

# Implementation of Kaizen an Innovative Strategy to Improve Education Quality in the Era of Society 5.0

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## Abstract

The Society 5.0 era directs technology towards solutions that can address broader social and environmental challenges. In the era of Society 5.0, education experiences various challenges, therefore digital transformation is needed to produce better educational products and services. The quality of education is dynamic, which means that it continues to change as the times change. So innovative steps in improving quality in the era of Society 5.0 by implementing kaizen. In practice, the application of kaizen uses the approach pioneered by Edward Deming, namely the PDCA (Plan-Do-Check-Action) approach. The purpose of this study was to determine the application of kaizen as a strategic step to improve the quality of education on an ongoing basis. The method used was a descriptive qualitative approach. The results showed that various problems occurred in efforts to improve the quality of education. These problems occur in manpower, materials, methods and environment. The innovative step of kaizen uses the PDCA (Plan-Do-Check-Action) approach as the principal's strategy for overcoming the problems that occur in educational institutions. At the PDCA stage, schools routinely conduct School Self Evaluation as an effort to improve the quality of education in a sustainable manner (continuous improvement) by referring to the indicators in the National Education Standards (SNP) while still using the principle of minimizing errors from the start (zero defect). The results of the School Self Evaluation are used as a reference in the preparation of the School Work Plan (RKS) which is short-term (1 year) and long-term (4 years).

## 1. Introduction

In the 21st century, digital transformation is underway, characterized by increasingly sophisticated technological developments. The discovery of technology and the availability of very large data (big data) indicate that we have entered the era of Society 5.0 which is a continuation of the industrial revolution 4.0 era (Panizzon and Barcellos, 2020). In addition, the Society 5.0 paradigm begins with an increasingly complex world and a high level of uncertainty (Hamedani et al, 2023; Panizzon and Barcellos, 2020). To achieve a better quality of life and well-being, Society 5.0 aims to integrate humans with machines through advanced technology. Therefore, society is expected to utilize digital technology to achieve significant progress in various aspects of life.

Digital transformation is the process of explaining the limitations or affordability of organizations related to digital technology, so that with digital transformation organizations can produce better products and services (Aisyah et al, 2023). The purpose of organizations carrying out digital transformation is to explore and develop various models and make better innovations in terms of products or services, expand networks, and get closer to customers to find customer needs (Hadiono et al, 2020).

Education in the Society 5.0 era experiences various challenges including disruption of teaching and learning, community involvement in educational development, the future of science and academia, cooperation between educational institutions and stakeholders, the gap between technology and humanity, and organizational change (Panizzon and Barcellos, 2020). There are still many Indonesians who do not have access to quality education, which has resulted in the phenomenon of economic inequality and increased unemployment (Sembiring, 2022). Whereas education is a very important need for every human being that lasts throughout life. Education has the essence in preparing and developing human resources that are reliable and able to compete in the future (Suhada et al, 2022).

Based on the results of national assessments at the primary and secondary school levels, Indonesia's education report card in 2023 shows that literacy skills at the SD / MI / Equivalent level are at a moderate level, namely 61.53% of students have literacy competencies above the minimum. Meanwhile, numeracy skills at the SD/MI/equivalent level are at a moderate level, with 46.67% of learners having numeracy competencies above the minimum. The quality of learning at the SD/MI/equivalent level is at a moderate level, which shows that the classroom atmosphere is starting to be conducive, affective support and cognitive activation from teachers is increasing. The education

report card is a description of the quality condition of the education unit based on data from the national assessment results. Thus, it can be used as a basis for identifying problems, reflecting on the roots of problems and improving the quality of education as a whole (Permendikbud Number 17 of 2021).

Quality is the main interpretation of Total Quality Management (TQM) and makes a very important indicator to pay attention to because it can describe the overall quality of the organization in serving customer needs (Septiadi, 2019). Joseph Juran described quality as the suitability of product use to meet customer needs and satisfaction (fit for use), while Crosby described quality as conformance to prerequisite specifications, and Edward Deming described quality as meeting customer expectations (Sallis, 2008). So it can be concluded that quality is the conformity between customer needs and product or service standards.

