

# CLASSROOM MANAGEMENT DESIGN THROUGH IoT-BASED LEARNING TO IMPROVE SCHOOL QUALITY

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## ABSTRACT

The level of achievement of the objectives of managing and utilizing existing resources, such as teaching staff, educators, and infrastructure was to achieve school goals and create an environment that supports learning activities through student IoT (Internet of Things) and produces outputs that can benefit the community. The efficient management of student IoT and resources in schools can improve their quality. In achieving success in accordance with the objectives, the design of classroom management through IoT-based learning can improve the quality of schools. The extent to which a social system achieves its goals is the degree of its effectiveness. Management and utilization of existing resources including teaching staff for students in the teaching and learning process. Education personnel, infrastructure, and so on are achieved to achieve school goals and create an environment that supports learning activities and outputs that can benefit the community. The effectiveness of school resource management by designing classroom management through IoT-based learning is mastered by teachers and students. School principals, teachers, and other education personnel are examples of these human resources. Infrastructure, environment, school programs, and other programs that utilize the Internet are the basis for progress in the management of non-human resources. One of the most important aspects of managing other school resources is an investigation into how well the school is performing under the leadership of the principal. This paper aims to explain the design of the effectiveness of classroom management in improving the quality of education. This research uses quantitative methods with data analysis techniques using literacy studies in journal articles on Google Scholar.

*Keywords: IoT, school resources, quality of education*

## 1. INTRODUCTION

The low quality of education at every level and education unit, especially primary and secondary education, is one of the problems of education in Indonesia. The uneven improvement in the quality of education is caused by at least three factors, according to various analyses and observations. The first factor, national education policy, and implementation use input-output analysis or an inconsistent approach to the education function. The second factor is that national education is carried out by a bureaucratic and centralistic ally. The third factor is the school community, especially teachers, and the general public, especially parents, have participated very little in the implementation of education so far (Briones, et al., 2021).

The low quality of various educational institutions is one of Indonesia's current education problems. According to Widiyono (2020) The habituation of students to know the Internet has not been well realized. All parties must make various efforts to increase awareness of technology-based education (Widiyono, 2020). Due to the low quality of technology-based education, students become victims of indirect association (Coman et al., 2020).

Related to the reality in question, one of the most important steps is to reorient the educational process, ranging from IoT-based quality management for students to ICT-based quality management in schools. In fact, Educational Institutions have made various efforts to improve educational standards through Student IoT. In universities, quality improvement efforts include curriculum development, increasing the competence of teaching staff through ICT-based training, improving education management, and procuring and improving educational facilities and infrastructure. According to Mulyasa et al. (2016), this effort was motivated by an awareness of the importance of education for the growth of the nation's character and human resources. Therefore, there has been a less significant increase in several education quality indicators (Anwar, 2021).

One alternative to improving the quality of schools is through management design and IoT-based classroom learning, with the aim of schools becoming independent in a decentralized system as well as creative and innovative in operational governance. Some of the reasons for the application of IoT in the field of education include the interactive learning, security, educational applications, and increasing efficiency. Based on this background, researchers want to study further classroom management design through IoT-based learning to improve school quality.

## 2. 2. LITERATURE REVIEW

### 3. 2.1 Student's IOT

IoT is a concept when an object has technologies such as sensors and software that are also used in communicating, connecting, and exchanging data using other devices when connected to the internet. Indonesia is a nation that wants to improve itself with the hope of high-quality education (Latifah, 2022). If an educational product is able to compete in the global market, it is said to be of high quality. The country's desire for high-quality education requires careful planning if it wants to achieve its goals. The quality of education does not just appear without special steps and strategies to improve it.

The student that uses the Internet of Things (IoT) has a longer attention span and pick up information more quickly. The interactive educational software provides the facilities such as: visual storytelling, sounds and animation, quiz and puzzles, and dialogue (Khatri, 2022).

