# Improving the Teaching Quality of Elementary School Teachers through the Implementation of E-Education Based on the JIBAS Application

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**Abstract.** The efforts to improve the quality of learning carried out by elementary school teachers are not enough just to carry out certain directions and supervision, the implementation of which is very limited, but must also be supported by an evaluation system that can be monitored at any time by the Principal. Therefore, optimizing the use of JIBAS e-Education technology is expected to assist School Principals in carrying out supervision and providing input in improving the quality of learning. To determine the role of e-Education based on the JIBAS application in improving the quality of learning which is carried out by elementary school teachers, This research was designed by applying action research methods to elementary school teachers which included two research cycles. The results of this research found that implementing e-Education based on the JIBAS application can be carried out as long as the school is prepared for it. The school must ensure that the facilities and infrastructure are adequate and the school's human resource elements are able to use these technological devices. Through the implementation of this application, teacher's mastery of material and skills in learning process has increased significantly. Thus, it can be concluded that the implementation of JIBAS e-education has a positive impact on improving the quality of elementary school teachers in the student learning process.

**Keywords:** Teaching quality, e-education, JIBAS.

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## INTRODUCTION

The efforts to improve the quality of learning must be the school's main agenda. Quality learning cannot be realized suddenly, but it is born from careful planning for all school components, especially teachers. Teachers are not only the main drivers of learning activities, but are also the core factor in realizing good and quality education. If teachers are able to carry out their duties and obligations well, it is certain that the graduates they produce will be optimal. On the other hand, if teachers do not carry out their duties and responsibilities well, it will be difficult to produce quality education graduates. The enormous responsibility and expectations placed on teachers mean that teachers are always faced with the necessity and demands of being able to produce optimal performance. Teachers are the most crucial component in the overall education system that must receive primary attention. This figure will always be in the strategic spotlight when talking about educational issues because teachers are related to any component in the education system. The teacher is a responsible developer in realizing educational goals (Burhan and Sugandi 2017). Therefore, improving the quality and competence of teachers, especially in carrying out the learning process, must be a serious concern for the Principal, where this has become his duty and function.

The success of a school principal in carrying out these functions not only has an impact on his own achievements, but also on achieving overall educational goals. Therefore, school principals must be able to fix various obstacles that are still often found in the process of providing education in schools.

In line with The Minister of National Education Regulation Number 13 of 2007 concerning School/Madrasah Principal Standards, It is stated that a school principal must have 5 (five) types of main competencies in order to be able to carry out all his duties and functions well, namely

personality competence, managerial competence, entrepreneurial competence, supervisory competence and social competence. These competencies imply that this position is not an easy position. The principal will be the person most responsible for the success of the school in implementing all its educational programs and activities. The principal is also the person most required to be able to develop all elements in the school, especially teachers, so that they can carry out their duties, especially in the learning process for students.

Efforts to develop teachers so they can carry out quality learning processes indicate that school principals must have supervision skills, especially academic supervision (Safitri and Mappincara 2021). So, school principals are not only required to have broad insight and experience related to learning, but also have the skills to guide, direct and encourage teachers so that they can carry out all learning tasks and obligations as well as possible. However, if you are able to carry out your obligations well, then most of the formal educational tasks at school will be successfully carried out.

The heavy duties and responsibilities, as well as their large role in the success of educational and school institutional implementation, are often not always carried out well by the Principal. There are several problems that are still obstacles in carrying out their duties, responsibilities and roles, some of which are related to time allocation constraints between carrying out their obligations to supervise activities at school and work agendas, such as fairly busy official meetings. In many cases, school principals often focus more on one aspect of their role and forget about other aspects. Coupled with the problem of a lack of innovation capability, it makes it difficult for the school he leads to develop optimally.

Such issues must be brought to the attention of the Principal to take certain actions in order to carry out more effective supervision and control in order to improve the quality of the teacher's teaching. One of the efforts made is to maximize the use of e-Education information and communication technology, especially through the intensification of the JIBAS (Inter-School Joint Information Network) application as a medium that can be used by School Principals to supervise and provide direction and input to teachers for improvement. quality of learning. The JIBAS application, in this case, is a web-based School Information System (SIS) application that is popular and open source (Akbar, Rahmawati, and Amrullah 2015) very helpful in school management, channeling information, providing communication media and building collaboration between the school education community starting from students, teachers, schools, parents, government and the public.

