

# Android-Based Internal Quality Audit Application Development at the Faculty of Educational Sciences State University Surabaya

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**Abstract:** Internal quality audit is considered an important tool to control the governance and operations of an organization. As an independent and objective assurance and advisory function, internal quality audit is designed to increase value through audits of internal control systems, risk management, and governance processes. Awareness of the importance of internal quality audit and also the fact that its effectiveness can be measured is what led the author to conduct research and development of an Android-Based Internal Quality Audit Application, which aims to facilitate the Internal Quality Audit process at the Faculty of Education, State University of Surabaya. The development of the Internal Quality Audit Instrument is carried out by adapting the ADDIE research and development model. The results of the study showed that each category tested got the results, namely: 90% for the functional category; 90% for the design category; 89% for the ease-of-use category; 87% for the suitability need category. The results of the study also explained that the Android-Based Internal Quality Audit Application, Faculty of Education, State University of Surabaya has been effective in each category and is good to be implemented.

**Keywords:** Android; Application development; Internal quality audit

## Introduction

Over the past two years, universities have undergone significant changes. Apart from the changing era that requires a lot of adjustment, it is also due to the Covid-19 pandemic that has occurred since the end of 2019. The Covid-19 pandemic seems to be an invisible enemy for all humans on earth, since it occurred for the first time in the first half of 2020. The occurrence of the Covid-19 Pandemic forced most people to change their culture and lifestyle to adapt to the new era after the Covid-19 pandemic, ranging from daily activities to organizational activities, both indoors and outdoors. Many countries have made dramatic changes to protect their communities from falling victim to this Pandemic, including creating new policies and regulations, so that productivity continues and performance does not

decline (Stawicki et al., 2020). The same is true for the education sector. One of the educational institutions that play an important role in dealing with the impact of the Covid-19 pandemic is the University. The university has a role as the main educational institution, because it is one of the public services that provide the most important services, as well as students whose main product represents the potential of the future workforce (Al-Kumaim et al., 2021). The university was established with the aim of being a bridge between Science, Information, Culture and society in providing quality manpower needed by the state in providing services to the community (Ozdem et al., 2019).

Higher education institutions (HEIs) are seen as important to individuals (Díaz-Iso et al., 2019). Their main function is to improve the quality of human resources, which is increasingly driven by a highly

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competitive job market (Zhu et al., 2018; Budihardjo et al., 2021). Therefore, in the past two years, universities have carried out many educational transformations to overcome problems and obstacles related to the Covid-19 Pandemic. In fact, policy makers have highlighted the need to measure the quality of education through higher education performance assessments (Kooli & Abadli, 2021). Colleges are progressively adopting new calculative practices including quality assurance protocols, teaching quality reviews, and benchmarking. Quality assurance, accreditation, as well as a benchmarking system are techniques used to improve the quality of education externally. In addition to external techniques, improving the quality of education can also be done internally.

According to Delausnay et al. (2005) in universities, the feasibility of quality depends on management, and quality managers focus on these parameters to achieve their mission. The quality approach is an internal form of self-control management including processes and techniques of quality control and evaluation and institutions at the same time. Control is not the last stage, but the beginning, the goal is to use the results to establish a strategy that spans the entire institution.

In the Regulation of the Minister of Finance Number 200/pmk.05/2017 concerning the Internal Control System in Public Service Agencies, it states that "The Internal Control System aims to achieve the effectiveness and efficiency of the activities of Public Service Agencies, reliability, integrity of financial information and performance of Public Services Agency, safeguarding the assets of the Public Service Agency, and compliance with laws and regulations". This approach to quality is in accordance with the agreement of the Conference of Chancellors and Presidents of Latin Universities in Europe, within the framework of the ELU (European Leadership University) group, which decided to work with reference to indicators and joint assessment procedures (Tavenas, 2003). This is the impact of implementing integrated quality management on individual development and preparation to compete and have quality that is characterized by market needs and demands.

Universities are expected to be innovation-friendly to achieve professionalism in bringing them closer to good teaching practices and respect management practices by providing evidence from research evaluations carried out using the right methods. However, the statement proved to be still abstract. For example, evaluation practices in higher education are carried out by focusing on predetermined quality indicators, the worst results obtained can actually hinder teaching innovations that require more openness and fault tolerance (Pohlenz, 2022). Therefore, it is very important to control and evaluate the quality of an

institution, which in this case is a university that has undergone a transformation in the last two years. Internal quality audit is an action taken to monitor or evaluate the quality of an institution. Internal quality audit is an important thing that must be considered by the auditor in the audit process (Rawi, 2022). One of these quality evaluations can be done with an Internal Quality Audit.

