

Teacher Competence Based on Digital Quotient as Instructional Leadership

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Abstract

The purpose of the study was to determine the digital intelligence-based teacher competence in carrying out the role as an instructional leadership. Digital intelligence-based teacher competence is related to the teacher's ability to prepare the learning process, especially learning with virtual models during the COVID-19 pandemic. This research uses a qualitative approach with case studies. This research case relates to the digital intelligence-based teacher competence at SD Al-Azhar 35 Surabaya. The research was carried out in 2021, the object of research was carrying out virtual learning. Data were taken by interview, observation, and documentation study. Data analysis was carried out through the stages of data condensation, displaying, as well as drawing conclusions and verification. The results of the study showed that the digital intelligence-based teacher competence at SD Al-Azhar 35 Surabaya was initially motivated by the formulation of a vision that became an institution of direction and work instructions for all civitas, namely "developing the Qur'an generation through digital literacy". The digital intelligence-based teacher competence is illustrated by three learning activities, namely the teaching and learning process, digital learning media management, and continuous self-development through a digital management system. The three activities describe teacher learning leadership in managing classrooms in maximizing teacher competence for optimal student learning outcomes.

Keywords

teacher competence; digital intelligence; instructional leadership

INTRODUCTION

Optimizing the competence of educators (Coninx, Kreijns, & Jochems, 2013; Dekker-Groen, van der Schaaf, & Stokking, 2013) is an important part in the development of human resources in the field of education in the face of changes in science and technology that are increasingly rapid and difficult to predict. Today's educational institutions are faced with conditions that are all agile, full of uncertainty, complexity, and ambiguity. (Flores & Swennen, 2020; Garbett, 2020; Murugan, Rajavel, Aggarwal, & Singh, 2020). These unpredictable conditions have actually been stated in a theoretical study of leadership in facing future challenges, known as VUCA (Volatility, Uncertainty, Complexity and Ambiguity), which was first published in 1987 by Warren Bennis and Burt Nanus. (Choughri, Ghazzawi, Shoughari, & Osta, 2017; Lawrence, 2013). Apparently the theory is very relevant to today's reality, especially in the world of education. Where an educational institution as an institution that prepares candidates for superior human resources who are ready to face challenges in the future. This challenge needs to be understood with all stakeholders of educational institutions to collaborate (Brandon & Fukunaga, 2014) with each other in preparing the learning process to produce graduates who are adaptive to the challenges of change.

Managers of educational institutions need to translate strategies for achieving organizational goals, one of which is the preparation of educators (teachers) who are adaptive and able to produce graduates who are ready to face these conditions. Managers of educational institutions (principals) and educators (teachers) need to prepare students who are ready to face 21st century competencies, namely the ability to work together, collaborate in teams, creativity, and critical thinking skills and be

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able to solve problems. (Kawuryan, 2019; Nehring, Charner-Laird, & Szczesiul, 2019; Sumantri, 2019; Wijaya, Sudjimat, Nyoto, & Malang, 2016). become a priority human resource to be developed. The increasingly fierce competition (Kosnik & Beck, 2009; Kusumawardhani, 2017). today requires tenacity, patience, ability to anticipate, speed and accuracy of thinking and acting in order to remain able to play an active role in the educational process itself. . In developing the potential of educators (teachers) it is necessary to be relevant to the concepts and policies currently being implemented by the Ministry of Education and Culture. Where the concept of independent learning is currently being inflated for formal education units, in which there are four main policies, namely the National Standardized School Examination (USBN), National Examination (UN), Learning Implementation Plan (RPP), and New Student Admission Regulations (PPDB). Zoning. Of the four policies in the realm of formal education, the focus is on improving Indonesia's superior human resources in 2045. One of the important points in implementing these policies is the existence of the National Examination which will be replaced by assessing student competence which can be done in the form of a written test or an assessment form. others are more comprehensive, such as portfolios and assignments (group assignments, essays, and so on). Thus, teachers and schools are more independent in assessing student learning outcomes. Freedom to learn is defined as the independence of teachers and students, where minimum competency assessments and character surveys are the main points in determining student graduation. This consists of the ability to reason using language (literacy), the ability to reason using mathematics (numbering), and strengthening character education. For this reason, student assessment as a major part of graduation is carried out in a formative (assessment of the learning process) in which the teacher has full authority who always interacts with students and understands students' conditions. The concept of a minimum competency assessment that emphasizes literacy and numeracy skills based on best practice in managing educational institutions according to PISA and TIMSS (<http://psmk.kemdikbud.go.id>).