According to the opinion above, it can be concluded that, quality education is being able to create educational products with global competitiveness, schools must be able to design an education system through educational software that is more interactive and

fast. This can be done through IoT to ensure a better and more modern quality of education.

## 2.2 School Management

Through efficient resource management, schools can improve their quality. According to Humaedi (2015), the word 'effective' means 'to achieve success in accordance with the set goals. The degree to which a social system achieves its goals determines its level of effectiveness. The extent to which the objectives of managing and utilizing existing resources, such as teaching staff, educational staff, and infrastructure are achieved in order to accomplish school goals and have an educational environment that supports learning activities and outputs that can benefit the community. Community is a measure of the effectiveness of managing school resources. School resources in this case include human and non-human resources. Principals, teachers, and other education personnel are examples of these human resources. Infrastructure, environment, school programs, and other relevant programs are examples of non-human resources. One of the most important aspects of managing other school resources is the investigation of how well the school is performing under situational leadership. This is because the principal is in charge of leading the school situation. The principal is in charge of organizing and persuading a group of educators to work together to achieve school goals. Furthermore, as a school principal, the principal is also in charge of and responsible for all school activities, both technical and special programs, by managing existing resources to achieve school goals. Principals have the ability to develop special programs that can help schools achieve their goals and improve the quality of education through students' IOT capability improvement programs. These programs can be in the form of programs that encourage collaboration, enhance learning, and improve the quality of educators and students (Pangondian et al., 2019).

## 2.3 School Development

Schools have a very important and strategic role in the development of the entire potential of individuals to prepare them for the dynamics of future life. The school, where education takes place, contains forward-thinking students who will never stop thinking. With regard to the era of communication and information of the 21st century, schools today face much greater challenges than in the past. Schools that are able to adapt to this era are certainly not schools in general; rather it is a school that is truly effective and able to prepare its graduates for the changes that will occur in the future. These schools are able to produce graduates who have certain academic abilities, skills, attitudes, and mentality, in addition to other personality traits, so that they can continue their education to a higher level or work in jobs that require expertise and skills (Balim, 2009).

A school capable of achieving its own goals is an effective school. Therefore, schools that can achieve goals by setting high goals are excellent and effective schools. Government, schools, and society all bears the responsibility of education as a long-term investment. To create an efficient school, the contribution of the community to the advancement of education is quite large.

## 2.4 Design of Effectiveness

In achieving the goals or objectives that have been set for any organization, activity, or program, effectiveness is a very important component. It is called success if the goal or objectives are achieved as predetermined.

According to Mahmudi (2010), Effectiveness is the relationship between output and purpose; the more effective the organization, company, or program, the greater the contribution of the output to the achievement of the goal. Therefore, the focus of effectiveness is on the results, programs, or activities that are considered effective if the resulting output is said to be used wisely or can meet anticipated objectives.

The most important performance measurement is the measurement of results, also known as the measurement of the effectiveness of internet use in students, (Sriadhi et al., 2018). Evaluation of the relationship between the actual product produced by an activity or program and the anticipated target results is what is meant by the term 'measuring effectiveness'. Numerical assessments can not only be used to measure student learning outcomes, but evidence can also be gathered through observation, secondary data recordings, video/photo recordings, or beneficiary interviews. According to Steers and Richard (2003), effectiveness is often interpreted as the quantity or quality of goods or services produced (output). However, it should be noted that for schools, effectiveness is the capacity to manage resources (utilization) optimally, which shows the extent to which the teacher's efforts are in producing quality education through the ability of IoT-based students to successfully complete all of their main responsibilities to achieve the educational goals of this 5.0 era.

## 2.5 Role of Leader

Within school organizations, the role of instructional leadership in enhancing teacher professionalism is very significant, especially in relation to their responsibility to improve the quality of school learning. One of the managerial aspects of organizational life is leadership, which is a key position. A strong mentality, a high level of education and previous work experience are the necessary qualities for a school principal. Likewise, the principal's leadership towards driving school efficiency is expected to be able to understand the learning process and be able to develop teachers. In addition to supervising school operations, the principal of a driving school must understand the student learning process and act as an educator facilitator (Mariana, 2021).