Internal quality audit is a systematic, independent, and documented process to obtain audit evidence and evaluate it objectively to determine the extent to which the audit criteria have been met, or a systematic, independent, and documented testing process to ensure that the implementation of activities in Higher Education is in accordance with the procedures and the results are in accordance with the standards to achieve the goals of the institution. The Institute of Internal Auditors (IIA) also asserts that internal audit can help organizations achieve their goals through a systematic and disciplined approach to evaluating the effectiveness of risk management, control, and governance processes (The Institute of Internal Auditor, 2020). So Internal Quality Audit is an audit conducted to determine the level of conformity of the implementation of activities to the organization's own internal standards, regulations, procedures, work instructions, in order to improve the quality of the institution and reduce the risk of not achieving standards/degrading quality. AMI is one of the stages/methods in the higher education quality assurance cycle in an effort to improve quality. Therefore, the importance of internal control as a corporate governance mechanism of which internal quality audit is a natural constituent, cannot be overemphasized (Singh et al., 2021), because Internal Quality Audit directs decision makers and information managers provide recommendations needed to take action in order to improve organizational performance.

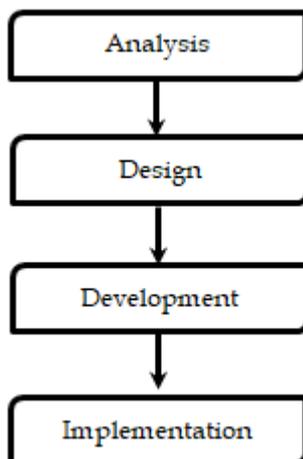
Internal quality audit activities cannot be carried out without guidance or reference. This guide or reference is called an internal quality audit instrument. Internal quality audit instrument is a tool used to determine the results of internal audits. This instrument is usually in print, but due to the Covid-19 pandemic, this method cannot be done anymore due to government policies related to social and physical distancing. The President of the Republic of Indonesia, Joko Widodo, first imposed this policy on March 24, 2020 (Kompas.com, 2020). This limited mobility is the reason why internal quality audit activities cannot be carried out using the old method. One of the innovations issued by the Faculty of Education as an effort to overcome this problem is to develop an Android-Based Internal Quality Audit Application.

Android is an operating system for mobile phones. In the mobile world like this, android is one of the

operating system platforms that make it easy for manufacturers to design high-end phones. The reasons why android is popular today include android being able to operate multiple apps at the same time, android has a customizable home screen, android has a better app market, android is hardware independent, android lets you install custom ROMs, android allows you use widgets to manage your app settings right from your home screen, android integrates with Google and Social Media, android gives you more options to fit your budget, innovative products like location aware services, nearby store locations etc., are some of the additional perks in Android. This statement proves that Android is a technological innovation that can make it easier for humans to do their jobs. Android-based applications have also been widely applied to the world of education, especially learning.

Learning using Android-based Interactive Physic Mobile Learning Media can improve students' psychomotor and self-efficacy (Suparno et al., 2020). Even being used in mathematics subjects, Android-based learning media has proven to be effective in improving student achievement (Wahid et al., 2020). Based on the explanation above, it can be seen that by applying Android as a medium it can make it easier for humans to do their work, therefore to facilitate the process of internal quality audits at the Faculty of Education, researchers have developed an Android-based Internal Quality Audit Instrument, which aims to facilitate the Internal Quality Audit process at the Faculty of Education, State University of Surabaya.

## Method



**Figure 1.** ADDIE research and development procedure

The development of the Internal Quality Audit Instrument was carried out by adapting the ADDIE research and development model developed by Lee et al. (2004). The ADDIE development model consists of

five stages, namely Analysis, Design, Development, Implementation, and Evaluation, but this research is limited to the implementation stage. The research procedure is shown in Figure 1.