The concept of independent learning is also reflected in the activities of teachers in making lesson plans. The slogan 'one sheet lesson plan' becomes interesting because teachers are no longer focused on documentary activities, but rather on learning development and innovation. The task and role of the teacher is certainly very heavy, especially with the arrival of the COVID-19 pandemic which requires learning to be carried out online. Various independent learning policies make it possible to accommodate various opportunities and challenges that arise in the teaching and learning process. Challenges in learning are certainly still found in every educational unit. Some of the common problems that arise include lack of teacher competence, inadequate learning facilities, less effective curriculum, weak career guidance, lack of communication skills. (Burgaz, 2008; Munishi, 2016; Oresanya, Omodewu, Kolade, & Fashedemi, 2014).

These various challenges certainly do not reduce the spirit in educating the nation's generation. The solution to this challenge is related to digital intelligence (digital intelligence). Where this is the key in determining the success of graduates to be able to survive at the next level as well as a provision to grow students' soft skills. Digital intelligence is an inseparable part of the three previously existing intelligences, namely emotional intelligence, intellectual intelligence, and spiritual intelligence. Digital intelligence seems to be a complement to being a complete Indonesian person, where this intelligence is defined as a set of social, emotional, and cognitive abilities that allow individuals to face challenges and adapt to the demands of digital life. (Trilling & Fadel, 2009). In supporting the readiness and maturity of logical and mathematical thinking to face future challenges that are increasingly complex and difficult to predict. (Beetham, 2016; Beyrouiti, 2017). This is commensurate with the spirit of the industrial revolution 4.0, where technological sophistication is rapidly replacing the presence of human labor. (Baygin, Yetis, Karakose, & Akin, 2016; Shahroom & Hussin, 2018).

The background of the research according to the description above in this study was conducted at the Al-Azhar Islamic Boarding School Foundation with a more specific research object at the elementary school level. In Surabaya, there are four Al-Azhar Islamic Elementary Schools, namely Al-Azhar Islamic Elementary School 11, Al-Azhar Islamic Elementary School 35, Al-Azhar Islamic Elementary School 52, Al-Azhar Islamic Elementary School 56, and Al-Azhar Islamic Elementary School 73. In the learning process What has been done, SD Al-Azhar has integrated 21st century skills, namely creativity, collaboration, critical thinking, and communication.

Where efforts to develop student competencies are carried out with various strategies. First, in developing students who are competent in creativity by presenting STEAM-based learning (science, technology, engineering, art, and mathematics). Second, collaboration competence is carried out by integrating learning through science projects. Third, in developing critical thinking skills by implementing project based learning. Fourth, communication competence is carried out by means of presentations made by students. Some of these efforts and strategies are interesting to study in answering the formulation of research problems related to the importance of digital intelligence, learning systems, and the competence of educators.

METHOD

This study uses a qualitative approach with research design using case studies. This study took the object of research at the Al-Azhar Islamic Education Foundation Surabaya with the focus of the research object at Al-Azhar 35 Elementary School Surabaya. The implementation of data collection by interviews, observations, and document studies is carried out during a pandemic where learning is virtual. Data analysis was carried out by reducing data, presenting data, verifying and drawing conclusions. The data taken in this study relates to the focus of the study, where the researcher was present directly in the research setting by implementing a health protocol. The questions given to the informants used a semi-structured method and were known by the informants. At the time it was known by the informant. During the interview process, researchers also observed virtual learning and teacher mastery in applying technology. In the interview process, researchers also observed virtual learning and teacher mastery in using learning technology. Telephone for study documentation by viewing lesson plans, teacher training documentation, learning media, as well as various student activities both virtual and face-to-face in creating digital intelligence-oriented learning.