With regard to the teaching quality of elementary school teachers, the process of supervision, monitoring and guidance carried out by the Principal is one of the determining factors. In this case, the Principal needs clear and complete information regarding the competence and performance of the teachers for whom he is responsible. In addition, instructions and directions from the Principal must also be received immediately by the teachers, so that if there are things that need to be done or corrected, they can know and carry them out immediately. This is where the JIBAS-based e-education application can show its role, and to find out how the role and implementation of the JIBAS-based e-education application can support improving the quality of elementary school teachers in teaching, it is deemed necessary to carry out a further study regarding this matter.

## METHOD

This study was designed by applying an action research approach which was carried out in two cycles and began with pre-action activities. Each cycle includes four activity stages, namely the action planning stage, action implementation, observation of action results, and reflection on action. These four activities take place simultaneously and their sequence can be modified according to research needs. The form of action taken in this research was the implementation of e-Education based on the JIBAS application with the subjects being teachers at Sekolah Laboatorium Percontohan UPI Elementary School. The subjects involved in this research were 30 teachers who worked at the school, consisting of 17 class teachers and 13 subject teachers, all of whom had honorary teacher status.

The data in this research was obtained through observations of teachers during the process of implementing e-Education based on the JIBAS application, questionnaires distributed to teachers as well as observations by observing the activities and creativity of teachers in understanding and using the JIBAS application to improve the quality of their learning.

The analysis process carried out on the data that was collected used two analysis techniques, namely: for quantitative data, descriptive analysis techniques were used to reveal a picture of the use of the JIBAS-based e-education application which was presented in the form of average (mean) and trend (percentage). Meanwhile, qualitative data was analyzed using the Miles & Huberman interactive model analysis technique using normative criteria to reveal the quality of teaching carried out by teachers as subjects in this research.

**RESULTS**

Schools are formal institutions that have public accountability for what they provide. As a formal organization that has a structure, it allows schools to carry out their function as good educational institutions (Norlena 2015). Therefore, schools have an obligation to continuously improve their services to the community. One of the services that is the obligation of the school is to improve the quality of the learning processes and outcomes held at the school concerned. To make this happen, the school principal as an educational practitioner and person responsible for the success of the school he leads, must be able to develop and condition teachers in the school environment so that they have high competence in providing learning services.

Every policy taken by the Principal to improve the quality of teacher competency does not only rely on guidelines and references from the government, but most importantly is rooted and emerges from findings in the field (Windayana 2016). Likewise, with efforts to improve the quality of teacher teaching, school principals are required to be able to directly monitor every process of learning activities carried out by teachers amidst their busy activity agenda.

Starting from the initial fact that elementary school teachers at the research location have not been optimal in implementing various forms of methods, models, approaches and learning strategies that are appropriate and in accordance with learning needs, limited resources and abilities in carrying out supervision and coaching to improve the quality of teacher learning. , as well as the lack of optimal reporting of learning processes and outcomes which are used as material for the Principal's evaluation regarding the learning process carried out by teachers, became the writer's concern to make an effort to improve the teaching quality of elementary school teachers by implementing the use of the JIBAS e-education application through action research. This effort is an action in building the school's human resources to anticipate the problems of the school concerned in the future (Muflihah 2019), and is intended to find pragmatic and performative truths according to I Wayan AS (Windayana 2016) is a framework of thinking that leads to needs that must be resolved immediately and pursued with real, planned and systematic action.

The JIBAS e-education application in question is a network that is open and grows independently. Open here means that various parties can participate in developing and providing educational services for the community that is formed, while growing independently means that this community network develops from the activities and interactions of each of its members (Sukron 2022). The form of this application is a management information system that can help school operations starting from the academic, financial, library, reporting, to interaction between teachers and students which is FOSS (Free & Open Source Software) so that it can be used by anyone (Hanafi 2020).

The purpose of implementing this application system, according to Sa'diyah et al. (2020) is so that schools can maximize the function of the integrated system to organize, manage and tidy up their data so that it will eliminate data duplication. In this way, this data becomes information that flows and is useful for various interested parties (Rosyadi and Kusumawardana 2021). This school information system has been widely used by schools at various levels to support daily school activities (Supangat and Amna 2020) and has received a good response from its users.