Education is the key to building civilization. If Indonesia aims to become a developed country, the main prerequisite is to improve the quality of education. Improving the quality of education is the responsibility of educational institutions to provide good educational products and services for students, parents, communities and stakeholders. Quality control, quality assurance, and comprehensive quality management are some of the basic elements of quality management directed at customer satisfaction (Crosby et al, 2020; Muyasaroh, 2017; Dudin et al, 2017).

To achieve quality education, quality improvement efforts must be implemented in the education process (Supriyanto et al, 2019). Improving the quality of education is carried out in line with and following the direction of the times (Habibi et al, 2022). Educational institutions can make efforts to improve quality on an ongoing basis (continuous improvement) so that the quality of education is increasingly maintained and as an accountability of educational institutions to the public. The process of organizing education must meet the National Education Standards (SNP) as a minimum requirement.

There is a Japanese term for continuous improvement, *kaizen*. In theory, *kaizen* was pioneered by Joseph Juran, a quality management expert who is also known as one of the main figures in the development of the concept of quality management. But in practice, the application of *kaizen* uses the process approach proposed by Edward Deming, one of the pioneers in quality management and earned the nickname "Great Quality Pioneers". By Edward Deming, the process approach used is known as PDCA (Plan-Do-Check-Action).

*Kaizen* is an effort to minimize errors from the start (zero defect) (Supriyanto et al, 2019). Thus, *kaizen* is an activity that leads to quality control and quality development. *Kaizen* is a philosophy of continuous improvement, which can represent an approach for educational institutions that strive to gradually improve educational processes and services to achieve a good reputation and appeal to customers (Suárez et al, 2019).

Researchers are interested in conducting research at SDN 2 Dawuhan because it is one of the driving schools in Situbondo district. As a driving school, SDN 2 Dawuhan is identified as having the ability to manage educational institutions not only operationally, but also in managing the learning process and developing teacher competencies. Therefore, SDN 2 Dawuhan makes various efforts to improve and maintain the quality of its educational institutions.

Research related to continuous quality improvement has been conducted by many other researchers, such as research conducted by (Tri et al, 2019) trying to explore the application of *kaizen* in manufacturing companies, while research conducted by (Suárez et al, 2019) explores *kaizen* values in university accreditation standards. Thus, there is a research gap between previous research and research that will be conducted by researchers. Therefore, the novelty in this research will focus on the application of *kaizen* in elementary schools that are used as driving school models.

The urgency of this research is to find out the process of continuous quality improvement using the innovative strategy of *kaizen*, as an answer in facing the challenges of the times in the era of Society 5.0. In theory, this research is very important to do as reference material for further research in exploring and identifying the application of *kaizen*. While in practice, this research is very important to do as a basis for school institutions in conducting quality assurance internally as a basis for maintaining the quality of educational institutions in accordance with customer needs. So, based on this background, the researcher is interested in conducting research on the application of *kaizen* as an innovative strategy to improve the quality of education in the Society 5.0 era based on customer needs by always prioritizing the zero defect principle.

## 2. Methods

The approach used is a descriptive qualitative approach. Qualitative research seeks to explore the phenomena that occur. In qualitative research, the researcher becomes the key

instrument in obtaining information. The research location is SDN 2 Dawuhan in Situbondo district. The research subjects were the principal and the driving teacher who was also the internal quality assurance team at SDN 2 Dawuhan. Determination of research subjects using purposive sampling technique. This is based on the needs of the research, so that the determination of the subject is based on the need for information to explore the focus of the research. By determining the research subjects related to the focus of the research, then extracting information about the focus of the research will be more accurate and in-depth.

Researchers conducted various stages of research, namely (1) determining the research theme, (2) conducting literature studies related to the research theme, (3) determining the focus of research, (4) data collection, (5) data analysis, and (6) drawing conclusions. Data collection techniques used interviews and documentation studies. Data analysis techniques use data reduction, data display, and conclusion drawing. Data validity techniques use four criteria, namely (1) credibility, (2) reliability, (3) dependability, and (4) confirmability.

### 3. Result and Discussion

The Society 5.0 era steers technology towards solutions that can address broader social and environmental challenges. Society 5.0 is an important and vital thing that must be faced in the millennial era. In this era, it has the possibility to provide products and services that are able to meet various kinds of individual and group needs (Rochmawati, 2023). Schools have used technology in the implementation of management in schools, such as the use of information systems and online-based applications to manage documentation, evaluation and reporting. Schools utilize technology to store and manage data in a structured manner and provide easy access.