### *Analysis*

Analysis is the first stage of the ADDIE research and development model. At this stage there are several important things that need to be done such as: conduct a preliminary study in the literature related to the importance of Internal Quality Audit based on several relevant studies as a basis for determining what development needs to be done; conduct an analysis related to the Internal Quality Audit process at the State University of Surabaya, as a basis for what kind of development design needs to be done; the last is to do a thorough analysis to find out what are the challenges and weaknesses of the methods used in the Internal Quality Audit process at the University of Surabaya.

### *Design*

Design is the second stage of the ADDIE research and development model. At this stage the researcher determines the tools and materials needed to carry out this development in accordance with the results of the analysis; determine the appropriate method for carrying out this development, as required; the last is to determine the human resources needed, because this is research and development related to digital media, therefore experts are needed in its development.

### *Development*

Development is the third stage of the ADDIE research and development model. The activity carried out at this stage is the creation of an Android-based Internal Quality Audit Instrument using the results of the previous two stages. Determining an attractive layout, making illustrations from the application, to enriching the material are part of this stage. Validation of applications that have been developed is also carried out at this stage. Improvements, edits are made after the first validation is done by an expert.

### *Implementation*

Implementation is the stage where the results of the development are actually tested. At this stage the test was carried out twice, namely in small groups, consisting of 5 people and large groups consisting of 30 people. After testing in small groups, the results are used to correct the shortcomings of the application, before being tested in a larger group. After the last test, the final revision will be carried out before finally the application will be implemented to assist the Internal Quality Audit process at the State University of Surabaya. This test will be carried out to see the effectiveness of several

categories, namely functional, design, ease to use, and suitability needs categories.

## Result and Discussion

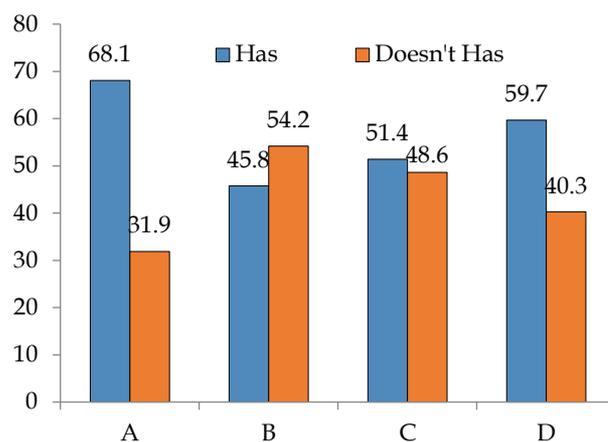
### Analysis

Internal quality audit is an activity carried out to monitor and evaluate the work of an organization within a certain period of time. Internal quality audits have an important role in an organization because the results of these internal quality audit activities can determine the sustainability of an organization. Internal quality audits are considered an important tool to control the governance and operations of organizations (The Institute of Internal Auditor, 2020). Until recent years, the internal quality audit function focused on compliance assurance, financial control, and asset safeguards, but now, internal quality audit is involved in increasing the potential for added value through increasing effectiveness (Joshi, 2021). This means that if the effectiveness of internal quality audits increases, the value of an organization will also increase. As an independent and objective assurance and advisory function, internal quality audit is designed to provide added value through audits of internal control systems, risk management, and governance processes (Eulerich & Eulerich, 2020). The quality assurance department that plays an important role in measuring the effectiveness of internal quality control, both in the private and public sectors, is the internal quality audit (Kiliç et al., 2021).

Positioning internal quality audit as a “Gardener of Governance” is a promising metaphor for strengthening its value proposition, both at the micro and macro levels (Lenz & Jeppesen, 2022). The purpose of the statement is that this internal quality audit is in a position to manage, control, and improve the governance of an organization to strengthen the values of the organization. It can also be interpreted that not only the internal quality audit process is important, but also the effectiveness of the internal quality audit is very important for an organization. Awareness of how the effectiveness of internal audit can be measured, and the factors that have the potential to influence this effectiveness can help organizations to understand their current performance and ultimately improve it in the future (Turetken et al., 2020). Awareness of the importance of internal quality audit and also the fact that its effectiveness can actually be measured is what led the author to conduct research and development of this Android-Based Internal Quality Audit Application.