With regard to the implementation of this application in schools that are research locations, its use includes academic features, school personnel data collection processes, financial reporting

systems, and teacher performance reporting systems. The emphasis in this research is the implementation of teacher performance monitoring and reporting features.

The main steps taken in this research were planning, action, observation and reflection which were carried out in two cycles as stated by Kemmis and McTaggart (Burns 2015), "... typical representations of action research shows spirals or cycles of (i) planning, (ii) action, (iii) observation and (iv) reflection. The spirals are interwoven, fluid and repeated throughout the investigation".

**Pre-action**

The initial step taken in this research was pre-action activities carried out to collect data and information related to the quality of teaching and the use of the JIBAS e-education application by the elementary school teachers who were the subjects of this research before they received treatment. Based on the data that has been collected, regarding the learning process and teacher performance as a whole, it shows that the majority of teachers are not yet optimal in achieving quality learning, especially those related to mastery of learning models, approaches, strategies and methods, as well as optimizing the use of information and communication technology (applications). e-education JIBAS) as one of the competencies that the teacher concerned is expected to master. This is a major problem that needs to be addressed as an effort to improve the quality of elementary school teachers in teaching.

The observation points used as the basis for this pre-action are specifically directed at the quality of teachers' learning in addition to process indicators, such as activeness, involvement and skills in using the JIBAS e-education application. The results of pre-action observations and pre-tests related to learning activities and competencies which are specifically directed at the teaching quality of elementary school teachers show that the average success of elementary school teachers in the learning process only reached 9.09% with an average score of 53.14, of which some Most (86.4%) teachers' teaching quality is included in the "poor" category (table 1).

Based on this data, it appears that teachers in general are still lacking in various aspects, especially those related to the quality of learning and mastery of the implementation of e-Education based on the JIBAS application which is expected to help them improve the quality of learning. The lack of quality teaching carried out by elementary school teachers will certainly have a big impact on the learning outcomes of the students themselves. Therefore, a teacher is required to have a responsive and reflective nature in the learning process, as emphasized by Sekar (2019), "Teaching should provide scaffolding to the extent that learners would become autonomous. It should be responsive to the prior knowledge and experiences of students ... Reflective teachers practice reflective teaching and they think over what and how they teach and learn".

**Table 1.** Percentage of Success of Elementary School Teachers in The Teaching Process (the results of observations and pretests on pre-action)

| No. | Categories | Achievement (%) |
|---|---|---|
| 1. | Very high (81-100) | 0,0 |
| 2. | High (61-80) | 9,1 |
| 3. | Adequate (41-60) | 86,4 |
| 4. | Low (21-40) | 4,5 |
| 5. | Very low (0-20) | 0,0 |

As an effort to improve this condition, it is deemed necessary to take action to monitor and direct and build fast and intensive communication with the teachers concerned. This is where the implementation of e-Education based on the JIBAS application was chosen as the right action to improve the teaching quality of elementary school teachers.

**The Actions in First Cycle**

The actions carried out in cycle I in this research are divided into four stages of activity, namely planning, action, observation and reflection. These four activities take place simultaneously, the implementation of which can be modified according to the needs and context of problem solving faced in this school action research. In its implementation, the series of action activities in cycle I will be carried out in two stages/sessions.

The planning stage is carried out by determining that the implementation of e-Education based on the JIBAS application is the right action to improve the teaching quality of teachers which will briefly be implemented by referring to existing activity implementation procedures and modified according to the real context in the field. This determination is based on data and information that has been collected regarding the needs of teachers in the schools that are the research locations to improve the quality of their teaching. This data and information will then be taken into consideration in the action plan that will be carried out as stated by Johnson (2012) that in conducting action research, "You must plan your study adequately before you begin to collect data. Having a plan and a schedule for collecting data before you start is what separates a systematic inquiry from an impressionistic view. However, plans and the type of data you collect can change as you get into your study".

There are at least seven steps for implementing e-Education based on the JIBAS application that will be adopted in this research, namely: (1) Checking and preparing information and communication technology facilities for implementing e-Education based on the JIBAS application, and limited meetings with teacher representatives; (2) Explanation of implementation steps for e-Education based on the JIBAS application to improve the teaching quality of teachers; (3) Learning and training on the use of e-Education based on the JIBAS application for teachers; (4) Initial evaluation; (5) Monitoring and explaining objectives in more detail; (6) Assessment of skills and alignment with action goals; and (7) Evaluation of the teacher's actions and overall performance.