Based on the interview results, adopting technology is an advantage for schools to increase efficiency, transparency and accuracy in producing positive contributions to continuous improvement in education quality. The use of information technology is starting to get attention because with technology, educational programs can be organized widely, efficiently and can be adjusted to the needs (Aisyah et al, 2023).

One of the principles of implementing Total Quality Management (TQM) is effective communication and full involvement of team members. Teamwork in organizations is an essential component in implementing Total Quality Management (TQM) to build trust, improve communication skills and build independence (Oakland, 1993). The principal as a top management leader conducts top down and bottom up communication. Top down and bottom up communication is crucial in achieving the success of Total Quality Management (TQM).

The principal's strategies and efforts in building effective communication and involving all employees are by holding regular meetings with teachers and education personnel, and the principal openly provides opportunities for teachers and education personnel to convey input, ideas and opinions. The implementation of open, transparent and inclusive communication will form good teamwork and ensure that all team members feel they have an important role in achieving school goals.

Education must continue to make continuous improvements (continuous improvement) because quality criteria continue to change related to products, services, people, processes and the environment. Quality must continue to improve over time, because quality is not only for the present but for the future (Supriyanto et al, 2019). This is stated in the five pillars of education quality, namely quality organization, quality standards, internal and external quality assurance, continuous quality improvement, and public accountability (Kemendikbud, 2012). The five pillars are the foundation in improving the quality of education. Thus, an innovative strategy that can be carried out by educational institutions in the context of quality assurance and to answer the challenges in the era of Society 5.0 is by implementing kaizen.

Based on the results of the interviews, the school has established an internal quality assurance team that is responsible for monitoring and ensuring that the entire education process in the school has run in accordance with the established quality standards, which refer to the National Education Standards (SNP). The main task of the quality assurance team is to conduct periodic internal evaluations of various aspects of education, ranging from curriculum, learning methods, facilities and infrastructure, student performance, to school management. The periodic evaluation is an effort to implement kaizen in educational institutions. The need for periodic evaluation is because the quality of education is influenced by various aspects such as the potential of students, teacher competence, quality of facilities and infrastructure and organizational culture (Wiyono, 2019).

The internal quality assurance team identifies areas that need improvement as the basis for developing an action plan to achieve these improvements. The internal quality assurance team also has the authority to coordinate various quality improvement activities, such as training for teachers,

curriculum development, implementing educational innovations and ensuring that all school members are actively involved in quality improvement efforts. This is because the role of human resources is very significant in educational process activities (Rochmawati et al, 2023).

Kaizen as an innovative step in improving the quality of education is based on zero defects (Supriyanto et al, 2019). With kaizen, the position of quality is at the main foundation in an organization and makes it the basis for thinking and acting in order to create quality results, of course by prioritizing the principle of minimizing errors from the start (zero defect). The strategy in kaizen is that management must satisfy customers and meet customer needs (Tri et al, 2019).

Based on the interview results, SDN 2 Dawuhan's strategy for continuous quality improvement is to conduct a School Self Evaluation (EDS). The school conducts quality mapping based on the School Self Evaluation document. The School Self Evaluation process involves all stakeholders, including the principal, teachers, education personnel, parents, school committee and school supervisors. Through the School Self Evaluation, the school institution will identify its strengths and weaknesses.

The stages in conducting EDS are (1) data collection in accordance with the data needed in the EDS instrument, (2) data analysis, steps taken by identifying problems using certain methods in accordance with school policies, (3) reporting or mapping, (4) preparation of recommendations, (5) implementation of recommendations in the form of education quality improvement programs.

Quality improvement efforts must have meaning and be in accordance with the needs of schools towards schools with a minimum service quality of the National Education Standards. The tool in the TQM concept is an instrument used to process data into information that becomes the basis for improving the quality of educational institutions. One of the Total Quality Management (TQM) tools is the use of fishbone diagrams. The use of fishbone diagram techniques or ishikawa diagrams or cause effect diagrams can help schools to map all the factors that affect the problem or the desired result. This diagram illustrates the various causes that affect the process by sorting, sorting and connecting causes with each other (Sallis, 2008). The fishbone diagram can be a tool for problem identification at the EDS stage.