The academic quality of the State University of Surabaya is guaranteed by the Institute for Learning Development and Quality Assurance, which was later called LP3M. The part in charge of directly carrying out quality assurance activities at the university level is

called the Center for Quality Assurance (PPM). While at the Faculty level, the part in charge of carrying out quality assurance activities is called the Quality Assurance Group (GPM). In the official website of the Quality Assurance Center (PPM) of the State University of Surabaya, it is stated that the audits carried out by the Quality Assurance Center (PPM) include: Curriculum Audit, Leadership Performance Audit, Learning Process Audit, Learning Assessment Audit, Audit of Learning Facilities and Infrastructure, and Online Learning Monitoring and Evaluation (<https://ppm.unesa.ac.id/page/audit>). The 2019 UNESA curriculum audit report conducted by PPM shows the following results.



**Figure 2.** 2019 UNESA Curriculum Audit Report: (A) CP Document; (B) Activity Document and Graduation Analysis; (C) Course Evaluation Matrix; (D) Assessment Instruments

Based on these results, it can be seen that the quality of the curriculum at the State University of Surabaya is good, but the percentage is still not high. Judging from the comparison, it is very thin, therefore it is necessary to carry out continuous monitoring and evaluation. In addition to the report on the results of the internal quality audit at this stage, the researcher also analyzed how the internal quality audit process at the State University of Surabaya was.

It can be concluded that the internal quality audit is very important for the sustainability of the Faculty of Education, State University of Surabaya, because from the results of the internal quality audit it can be seen what has been achieved and has not been achieved during one academic year, so that stakeholders can later determine what must be done to improve and complement what has not been achieved and improve what has been achieved.

| Description  | Students | Lecture | Secretary of Study Program | Head of study program | Vice-dean 1 | Document   |
|--|----------|---------|----------------------------|-----------------------|-------------|--|
| Students file an appeal by bringing documentary evidence   | Start    |         |                            |                       |             | Proof of value<br>Proof of exams and assignments                         |
| Acceptance of evidence and recalculation of value results and submission of system unlocking                       |          |         |                            |                       |             | New score recap  |
| Write on the list of requests to unlock and re-upload  |          |         |                            |                       |             |  |
| The submission service is complete and if the upload time limit runs out, the Head of Study Program will report it |          |         |                            |                       |             | The complete list of courses is uploaded and reported to the Vice-dean 1 |

Figure 3. Grade appeal procedures (still within lockout deadline)

| No. | Description of activities  | Executor |         |                           |                        |              | Standard Quality |   |         | Description  |
|-----|--|----------|---------|---------------------------|------------------------|--------------|------------------|---|---------|--|
|     |  | Lecturer | Faculty | Vice-rector for Academics | Head of TU Subdivision | Head of PPTI | Completeness     | Time  | Output  |  |
| 1.  | Start  |          |         |                           |                        |              |                  |   |         |  |
| 2.  | The lecturer makes an application for a change in grades addressed to the Vice-dean of academics                 |          |         |                           |                        |              |                  | Grade File / Transcript Student                             | 2 Days  | Application letter for Change of Value                         |
| 3.  | Faculty write letters introduction to the vice-rector for academics  |          |         |                           |                        |              |                  | Lecturer's application letter, Student Grades / Transcripts | 2 Days  | Cover letter from faculty                                      |
| 4.  | The Vice-rector for academics approves and distributes a letter to the Head of PPTI                              |          |         |                           |                        |              |                  |   | 2 Days  | A letter that has been approved by the vice-rector of academic |
| 5.  | Head of TU Subdivision received letter and record the incoming letter for further submission to the Head of PPTI |          |         |                           |                        |              |                  |   | 2 Hours | Registered letter and get an incoming letter number            |
| 6.  | The head of PPTI disposes of letter to service division  |          |         |                           |                        |              |                  |   | 1 Day   | Disposition letter   |
| 7.  | The service division processes letters according to existing instructions  |          |         |                           |                        |              |                  |   | 1 Day   | Value Changes according to the letter                          |
| 8.  | The service division enters data into the e-service application  |          |         |                           |                        |              |                  |   | 1 Day   | E-service data   |
| 9.  | The service division change the mail status in e-services to close   |          |         |                           |                        |              |                  |   | 2 Hours | Letter completed   |
| 10. | Finish   |          |         |                           |                        |              |                  |   |         |  |

Description:  
 □ = Start/Finish    □ = Process    → = Process Direction    □ = Connection between pages    ◇ = Decision-making

Figure 4. Grade appearance procedures if value has been uploaded in SIAKADU (SOP-PPTI with POB-AK-001)