The implementation of action phase which was held for eight days (for the first session) was carried out in accordance with the objectives and plans that had been previously determined. The initial step taken in implementing this action is to prepare and ensure that the information and communication technology infrastructure or facilities and infrastructure for implementing e-Education based on the JIBAS application are ready for use. In addition, an explanation of the plan to intensify the implementation of e-Education based on the JIBAS application for every aspect of school activities was conveyed to all teachers, including explaining the steps that would be taken, such as ensuring that all teachers mastered the use of the JIBAS application and how it would be implemented for improving content, materials, reports and feedback for a higher quality learning process.

The next step in implementing this action is to provide training and learning to teachers regarding the use of e-Education based on the JIBAS application by involving several teachers who have fully mastered the operation of the application as peer mentors. Meanwhile, the monitoring process is carried out both on the process and on the training participant teachers.

At the first session activity evaluation stage, after all action activities were carried out, the researcher together with the mentor teacher analyzed and discussed the results of the training activities as well as the development of mastery of the participating teachers in using the JIBAS application. The results of this analysis show that the participating teachers have sufficient ability to use JIBAS-based e-Education properly and correctly. The decision taken was that the participating teachers would be intensified in using the application so that the e-Education process could be implemented optimally in schools. The activities were carried out in the second session with an emphasis on optimizing the use of the JIBAS application as a medium to support learning implementation starting from planning lessons, implementing learning activities, reporting learning results, to using the application as a medium for monitoring the quality of teaching carried out by teachers.

After the action implementation process in cycle I ended, the author made observations and observations regarding the implementation of JIBAS-based e-Education in schools and together

with the Principal monitored the development of the performance of elementary school teachers and their level of discipline in making reports, providing critical input regarding learning conditions through the application. This monitoring activity is carried out consistently with what has been determined in the planning, as confirmed in Johnson (2012) statement that "Observations should be regular, but they do not necessarily have to be long ... Many of your observations might be a quick note with the date and time recorded, whereas others might be longer and more formal. Although they do not have to be long, observations do have to be done on a consistent, preplanned schedule". Meanwhile, to measure the level of success of teachers in implementing the JIBAS application in learning, it is carried out through inter-cycle tests.

**Table 2.** Percentage of Success of Elementary School Teachers in Teaching Process (the results of observations in cycle I)

| No. | Categories | Achievement (%) |
|---|---|---|
| 1. | Very high (81-100) | 0,0 |
| 2. | High (61-80) | 65,9 |
| 3. | Adequate (41-60) | 34,1 |
| 4. | Low (21-40) | 0,0 |
| 5. | Very low (0-20) | 0,0 |

Based on the results of observations and evaluations of the implementation of e-Education based on the JIBAS application in the learning process carried out by elementary school teachers in cycle I, it is known that the average success of elementary school teachers in the learning process reached 65.9% with an average score of 62. 77 where the majority (65.9%) of teachers' teaching quality is included in the "high" category, but there are still quite a lot (34.1%) of teachers who are less able to achieve success in their teaching (table 2).

The achievement in Cycle I by these elementary school teachers showed an improvement compared to the achievement in pre-action where the average score achieved was 53.14 with a success percentage of only 9.09%. This increase in achievement becomes material for reflection for implementing actions in the next cycle, whether it is considered sufficient to represent the author's success in implementing actions, or whether the results still need to be improved.

The final stage of action in cycle I is to reflect on the results of the actions achieved by elementary school teachers. This stage will determine whether or not actions need to be corrected or further enhanced in cycle II. This is confirmed by Burns (2015) who stated, "...the evidence from the data must be supplemented and supported by what can be learned from and made meaningful about the practical social situation through deep reflection and experiential application".