Quality mapping is important as an effort to capture the real conditions that exist in schools, so the fishbone diagram is one of the tools that can be used to carry out the process of continuous improvement or kaizen. In Figure 1, a fishbone diagram will be shown to make it easier to map the various problems experienced by the school.

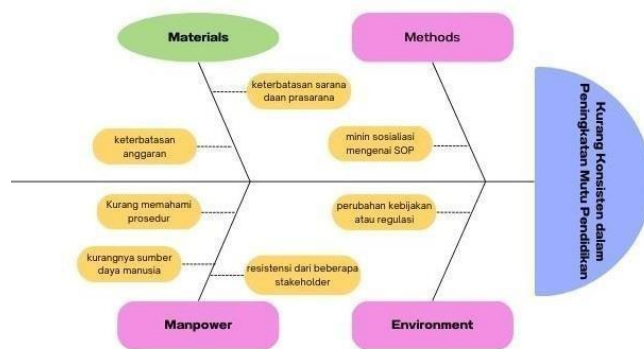


Figure 1 Fishbone Diagram (Source: Research Data)

In the fishbone diagram there are 5 sub-points that need to be identified to find out the problem. These sub-points consist of manpower, materials, methods, machines and environment. However, based on the results of the interview, researchers only found 4 sub-points that experienced problems, including manpower, materials, methods, and environment.

Based on Figure 1, the fish head is the main problem, which is the lack of consistency in improving school quality. Furthermore, there are several factors identified as large bones, namely manpower, materials, methods, and environment. In each large bone, there are fractions in the form of small bones which are problems in each sub-point. So, each small bone goes to the sub-point problem (big bone) and will later accumulate into the main problem shown in the fish head.

First, in the manpower factor, the problems faced are not all school resources understand quality improvement procedures, lack of human resources and resistance or disapproval from some parties or stakeholders. Second, in the materials factor, the problems faced are limited budget and

facilities and infrastructure. Third, in the methods factor, the problems faced are the lack of socialization of the SOP. Fourth, in the environment factor, the problems faced are changes in policy or regulation.

The problems that have been identified will be corrected and the quality of education improved. An effective and standardized quality assurance model is needed to answer the problems experienced to realize school quality goals. One of the concepts of kaizen is the PDCA approach. The PDCA cycle is an important cycle of kaizen because it is the basis for policy making in an effort to maintain and improve standards (Imai, 2005).

Efforts to improve the quality of education use the PDCA (Plan-Do-Check-Action) process approach proposed by Edward Deming. Quality assurance in educational institutions carried out with the PDCA approach is oriented towards meeting quality standards in accordance with the National Education Standards (SNP) (Muyasaroh, 2017). Good quality assurance will form a positive opinion in the community about school quality (Habibi et al, 2022).

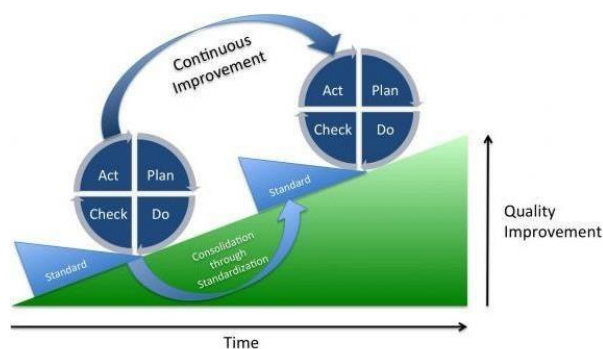


Figure 2 Deming Wheel

Figure 2 explains that the continuous improvement process will have an impact on improving quality. This indicates that the longer and more consistent the improvement of the quality of education is carried out, the quality of education will increase. Of course, the improvement process must be based on applicable and relevant standards, namely the National Education Standards (SNP). The National Education Standards are indicators of quality.

PDCA provides an opportunity for evaluation and continuous improvement. Plan is the creation of a plan for improvement that causes change. Do is the small-scale testing of the planned improvement changes. Check is the activity of checking the effects arising from the tests carried out. And action is acting on the results of the effects of the first step (Sallis, 2008).