**Design**

Design is the stage where the researcher begins to determine the things that must be done. Based on the results of the analysis carried out in the first stage, the researcher concluded that the ease of conducting an internal quality audit is an innovation or renewal that must be carried out so that internal quality audit activities can later be carried out more effectively and the results can also be seen by various parties. Based on the results of the analysis, the researcher decided to use the ADDIE development method which was considered very representative of the stages in accordance with the objectives of this study. In addition, to make it easier for the auditor staff and also various parties in need, the researchers decided to develop this application based on Android, so that it will be easier to access information related to internal quality audit activities at the Faculty of Education, State University of Surabaya. At this design stage, researchers also determine the human resources needed, such as software experts, android application development experts, and also involve the internal quality audit staff of the State University of Surabaya itself to determine the content, features, and layout according to the wishes and needs.

**Development**

Development is the main stage of the ADDIE research and development model, because at this stage all the designs that have been prepared in the beginning will begin to be implemented. The results of this study are the creation of an Android-based internal quality audit application at the Faculty of Education, State University of Surabaya. The following is an overview and features of the Android-based internal quality audit application at the State University of Surabaya.

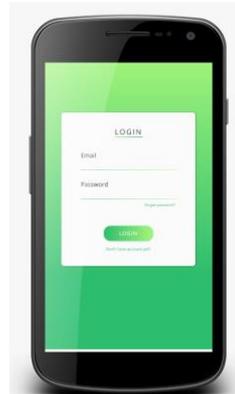


Figure 5. Login display view



Figure 6. Menu display view



Figure 7. Instrument Audit menu display



Figure 8. Recapitulation Audit menu display



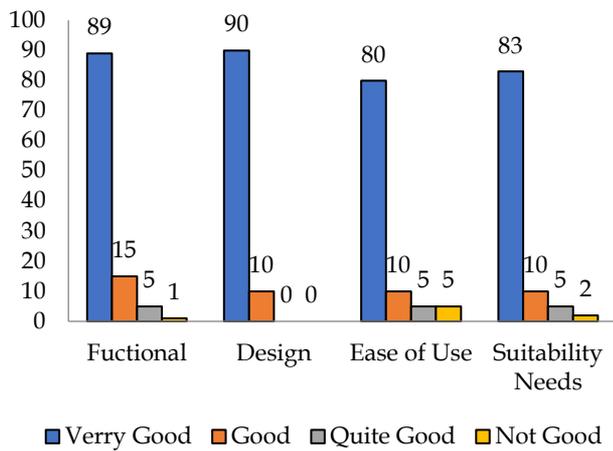
Figure 9. Standard operational procedure audit menu display



Figure 10. Audit report menu display

**Implementation**

The implementation stage is the stage where the application that has been developed is tried to be implemented on several samples first to see the results and what is lacking and needs to be improved before it will be officially implemented. In this study, trials were conducted on two different sample groups, namely small and large scale. The results of small-scale trials are as follows.

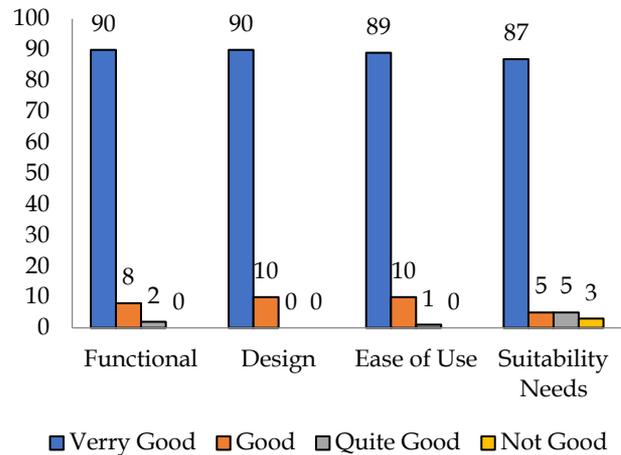


**Figure 11.** Small scale test result

Based on the results of the data analysis above, it can be seen that this Android-Based Internal Quality Audit Application reaches an average percentage of above 80% in each category. In small-scale trials the Design category got the highest percentage results, which was as much as 90%. This means that the design is the first thing that will be seen from an application. The attractiveness of the design is the most important thing to attract user interest. Great Mobile App (android) design and easily accessible functionality attracts so many users to the app. This will help us to increase the number of installs, ratings and reviews, and will ultimately help us to develop the app and reach a large audience (Chaitanyamunje, 2021). With an attractive application design, users will be more interested in using it. In addition to the physical design, the suitability of the content is also an influence on the development of an application.