At this stage, it was revealed that after the actions in cycle I were given, although the success of elementary school teachers in carrying out learning by implementing e-Education based on the JIBAS application had increased from before, there were still weaknesses and deficiencies found in several aspects that could have been improved. to further grow teachers' mastery in building e-Education based on the JIBAS application and grow their learning abilities and quality. These shortcomings include: (1) There are still teachers who are unable to understand the function and benefits of the JIBAS application for their learning purposes; (2) There are still teachers who have not been able to carry out the procedures for implementing the JIBAS application optimally; and (3) Principals as supervisors and facilitators and writers as researchers have not been able to evaluate the performance of JIBAS application-based learning carried out by teachers as a whole, because there are still many teachers who have not provided learning reports in the application.

Based on this, the authors consider it necessary to continue implementing actions by implementing an e-Education system based on the JIBAS application in Cycle II as an improvement on the deficiencies and weaknesses found in Cycle I.

**The Actions in Second Cycle**

Based on the results of the analysis and reflection on the results of the actions that have been carried out in cycle I, the implementation of e-Education based on the JIBAS application in learning for elementary school teachers is continued in cycle II with planning that emphasizes the focus of action on aspects that are deficiencies in the cycle previously and adapted to the implementation steps of e-Education based on the JIBAS application itself. Actions in cycle II are directed at finding out the effectiveness of the actions implemented, the role of these actions in the Principal's efforts to improve the teaching quality of teachers, and to find out the implementation of e-Education based on the JIBAS application carried out by elementary school teachers in schools.

Actions in cycle II were carried out based on the improvement plan that had been prepared previously and carried out in two action phase sessions. As in the previous cycle, in implementing the actions in cycle II, the initial step taken was to ensure that the information and communication technology facilities and infrastructure for implementing e-Education based on the JIBAS application so that there were no obstacles and technical problems, and continued with providing an explanation to the participants that the implementation of e-Education based on the JIBAS application will be more intensive compared to the implementation in the previous cycle, as well as conveying the steps for activities that will be carried out again.

In implementing the actions in cycle II, the author as a researcher together with the Principal ensured that all teachers in the schools studied were actively involved in training related to the use of the JIBAS application for the purpose of improving the quality of learning, carrying out monitoring through the JIBAS application, and monitoring the development of teacher performance as well as what is their level of discipline in making reports, providing critical input on learning conditions in the application, and so on.

Meanwhile, at the evaluation stage, the researcher and the Principal together with the mentor teacher analyzed and evaluated the development of the implementation of e-Education based on the JIBAS application that had been carried out by the teacher based on data and information from monitoring results during the action process. On this occasion, the steps for the activities for the second session were also conveyed to the teachers. Implementation of actions in the second session, activities focused on the use of the JIBAS application which was implemented directly in learning activities carried out by teachers. Meanwhile, researchers and the principal carry out monitoring as carried out in the first session to collect data and information as evaluation material.

The results of this monitoring are then evaluated to determine the development of teachers' mastery and success in implementing e-Education based on the JIBAS application. To measure teacher performance in learning by implementing JIBAS-based e-Education and at the same time to measure the success of the actions that have been implemented in this research, observations and post-tests were carried out to measure teacher success.

**Table 3.** Percentage of Success of Elementary School Teachers in Teaching Process (the results of observations and tests in cycle II)

| No. | Categories | Achievement (%) |
|---|---|---|
| 1. | Very high (81-100) | 9,1 |
| 2. | High (61-80) | 90,9 |
| 3. | Adequate (41-60) | 0,0 |
| 4. | Low (21-40) | 0,0 |
| 5. | Very low (0-20) | 0,0 |

Based on the results of observations and posttests conducted in cycle II, it shows that the average success of elementary school teachers in the learning process reached 80.0% with an average score of 70.7 where the majority (90.9%) of teachers' teaching quality fell into the

category " high" and 9.1% of teachers were able to achieve "very high" success in their teaching (table 3).

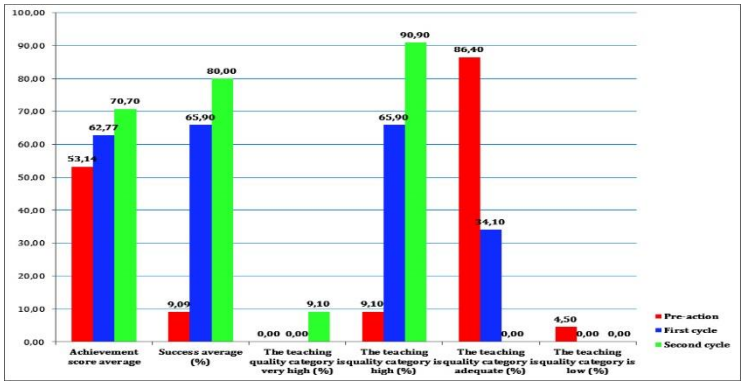


**Figure 1.** Increase in The Percentage of Success of Elementary School Teachers in Implementing JIBAS-based e-Education