Plan, at this stage it is necessary to identify the potential of the school institution and set a vision, mission, goals and objectives. This stage is important to do as part of building a self-system in school institutions. Without planning, the other stages will not run optimally. Do, the implementation stage of the plan that has been prepared. The implementation of activities must be based on SOP (Standard Operating Procedures) or work instructions, so that it runs in accordance with the plan that has been set. Check, monitoring and evaluation activities and periodic internal audits, which aim to ensure activities run according to plan. Action, reviewing the activities that have been carried out by holding a management review meeting. If the results do not meet the standards, continuous improvement actions need to be taken.

Implementation of the Deming Plan cycle by creating a School Development Plan (RPS) and School Work Plan (RKS) based on the results of the School Self Evaluation. The formulation of quality plans, quality fulfillment and school development must be based on the vision, mission, strategic plan, analysis of internal and external factors. The School Self Evaluation process is a report on the results of quality mapping and problem identification using certain methods. School self-evaluation that refers to the National Education Standards must be carried out regularly and periodically as an effort to identify errors from the start (zero defect). This is in line with the opinion (Robert & Kyne, 2018) that the education process as a system that is continuously able to improve quality based on kaizen-based management by prioritizing the zero defect principle. The RKS is prepared in the short term (1 year) and long term (4 years).

In the Do cycle, the school implements the school programs based on the results of the School Self Evaluation as outlined in the School Work Plan (PSP). The implementation must be in accordance with the RKS, with the aim of checking the effects, whether the problems identified at the beginning

have been resolved. In the Check cycle, regular monitoring and evaluation of school programs are conducted. In this case, the EDS process is carried out to check the programs that have been carried out in overcoming problems. Therefore, EDS is conducted routinely every 1 (one) year with the aim of reviewing the implementation of education quality improvement.

The principal regularly monitors progress, evaluates the effectiveness of the measures taken and makes adjustments where necessary. The improvements made continue to monitor whether they have a significant positive impact on the quality of education in the school. In the last stage, Action, the principal carries out the strategies and efforts needed to improve the quality of the school in a sustainable manner. The results of the EDS become a reference for further improvement and quality enhancement. So, it can be concluded that indeed the implementation of PDCA is like a wheel, it must be monitored and improved continuously (continuous improvement) in order to achieve the desired quality of education.

Based on the results of analyzing the problems using the fishbone diagram, the strategy carried out by the principal is on the manpower factor, the problems faced are not all school resources understand the quality improvement procedures, lack of human resources and resistance or disapproval from some parties or stakeholders. So that the principal's strategy is to include human resources in training, seminars and workshops that are relevant to the demands of education and technological developments. In the materials factor, the problems faced are budget limitations and facilities and infrastructure. The principal's strategy is to thoroughly evaluate the condition of facilities and infrastructure and plan and allocate the budget effectively, efficiently and economically. Principals also try to find additional sources of funding through cooperation with external parties.

In the methods factor, the problem faced is the lack of socialization about the SOP. The principal's strategy is to hold regular meetings and socialize regularly about SOPs in improving school quality. The principal tries to build communication top down and bottom up, so that all stakeholders can convey ideas, opinions and various difficulties experienced in efforts to improve the quality of education. Schools that have a supporting system of competent leaders will become quality educational institutions. In environmental factors, the problems faced are changes in policies or regulations. So that the principal tries to always be up to date and adapt to the various changes that occur. Principals also try to follow the technical guidance organized by the Education Quality Management Institute (LPMP).

#### 4. Conclusion

The quality of education is important to continue to be improved by following the demands of the times. Therefore, the need for quality assurance by educational institutions. By conducting quality assurance, it is the accountability of educational institutions to the public. This step is also an effort to fulfill customer needs by always improving educational products and services. The use of fishbone diagrams as a way to identify areas that need to be improved or made improvements. The sub-points that experience problems are manpower (humans), materials (materials), methods (methods or ways), and environment (environment).

One innovative strategy for continuous quality improvement is by implementing kaizen. With kaizen, the position of quality is at the main foundation in an organization and makes it the basis for thinking and acting in order to create quality results, of course by promoting the principle of minimizing errors from the start (zero defect). In practice, the first step of kaizen is the PDCA approach developed by Edward Deming. The school has conducted a School Self Evaluation as a response to the problem. Through the School Self Evaluation, it can make an improvement plan through the preparation of the School Work Plan (RKS). The plan is continuously monitored and evaluated in its implementation. The implementation of School Self Evaluation is routinely carried out every 1 (one) year as a response to the implementation of continuous quality improvement.

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