RESULTS AND DISCUSSION

In reviewing the findings of research data on optimizing the competence of educators in the perspective of independent learning in order to produce graduates based on digital quotient, it is based on three components in accordance with those in the research focus. Where the optimization of educational competencies is related to the digital intelligence competencies possessed by all educators or teachers at Al-Azhar 35 Elementary School Surabaya. Where competence is related to the work ability of each individual which includes aspects of knowledge, skills, and work attitudes that are in accordance with the expected standardization. (Moran, 2009; Nur, 2020). Some important things related to competence include knowledge, attitudes, understanding, values, talents or abilities, and teacher interests related to digital abilities. (Prayogi, 2020).

The Importance of Digital Quotient in The Digital Era for Graduates

Digital intelligence (digital quotient) is important to be mastered by graduates at every level of education. Especially now that we are entering the era of disruption, educational institutions are no exception. This phenomenon is a situation where a condition is no longer linear. Some of the features that follow us are known as VUCA. Where changes are massive, fast, and difficult to predict (volatility), rapid changes cause uncertainty (uncertainty), the complexity of the relationship between the factors that cause change (complexity), the unclear direction of change that causes ambiguity (ambiguity) makes managers of educational institutions to continue innovate in learning (Hadar, Ergas, Alpert, & Ariav, 2020; Lawrence, 2013; Stein, 2021). This era which then creates learning disruption, which brings students to various conveniences in learning which raises the thought that learning is no longer about the process of direct interaction between students and teachers, but becomes a single process of finding out from all learning sources or known with the educational revolution 4.0 (Ciolacu, Binder, Svasta, Tache, & Stoichescu, 2019).

Learning styles and new ways applied by students along with digitalization in the learning process makes technology the main source to obtain information easily (Ramírez-Montoya, Loaiza-Aguirre, Zúñiga-Ojeda, & Portuguese-Castro, 2021). There is internet access that makes it easier for students to access information as well as various references that support the achievement of competencies that are tailored to their respective educational levels. This is in line with what was conveyed by the informant at the time of the interview where the learning carried out by the school as the object of research has implemented learning by bringing technology and information closer together in each formulation of learning outcomes set by the teacher. Where learning in the research setting has been oriented to digital intelligence, teachers are encouraged to learn new things related to learning technology, especially during the pandemic that is currently happening.

This is in accordance with the concept of continuity (Lessing & De Witt, 2007; Ng, 2010). This is related to professional development, where teachers as educators are required to always develop themselves to hone their abilities both in terms of understanding learning pedagogy and classroom management. (Barrett, Davies, Zhang, & Barrett, 2015). In term of digital intelligence, teacher mastery of the use of information technology and electronic devices are important to teach students through electronic devices used during virtual learning. As was the case with teachers at SD Al-Azhar 35 Surabaya, where at first the teacher used Google Classroom as a medium of learning. Along with that, teachers also improve their competence to use other electronic devices such as zoom and use the learning management system developed by the Al-Azhar Islamic education foundation. This is a tangible form of

how teachers at SD Al-Azhar 35 Surabaya have a strong motivation to present interesting learning for students and make it easier for parents to provide assistance and good data management.

From the process carried out by the teacher in self-development, it directly has an impact on the competencies that will arise in students, especially digital intelligence competencies. The interesting thing is that in the background of this research, the fulfillment of digital intelligence that exists in students does not only occur when learning is carried out virtually because of the pandemic, but long before the pandemic has carried out digital literacy-oriented learning. This can be seen from the formulation of the vision at SD Al-Azhar 35 Surabaya, which develops the Quranic generation through digital literacy for students.