The achievement in Cycle II by these elementary school teachers showed an improvement compared to the achievement in Cycle I where the average score achieved was 62.77 with a success percentage of only 65.9%. This shows a consistent increase in teacher success in implementing e-Education based on the JIBAS application starting from pre-action, action in cycle I, and action in cycle II (figure 1). This increase in achievement becomes material for reflection on the implementation of the actions in this research which will be followed up in the implementation of educational services and the teaching and learning process in the school environment.

Referring to the results of observations and test results measuring the success of elementary school teachers in implementing e-Education based on the JIBAS application in this research, the results of reflection conclude that: (1) The results of observations and post-tests in Cycle II show an increase in the average achievement score and percentage success of Sekolah Laboratorium Percontohan UPI Elementary School teachers in implementing e-Education based on the JIBAS application consistently; and (2) By implementing e-Education based on the JIBAS application the teachers of Sekolah Laboratorium Percontohan UPI Elementary School become more accustomed and skilled in using information and communication technology devices to improve the quality of the learning they carry out.

Viewed from the entire series of actions, the action implementation rating scale in this study shows that five of the seven points in the action syntax (71.4%) are fulfilled very well, while the other two points (28.6%) are fulfilled well (figure 2).

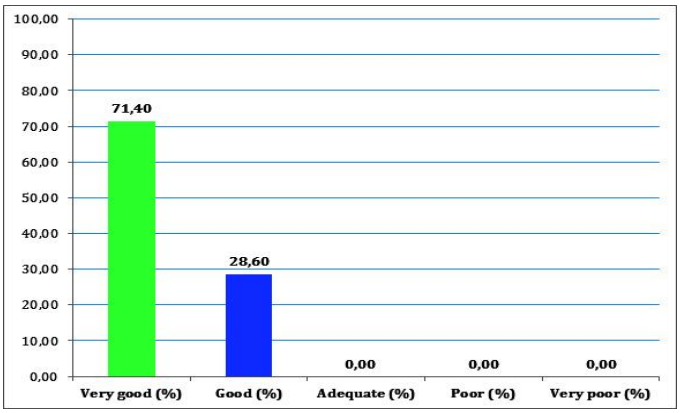


**Figure 2.** Achievement of The Rating Scale for Implementing Actions in Research

Thus, it can be concluded that the author as a researcher has succeeded in carrying out actions well, especially in implementing e-Education based on the JIBAS application as an action

which is believed to be able to solve the problem of lack of teaching quality which are carried out by teachers in Sekolah Laboratorium Percontohan UPI Elementary School.

The results of this study are in line with the view of Akbar et al. (2015) that the JIBAS application is an integrated school information system network that helps school management, flows information, provides communication media and builds collaboration between the school education community from students, teachers, schools, parents, government and the general public. Through the JIBAS application, teachers can not only provide good learning reports, but also the principal can carry out supervision and in turn can provide input to improve the quality of the teachers' own learning.

This system is very appropriate for further development and use in overall school management activities. However, according to Kartika et al. (2022) with the various other features available in JIBAS apart from the Academic features, the school needs to study other features so that the effectiveness and efficiency presented by this system can be felt by the school.

## CONCLUSION

Implementation of e-Education based on the JIBAS application can be carried out as long as the school has the readiness to implement this. In this case, the school must ensure that its facilities and infrastructure are adequate. Not only that, every individual or human resource element in the school concerned must have the ability to use the technological devices required in the system. The role of implementing e-Education based on the JIBAS application on the teaching quality of elementary school teachers shows positive results. Using this application can improve teachers' skills in mastering material and learning models better, presenting learning reports for more comprehensive feedback and performance assessments, and others.

Thus, it can be recommended that the use of information and communication technology for the purposes of education and learning in schools will have its own value and benefits, however, school management must be able to understand well the need and context for the application of this technology so as not to cause undesirable negative impacts. from the use of the technology.

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