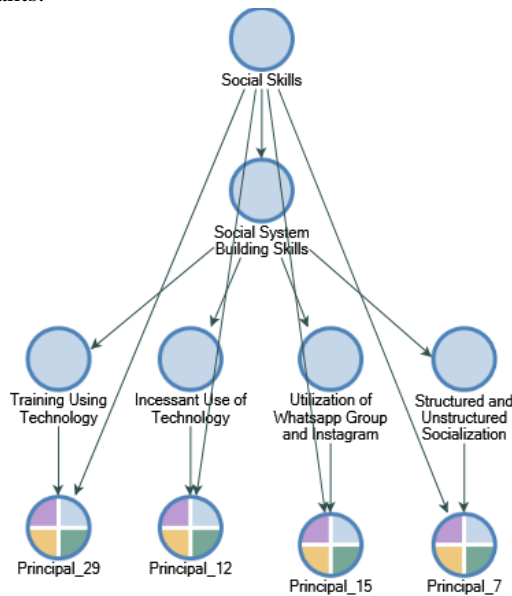

Figure 4 Visualization of Social Skill
Source: the results of research data

a) Social System Building Skills

Skills to build a social system is one indicator of Social Skills (Social Skills).

5. Team Building

Based on the results of data collection, several findings related to Team Building skills were obtained. That the results of the interviews showed that the participants gave answers related to Team Building. The results of the interviews were analyzed and processed using Nvivo 12 to obtain data in the form of Figure 5 which visualizes the various meanings expressed by the participants.
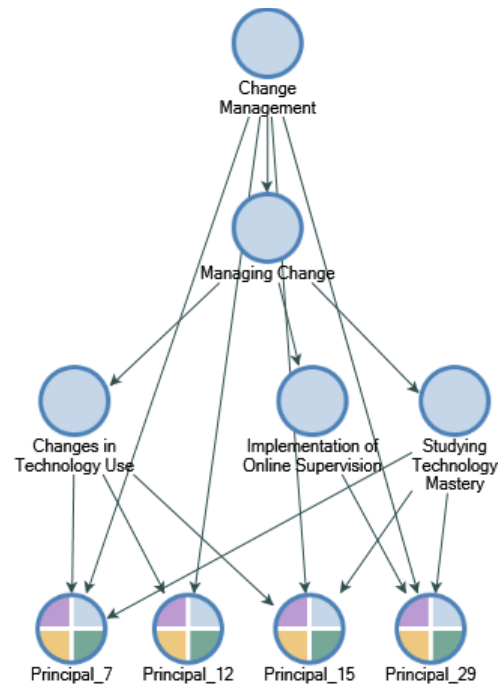

Figure 5 Visualization of Team Building
Source: the results of research data

a) Team Building Ability

Team building skills are the ability to build and direct work teams virtually to achieve the expected synergies—one indicator of Team Building Skill (Team Building).

6. Change Management

Several findings related to Change Management skills were obtained based on the data collection results. The interview results showed that the participants gave answers related to Change Management. The results of the interviews were analyzed and processed using Nvivo 12 to obtain data in the form of Figure 6, which visualizes the various meanings expressed by the participants.
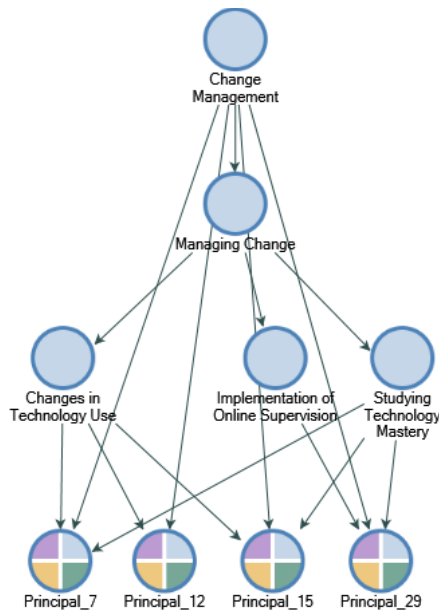
Figure 6 Visualization of Change Management
Source: the results of research data

a) *Managing Change*

Managing Change The ability to manage culturally strategic changes in the organization and be an indicator of Change Management

7. Trustworthiness

Several findings related to Trustworthiness skills were obtained based on the data collection results. The interview results showed that the participants gave answers related to trustworthiness. The results of the interviews were analyzed and processed using Nvivo 12 to get data in the form of Figure 7, which visualizes the various meanings expressed by the participants.
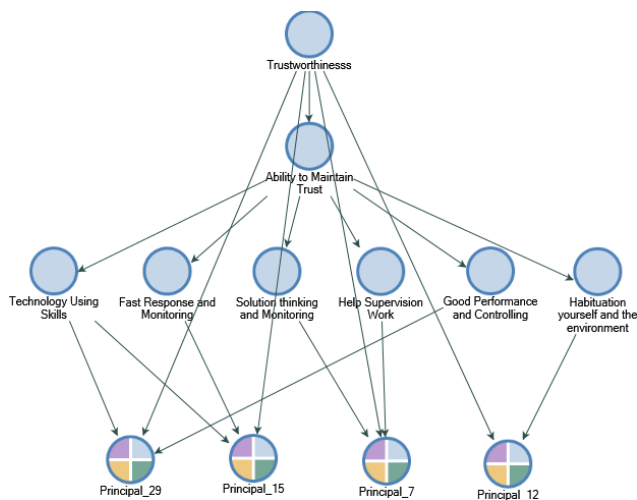