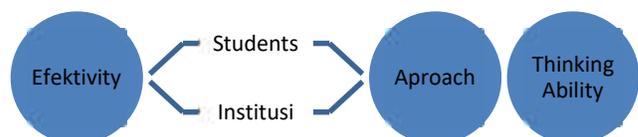


Figure. 1. Design of Effectiveness

## 2.6 School Resource Design

Schools can use their resources to achieve educational goals. School educational resources can be divided into four categories: (a) non-human resources, which include school programs and curricula; (b) human resources which include school principals, teachers, education staff, and other education staff; (c) physical resources, which include buildings, rooms, equipment, educational aids, study time, and the physical appearance of the school; and (d) financial resources, which include all funds received by school management from the community and government (Suparyanto & Rosad, 2015).

The perspective of teachers and schools towards students in building and encouraging the creativity to support the achievement of educational goals as outlined in the vision and mission of the school is very important for the success of a learning process to provide maximum education. Through the design IoT, it gives a new nuance for students in building thinking through the internet by connecting students' thinking skills to technology. The IoT learning design scheme is shown in Figure 2 below.

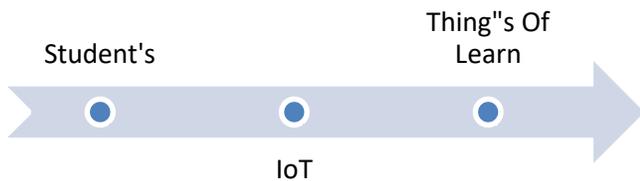


Figure 2. School HR Design

The good design of school power management is considered effective to improve the quality of education. According to Rohmawati (2015), one of the school resources that can be used to improve the quality of students' IOT-based education is school facilities and infrastructure (as cited in Dabbagh & Kitsantas, 2012). One of the factors supporting the achievement of school goals is the availability of supporting school infrastructure for education (Yakin, 2019). In this case the learning support facilities and infrastructure used by the school to achieve its goals are ICT infrastructure. Achievement of goals, availability of infrastructure and technology, use of the relevant media, and discussion of material are examples of indicators of infrastructure that are said to be used effectively. Human resources such as educators and education staff play an important role in fostering a positive learning environment. In this case, educational staff consists of administrative staff and other non-educational staff, while educators are teachers. The learning process will be in line with school goals if educators and other education personnel comply with standards and carry out their responsibilities effectively (Fadila et al., 2020).

#### 4. 3. METHODS

Using qualitative data collection methods and techniques for the study of literature, the author used a number of literature references in this work. Books, relevant journals, and the internet are the sources for writing this article. The data of this article came from

from document source found online through Google Scholar searches.

#### 4. RESULTS & DISCUSSION

In resource management, learning leaders use the school's well-owned and managed assets as the school's strengths or potentials according to the environment and its times. An educational institution or school must have resources that can be used to achieve the goals of the vision and mission that have been planned. Schools need to create an ecosystem that can encourage creativity to help the success of educational goals. The way schools view their ecosystem is critical to the success of a learning process: whether it is weaknesses or strengths. Schools focused on their strengths will avoid focusing on their weaknesses and instead work to leverage their assets (Muzakkar et al., 2022).

The results produced by the school show its quality. The results of managing school resources effectively to create student characteristics can positively develop their IOT (Lase, 2019).

The purpose of education in improving the quality of education in schools is known as the output of the blended learning method which is implemented based on the internet (Setiawan, 2017). Meanwhile, the achievement of students' ICT abilities in the field of learning is an illustration of school output to improve school quality (Astini, 2020).

Based on this description, it is necessary to efficiently manage school resources to assess the quality of education of a school. Inputs (principals, teachers, experts, infrastructure, students), processes (teaching and learning activities, management), outputs (satisfactory learning outcomes, training levels), and outcomes (graduates can work according to their fields) are all indicators of the effectiveness and quality of education.