The vision formulation as presented above has implications for the entire series of learning processes carried out by teachers and principals to develop learning with digital literacy. Vision as a guideline and school ideals that are reflected and reflected in the behavior of the entire educational community at SD Al-Azhar 35 Surabaya. For this reason, the school has implemented a vision in learning design by using a digital approach in every action and learning material. This can be seen from the website owned by the school, where students are accustomed to using laptops and other electronic devices when learning is done face-to-face (before the pandemic). Another effort is also made by the school by presenting the school's flagship program, where this program is divided into academic and non-academic programs. The entire presentation of this program is packaged by prioritizing digital intelligence, especially several programs that are directly related to digital intelligence, namely robotics, digital libraries, and laboratory e-learning.

From the description above, it can be concluded that schools, in this case principals and teachers, have a strong commitment to implementing digital intelligence for students. Various efforts made by schools begin with self-development carried out by the teacher first, where the results of self-development will be applied in the learning process which has an impact on the creation of students' digital intelligence competencies. Moreover, schools understand that digital intelligence is an intelligence that must be possessed by all students to be ready to enter the next level of education. In addition, elementary school is a foundation for students to strengthen their competencies, so that students are able to adapt to developments in information and technology when growing up.

Learning System that Leads to Independent Learning

The learning system in SD Al-Azhar 35 Surabaya has led to the creation of independent learning for teachers and students. This is reflected in the results of interviews conducted with principals and vice principals in the data triangulation process showing the same results, where schools have made a policy related to the self-development of teachers to increase competence in terms of using learning media with a technology and information approach. The form of providing greater opportunities for teachers to explore skills using digital learning media when schools are facing virtual learning situations due to the pandemic. Several things have been done by schools in realizing independent learning for both teachers and students. Steps taken by schools by providing opportunities for teachers to carry out self-development in accordance with the teacher's interest in using online learning applications. (Saleh, 2020).

The form of increasing teacher competence by carrying out self-development in learning using online media is part of the creation of a learning system that emphasizes the concept of independent learning. (Bonds, Bonds, & Peach, 1992; Jahari, 2020). Freedom to learn is defined as the freedom of teachers to explore the development of knowledge and skills according to the interests of the teacher. (Juita & Yusmaridi, 2021). In the context of this research setting, schools are looking for the best formula for online learning that provides easy access for teachers, students, and parents or guardians of students. (Carolan-Silva, 2011; Henderson, 1981). The active role of parents greatly affects the achievement of student learning outcomes. From the background of the study, it was found that the role and participation of parents at SD Al-Azhar 35 Surabaya is very important and is an important part of a series of learning processes. This is because at the elementary school level, the role of parents is very important to accompany children when learning from home. Some of the roles of parents include providing assistance in understanding learning materials and concepts that are needed for competency achievement, using electronic media as a means of online learning.

In the background of the study, it was found that the learning system that was built leads to independent learning for students' independence in learning. One of the forms of student independence is represented by the presence of parents. Where the learning carried out is monitored directly by the parents because the parents are involved in the virtual learning space. For this reason, the readiness of the learning system carried out by schools must be carefully prepared. Several things have been done by schools to prepare this learning system by providing support for teachers to use the facilities owned by

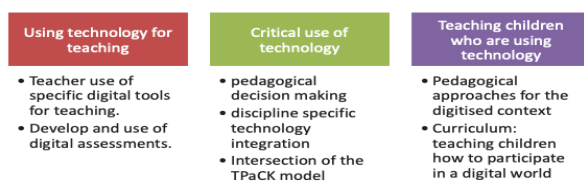


Figure 2. Three dimensions of integration of technology into teaching practices.

Figure 1. Technology integrity dimension in learning system (Starkey, 2020)

the school including electronic devices, internet networks, training on the use of virtual learning devices, as well as discussion rooms between teachers and principals in conveying problems related to virtual learning.

The various efforts that have been made have a positive impact on the creation of an effective learning system. One of the indicators used by schools that learning is going well is the response shown by the parents. Where the response given is very positive for the presence of online learning given to students. This form of positive response is a reflection of the participation of parents in the presence of a learning system that pays attention to the welfare of children in learning (Anderson & Graham, 2016; Bono, Mangan, Fauteux, & Sender, 2020; Powell, Graham, Fitzgerald, Thomas, & White, 2018). Where in conditions of learning carried out virtually, the welfare of children in learning is a shared concern of both teachers and parents.