Figure 7 Visualisation of Trustworthiness
Source: the results of research data

a) Trust Keeping Skills

Trust Keeping Skills is the ability to develop, improve, and maintain the trust of followers and partners to continue to synergize and collaborate in achieving organizational goals. In this study, four participants gave answers about team building. Below are the responses from each participant.

DISCUSSION

Digital Attitude can also be interpreted as a view of a person or employees regarding the digital technology used by the organization to help them in the activities of the organization or company. The findings of this study indicate that the principal, as a leader, can respond to the advancement of school technology by utilizing technology's role in carrying out his leadership. Therefore it can speed up and streamline providing or receiving information and make it easier to carry out their leadership. The use of technology can also facilitate work, such as the implementation of supervision which was initially carried out offline to turn online.

Leadership skills are the ability of leaders to direct their employees in the company to pursue the same vision and mission in developing in the digital era [8]

In decision-making, the principal stated that many technologies play a role in various school activities. The decisions taken are based on technology because the formulation is done virtually.

Communication skills are also defined as utilizing technology to communicate effectively within an unlimited scope of time and place. [9]

The results of the study stated that the communication skills of principals at the State Junior High School level in Bandung City were proficient, characterized by school programs and policies that could be conveyed well by school residents, for the use of technology in communication was already diverse and varied, starting from Whatsapp Group, Google Meeting, and Zoom Meetings. The habit of principals using technology in managing schools results in increasing communication skills.

Social Skills can be interpreted as skills to build a social system conducive to supporting changes toward better digital maturity.

This is related to the findings in the field that all school principals involved in this study always invited to use technology both by structured and unstructured

socialization, use WAG and Instagram social media, and carry out technology-based training, therefore the principal aggressively in asking school residents to use technology in managing schools.

Team Building Skill is building and directing work teams virtually to achieve the expected synergy. Ability to build Teamwork. From a digital leadership perspective, team-building skills have an essential role, Van Wart et al. (2016).

The findings of this study indicate that the principal's ability to manage a team which in this case is the school community he leads, the principal can take advantage of the use of technology owned so that principal is still able to maintain providing supervision and direction to his subordinates and provide opportunities for his associates to express their aspirations. And contribute to the development of the school during this difficult time of the pandemic.

As leaders of educational institutions, principals need to realize that all forms of change in schools must start from themselves. To do this requires change management by planning transitions, monitoring implementation, and refining technology practices with the experience of Van Wart et al. (2016).

The study results indicate that one form of change made by school principals during the pandemic is using technology in education. The things that principals do based on these findings are to study the use of technology so that teachers and school residents have an understanding of the use of technology in education, after that the principal makes changes by using technology or implementing the technology in school life after that do not forget the principal conduct online supervision to teachers to assist teachers in the successful transition from conventional learning to online learning.

In organizational life, trust is an essential thing that must be owned by every member, including in educational organizations, which in this case are schools. As a leader, the principal needs to trust the teacher's t, and vice versa; the teacher must have confidence in the principal. This trust must be built so that the goals of the educational organization or school can be achieved.

Based on these findings, the Trustworthiness Skills of the principal can be reflected in the principal's ability to provide services to his teacher, one of which is to respond quickly to all forms of reporting or things desired by the teacher or school community. Conveyed, the principal's behavior is also supported by the presence of technology

with the existence of social media and digital communication media.

CONCLUSION AND RECOMMENDATION

Based on the results of the analysis, the digital-based educational leadership skills possessed by school principals at the SMP Negeri in Bandung City already have skills as the results of the researchers' findings, it can be concluded that the principal's digital skills as leaders can respond to the advancement of school technology, namely utilizing the role of technology in running the school. The wheel of leadership, therefore, can speed up and streamline providing or receiving information and make it easier to manage school work. The use of technology can also facilitate work, such as the implementation of supervision which was initially carried out offline to turn online. Thus, leaders must always be able to adapt to any conditions, including the Covid-19 pandemic, which forces changes in all aspects, for example, in learning; technology is needed for the continuity of education. Leadership Skill skills show that the principal's involvement in formulating and communicating the Vision and Mission is based on technology; there are several findings. Namely, achieving the vision and mission can be faster and more efficient because of the role of technology and the realization of science and technology and students with character. Technology-based.

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