Figure 3. School Quality Effectiveness Design

Planning for the development of school resources includes several stages to improve the quality of learning, including reviewing related policies, analyzing school conditions, formulating school goals, collecting data and related conditions, analyzing data and information, formulating and selecting program alternatives, and determining steps to implementing these programs. Capacity building program planning with the aim of increasing human resources is part of human resource development. so that school resources can examine various bureaucratic rules and policies.

Debriefing activities, teacher guidance and direction, teacher work meetings at the beginning of the school year, and meetings to discuss existing problems are part of the school resource

development carried out. Training and education, performance evaluation, career development, counselling, motivation, and discipline are all methods of implementing school resource development. Plans for various programs, such as involving teachers in various training and upgrading programs held at the education office and other institutions, are proof of this.

## 5. CONCLUSION

- a. Effectiveness is a very important component. School educational resources can be divided into four categories: (a) non-human resources, which include school programs and curricula; (b) human resources which include school principals, teachers, education staff, and other education staff; (c) physical resources, which include buildings, rooms, equipment, educational aids, study time, and the physical appearance of the school; and (d) financial resources, which include learning facilities in schools from the community and government. Planning for the development of school resources includes several stages to improve the quality of IoT-based learning. Through the design of classroom management by the teacher, namely by analyzing school conditions, formulating school goals, collecting data and related conditions, analyzing data and information, formulating and selecting alternative programs, and determining steps to implement these programs, there was an increase in the effectiveness of school quality, human resources, and students' abilities in developing and implementing it based on the internet.