The readiness of the learning system that is built reflects the readiness of the teacher to use technology in learning. This is reflected in teachers who are able to use technology equipment for specific learning, such as the results of data mining, it was found that the virtual learning media used used Google Workspace for Education, Zoom Club Meetings, and the learning management system built by the Al-Azhar Islamic Education Foundation. In the assessment process, schools also use learning media to collect assignments and student work so that they can be managed properly (El Mhouthi, Erradi, & Nasseh, 2018; Little, 2015). The assessment system will later be included in two tools that have been developed, namely integrated with the Surabaya City Education Office and the learning management system developed by the foundation. The assessments given by the teacher can also be directly accessed by parents, so parents will know their children's learning outcomes in real-time.

The second thing related to the readiness of teachers in the learning system implemented is critical in using technology. (Legris, Ingham, & Collerette, 2003). This relates to decision making in the pedagogical aspect, where pedagogy (Gess-Newsome, 1999) This relates to decision making in the pedagogical aspect, where pedagogy is related to the ability to manage learning in students which at least includes understanding insight or educational foundations, understanding of participants students, curriculum/syllabus development, learning design, implementation of educational and dialogical learning, utilization of learning technology, evaluation of learning outcomes, and development of students to actualize their various potentials.

The critical form of teachers in using technology is also reflected in their skills in integrating technology in learning materials. As well as to develop students' critical attitudes, the teacher applies learning with a project based learning approach. (Tasci, 2015). Students are given practical work materials that have been prepared by all the equipment from the school, during the learning process the teacher becomes a companion and facilitator for students' practical activities. This process will be reflected in the critical thinking attitude of students as part of the competencies that are expected to be mastered by students. (Akhmad, Masrukhi, & Indiatmoko, 2020; Bell, 2010). With a learning system that uses a technological approach, it is also reflected in the form of technological pedagogical content knowledge. (Baran, Chuang, & Thompson, 2011; Tai, 2015; Wetzel & Marshall, 2011). This relates to the ability of teachers in terms of the use of technology, pedagogy in learning, as well as learning material that is mastered by the teacher.

The next thing related to the integration of technology in learning is reflected in teaching using technology. This is related to the pedagogic approach in the context of digital learning and the curriculum that supports the creation of digitalization of learning (From, 2017). Teachers' pedagogical abilities in terms of digital learning are very real and are reflected in the learning media used with various electronic devices and also digital software to support virtual learning. Teachers are very comfortable with learning that is done digitally, as well as students also seem adaptive to the technology used for the learning process. In the context of a curriculum that supports the creation of digitalization of learning, it has been

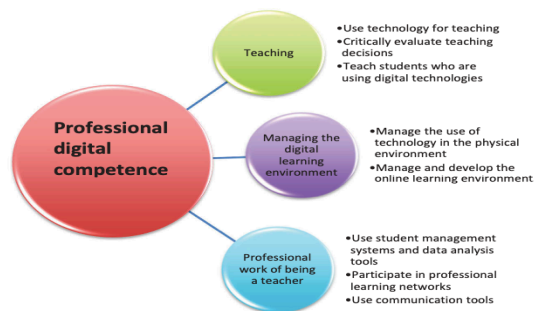


Figure 3. Professional digital competence for digitally infused education systems.

Figure 2. Digital competence of teachers in the learning system (Starkey, 2020)

applied in the lesson plans made by the teacher. Where in each learning activity that is reflected in the lesson plan, the teacher includes ways to achieve competencies based on digital literacy. The research background also describes a curriculum that reflects the digitization of learning from the core curriculum as well as supporting curricula in extracurricular activities.