The results of research conducted by Kang & Suh (2018) and Behboudi et al. (2021) also show that applications developed based on user needs, feasibility of use, and also using expert views in content creation, attractive design, and appropriate evaluation stages can get a high level of user satisfaction. In this study, the results from the ease of access category became the lowest category, which was 80%. Although it has reached 80%, this category is still the lowest among other categories in this small-scale trial. Therefore, after a

small-scale trial, the researchers made several improvements, including: improve access to usage, improve storage, and improve the website system. After the repairs were completed, the researcher then conducted a second trial, namely a large-scale trial. The results of large-scale trials are as follows.



**Figure 12.** Big scale test result

The results of large-scale trials show improvements in the categories that were previously lacking. Each category gets the results, namely: 90% for the Functional category, this means that the Android-Based Internal Quality Audit Application of the Faculty of Education, State University of Surabaya based on its function has been effectively implemented; 90% for the design category, this means that the Android-Based Internal Quality Audit Application, Faculty of Education, State University of Surabaya has a design that can attract users; 89% for the ease of use category, which means that the Android-Based Internal Quality Audit Application, Faculty of Education, State University of Surabaya is easy to access by users, and the results of this category have increased from the previous trial; 87% for the suitability needs category, this means that the Android-Based Internal Quality Audit Application, Faculty of Education, State University of Surabaya has been in accordance with the needs of its users.

Based on the test results above, it can be seen that the Android-Based Internal Quality Audit Application, Faculty of Education, State University of Surabaya has been effective in each category and is ready to be implemented. This shows that the development of android-based applications or mobile applications has an important role to increase the effectiveness and efficiency of the internal quality audit process. In recent years, research and development related to android-based applications or mobile applications has indeed increased, and the results of the research also show that android-based applications or mobile applications have

proven to be effective in making it easier for humans to carry out their duties in various aspects of life, ranging from social, educational, to social health.

Some of the relevant research results are as follows. In the field of education, the results of research conducted by Yen-Mei et al. (2021) and Yong et al. (2021) in a study entitled "Mobile microlearning design and effects on learning efficacy and learner experience" showed that mobile micro-course students experienced increased knowledge, were more certain in decisions about practical applications, and increased confidence in performing skills. Research conducted by Jayatilleke et al. (2018) entitled "Development of mobile application through design-based research" also shows relevant results, namely that the views expressed by new users indicate that the mobile applications developed are generally efficient, easy to learn, easy to navigate, and attractive. It is also pedagogically constructive because the content and tools used in the application are useful from the point of view of content and technology experts in Education. Other relevant research results, namely the research conducted by Klimova (2021) in her research entitled "Evaluating the Impact of Mobile Applications on EFL University Learners' Vocabulary Learning - A Review Study" shows the results that mobile-applications are effective, useful, and suitable learning tools for retention. and new vocabulary exercises. In fact, they allow repetition of traditional classroom instruction based on the following presentation mode: input-interaction-feedback. The results of some of these studies indicate that android-based applications or mobile applications have proven effective to help humans do their work in various aspects.

## Conclusion

Internal quality audit is considered an important tool to control the governance and operations of an organization. As an independent and objective assurance and advisory function, internal quality audit is designed to provide added value through audits of internal control systems, risk management, and governance processes. Awareness of the importance of internal quality audit and also the fact that its effectiveness can actually be measured is what led the author to conduct research and development of this Android-Based Internal Quality Audit Application. The results of the study showed that each category tested got the results, namely: 90% for the functional category; 90% for the design category; 89% for the ease-of-use category; 87% for the suitability need category. Based on the test results above, it can be seen that the Android-Based Internal Quality Audit Application, Faculty of Education, State University of Surabaya has been

effective in each category and deserves to be implemented.

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## Author Contributions

Mohammad Syahidul Haq, Erny Roesminingsih, and Nur Aini Dwi Setyowati conceptualized the research idea, designed of methodology, management and coordination responsibility, analyzed data, conducted a research and investigation process; Firman Ashadi and Denok Dwi Anggraeni conducted literature review and provided critical feedback on the manuscript.

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## Conflicts of Interest

The authors declare no conflict of interest.

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