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## 7. REFERENCES

- Afor, S., Arkiang, F., Ola, M. I., & Yanti, S. I. (2022). Efektivitas manajemen sumber daya manusia dalam meningkatkan mutu pendidikan. *Urwatul Wutsqo: Jurnal Studi Kependidikan Dan Keislaman*, 11(2), 164–175. <https://doi.org/10.54437/urwatulwutsqo.v11i2.589>
- Anwar, M. (2021). Penerapan manajemen berbasis sekolah di madrasah: Alternatif peningkatan mutu pendidikan madrasah. *Jurnal Health Sains*, 2(8), 1527–1544. <https://doi.org/10.46799/jsa.v2i8.290>
- Astini, N. K. S. (2020). Pemanfaatan Teknologi Informasi dalam pembelajaran tingkat sekolah dasar pada masa pandemi covid-19. *Jurnal Lembaga Penjaminan Mutu STKIP Agama Hindu Amlapura*, 11(2), 13-25. <https://doi.org/10.47730/jurnallampuhyang.v11i2.194>
- Balim, A. G. (2009). The effects of discovery learning on students' success and inquiry learning skills. *Eurasian Journal of Educational Research (EJER)*, 9(35), 1-20 [https://ejer.com.tr/wp-content/uploads/2021/01/ejer\\_2009\\_issue\\_35.pdf](https://ejer.com.tr/wp-content/uploads/2021/01/ejer_2009_issue_35.pdf)
- Briones, S. K. F., Dagamac, R. J. R., David, J. D., & Landerio, C. A. B. (2021). Factors affecting the students' scholastic performance: A Survey study. *Indonesian Journal of Educational Research and Technology*, 2(1), 97-102. <https://doi.org/10.17509/ijert.v2i2.41394>
- Coman, C., Țiru, L. G., Meseșan-Schmitz, L., Stanciu, C., & Bularca, M. C. (2020). Online teaching and learning in higher education during the Coronavirus pandemic: Students' respective. *Journal Sustainability*, 12(24), 1-24
- Dabbagh, N., & Kitsantas, A. (2012). Personal learning environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *Internet and Higher Education*, 15(1), 3–8. <https://doi.org/10.1016/j.iheduc.2011.06.002>
- Fadila, R. N., Lutfiani, E. A., R, I. S., Veronika, N., Rachmanto, D., & Arfinanti, N. (2020). Efektivitas pengelolaan sumber daya sekolah dalam meningkatkan mutu pendidikan. *Jurnal Akuntabilitas Manajemen Pendidikan*, 8(1), 81–88. <https://doi.org/10.21831/jamp.v8i1.28997>
- Humaedi, M. A. (2015). Etnografi bencana: Menakar peran para pemimpin lokal dalam pengurangan resiko bencana. LKiS Yogyakarta.
- Khatri, R. (2022). How IoT can guide students in learning?. Opengrowth, <https://www.opengrowth.com/resources/how-iot-can-guide-students-in-learning>.
- Lase, D. (2019). Pendidikan di era revolusi industri 4.0. *SUNDERMANN: Jurnal Ilmiah Teologi, Pendidikan, Sains, Humaniora Dan Kebudayaan*, 12(2), 28-43 <https://doi.org/10.36588/sundermann.v1i1.18>
- Latifah, N. (2022). Peran kepala sekolah dalam meningkatkan mutu pendidikan. *EDUCATOR: Jurnal Inovasi Tenaga Pendidik Dan Kependidikan*, 2(2), 175–183. <https://doi.org/10.51878/educator.v2i2.1307>
- Mahmudi. (2010). *Analisis laporan keuangan pemerintah daerah*. Sekolah Tinggi Ilmu Manajemen Yogyakarta.
- Mariana, D. (2021). Pengaruh kepemimpinan kepala sekolah terhadap efektivitas Sekolah Penggerak dalam meningkatkan kualitas pendidikan. *Jurnal Pendidikan Tambusai*, 5(3), 10228–10233.
- Mulyasa, E., Iskandar, D., & Aryani, W. D. (2016). *Revolusi dan inovasi pembelajaran*. PT Remaja Rosdakarya
- Muzakkar, P., Sd, A., & Tanjong, N. (2022). *Pemimpin dalam pengelolaan sumber daya di sekolah*, 22–25.
- Pangondian R. A., Santosa, P. I., & Nugroho, E. (2019). Faktor - faktor yang mempengaruhi kesuksesan pembelajaran daring dalam revolusi industri 4.0. *Seminar Nasional Teknologi Komputer & Sains (SAINTEKS)*.
- Rohmawati A., (2015). Efektifitas pembelajaran. *Jurnal Pendidikan*, 9(1), 15-32.
- Setiawan, W. (2017). Era digital dan tantangannya. *Seminar Nasional Pendidikan*.
- Sriadhi, S., Gultom, S., Restu, R., Rahim, R., & Simarmata, J.

- (2018). Internet-based social media and its influence on student behaviour changes. *IOP Conference Series: Materials Science and Engineering*, 434(1).  
<https://doi.org/10.1088/1757-899X/434/1/012267>
- Steers & Richard (2003). *Efektifitas organization*. Erlangga.
- Subekti M, Faozanuddin M, & Rokhman A. (2017). Pengaruh komunikasi, sumber daya, disposisi dan struktur birokrasi terhadap efektifitas implementasi program bantuan operasional sekolah pada satuan pendidikan sekolah dasar negeri di kecamatan Tambak. *Jurnal The Indonesian Journal of Public Administration*, 3(2),58-71  
<https://doi.org/10.52447/ijpa.v3i2.923>
- Suparyanto, R., & Rosad, S. E. M. M. (2015). *Manajemen Pemasaran*.Bogor: In Media
- Widiyono, A. (2020). Efektifitas perkuliahan daring (Online) pada mahasiswa PGSD di saat pandemi Covid 19. *Jurnal Pendidikan*, 8(2),169-177  
<https://doi.org/10.36232/pendidikan.v8i2.458>
- Yakin, A. Al. (2019). Manajemen kelas di era industri 4.0. *Journal Peqguruang: Conference Series*, 1(2), 10-12  
<http://dx.doi.org/10.35329/jp.v1i2.328>