Competence of Educators in Carrying Out Learning that Results in Students Having Digital Quotient Competencies

The competence of educators in the portrait of the results of this study is illustrated as digital learning competencies that are mastered by teachers in carrying out learning in virtual classrooms. Teacher competence is divided into four, namely personality competence, pedagogic competence, professional competence, and social competence (Indonesia, 2003). For this reason, this study provides a new competence that is adapted to current educational conditions. Where in the current situation teachers must master digital intelligence and this is reflected in the digital competence of teacher learning (Krumsvik, 2014; Lund, Furberg, Bakken, & Engeliën, n.d.; Toom, 2017). This form of digital intelligence is reflected in teacher activities in applying learning to students, where there is one value held by schools, namely 'adab'. Adab means ahlak, this word has a deep philosophy related to procedures, manners, as well as behavior and speech in every action when the teacher conducts the teaching and learning process. This is a character value that is raised both a reflection of the teacher and students.

In order to produce students who have digital intelligence competencies, educators or teachers also have a reflection of digital competence in the learning that is carried out. Digital competence by teachers is said to be professional when it meets three elements, namely teaching, digital learning environment management, and teacher professionalism (Starkey, 2020). First, teaching, this is related to the use of technology in the learning process. In the background of the research, it can be seen that the competence of teachers in using technology in teaching material to students is reflected in the various software and electronic devices used. Second, the management of the digital learning environment is related to the readiness of learning devices owned by schools and the readiness of human resources, namely teachers, in using technology. The management of the learning environment carried out in the research setting has created a learning management system that can be accessed by all schools under the Al-Azhar Islamic education foundation. Third, teacher professionalism, where teachers already have academic qualifications that are in accordance with the level or material being taught. This relates to the professional competence of teachers and the ability to formulate learning materials, mastery in delivering learning materials, and evaluating student learning outcomes in accordance with learning materials.

Some things that are an important part in the formation of students who have digital intelligence are trained with various positive habits carried out by schools (Nurriyah, Rizky, & Hasan, 2018). As a form of implementation in terms of realizing the competence of educators in carrying out learning in order to hone students' abilities and skills based on digital intelligence, schools have carried out various programs that are described in each learning activity. In virtual learning, the school implements a morning prayer program. This program is intended to equip students with leadership skills. Where in the activity before learning is carried out, students are alternately asked to lead in prayer at the beginning of learning. There are several characters who want to be instilled in students when students lead prayer, among those characters are courage, self-confidence, communication skills and the embodiment of belief in Allah SWT.

The form of the teacher's professional embodiment is also reflected when the teacher applies project-based learning. Some of the characters that want to be raised related to 21st century skills are creativity, collaboration, critical thinking, and communication. (Ferrero, Vadillo, & León, 2021; Ichsan

et al., 2019; Ruskandi, Hikmawan, & Suwangsih, 2019). These skills are taught to students since the first grade of elementary school. Where in the process of preparing learning plans carried out by teachers, coordination is always carried out to determine the level of depth of material that is adjusted to the level or level of education. The purpose of this project-based learning is to improve students' higher order thinking skills. The competence of teachers is also honed to be able to collaborate with teachers at each level or class of students to coordinate to realize large projects that must be carried out by students in groups in grade 6 elementary school.

Project-based learning carried out by students is directed and accompanied by a teacher. This learning leads to digital intelligence competencies which are reflected in students through project-based activities. One form of activity is robotics. Students are taught to understand related to simple programming languages that have been provided by device developers in collaboration with schools. This programming language is related to code that describes work steps by thinking logically and systematically.

CONCLUSION

The conclusions of this research relate to the focus of the research, namely the importance of digital quotient in the digital era for graduates; learning system that leads to independent learning; the competence of educators in carrying out learning that results in students having digital quotient competencies. Where the academic community at SD Al-Azhar 35 Surabaya has interpreted digital intelligence to be integrated in learning activities. This is related to the formulation of the vision that exists in schools regarding digital literacy and is well implemented in every learning activity at school. The learning system in the research setting has put forward the concept of independent learning. Where the principal has implemented the freedom for teachers to plan their learning that liberates students. This freedom is related to learning methods, material exploration, and learning strategies. The competence of educators has mastered pedagogic and professional competencies. Where the reflection of adequate competence in this teacher is in the educator himself in creating innovative learning.

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