

Implementation of learning quality assurance based on applied education technology

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Abstract. This research aims to analyze the implementation of learning quality assurance at school and develop its model based on the applied educational technology. The research unit of analysis encompassing several junior high school, senior high school and vocational school in Semarang, Kendal, and Kudus district. The research results (1) school had implemented the learning quality assurance including the planning, implementation, monitoring, and evaluating process, although the documentation is still desultory, (2) the learning quality assurance based on the applied educational technology had been developed as a reference to define (a) the scope of quality assurance at school, (b) the quality policy and quality assurance organization at school, (c) the standard of learning quality and its achievement strategy, and (d) the manual for learning quality and its instrument, and (3) the learning quality assurance based on the applied educational technology is worth implemented on the learning quality assurance process at school.

1 Introduction

Quality of learning is needed to realize education that is able to produce students with better learning capacity. High quality learning will lead students either to acquire a number of knowledge, skills and attitudes, and the more important is to develop their learning capacity about how to gain knowledge, skills and attitudes (Zamroni, 2000; Semiawan, 1998). Therefore the quality of learning is needed as a dimension of benchmark for the professional development of educators as well as the development of schools as educational institutions that must consistently develop towards competition in the information age and openness of the world.

Related to the efforts of improving the learning quality that must be pursued by every professional educator, the presence of educational technology is an enlightenment. Educational technology as an area of interest with an effort to facilitate the learning process have some following characteristics; (1) give special attention and unique service from each of the target students, (2) use various kinds and as many learning resources as possible, and (3) apply a system approach (Miarso, 2002). Educating technology is not merely applying technology in education, but it is a systematic and systemic process to enhance the quality of education and learning processes. Although it is undeniable that in the system process it allows for the application of technology in the sense of the product.

Applied educational technology in the learning system, has the potential to improve the quality of learning that has an impact on student learning outcomes. Praxis of learning is inseparable from the application of educational technology. Quality learning can only be realized if it is properly designed, equipped with the necessary materials, presented through the appropriate media and resources, divide the roles clearly based on the functions between components, and properly

assessed. This prerequisite is a field of educational technology work both theoretically and practically.

Regarding to the applied educational technology potential in improving the quality of learning, developing it as a learning quality assurance system in schools is necessary. As a quality assurance system, educational technology in schools must pay attention to the quality assurance system recently run in schools, and leads its system to be able to run more systematically, directed and organized.

The role of educational technology in assisting the implementation and development of a quality assurance system can be realized in the form of organizations that formally institutionalize in schools. This is needed so that the operational activities of the quality assurance system do not rely on the principal and the management team, but distribute the duty to the authorized person to conduct quality assurance of education and learning in schools. This is where the group or team given the authority to carry out the quality assurance process of learning in schools is formed in which it consists of teachers and other education personnel, especially education technologists.

Technically operational and institutional structure of the implementation of learning quality assurance systems in schools, can refer to the idea of prototyping the educational technology development team developed by Budiyo, et al. (2014). The education technology development team in this case can be used as an institution that is formally exist in the school, in addition to other institutions such as guidance and counseling (BK). The basis for this institutional development is Regulation of the Minister of Administrative Reform (Permenpan) No. PER / 2 / M.PAN / 3/2009 concerning functional positions of learning technology and credit numbers. With the existence of a clear institutional structure, the application of educational technologists as a learning quality assurance system can be assessed, developed, implemented and evaluated for improvement.

Empirically there are many research which study have given contribution to the efforts of improving the learning quality. Several researches on educational technology from the dimensional process can be stated as follows. Haryono (1997) developed a learning process model characterized by an increase in creative and critical thinking skills that were significantly able to improve the ability to think creatively and critically of elementary students in Central Java. Haryono (2006) developed a science process skills-based learning model to improve students' scientific abilities which included dimensional product, process, and attitude. Development and implementation of mathematics learning designs that integrate the growth of vocational skills among junior high school students developed by Susento (2011). Online learning development based on e-pedagogical principles developed by Nugraha (2011). While Budiono, et al. (2014) develop an applied educational technology in improving the quality of learning in the form of learning technology developer assistance in education units.

2 Methods

In accordance with the research target, which is to produce a learning quality assurance model or system based on applied educational technology, research is carried out with the approach of "development research". The research program is followed up with the development for improvement or refinement of a practice (Borg and Gall, 1989: 784-5). The study begins with an assessment of the implementation of learning quality assurance in schools. Based on the factual model of learning quality assurance run in school and the results of literature review, developed (formulated) systems or models of quality assurance of the learning process as intended. The product produced was tried to be implemented in the implementation of learning quality assurance in schools, to know the level of feasibility and effectiveness as a learning quality assurance system or model in schools.

With a focus on developing and testing learning quality assurance systems based on applied educational technology, research was conducted at 8 schools, namely 3 (three) Junior High Schools, 2 (two) Senior High Schools, 2 (two) Vocational Schools, and 1 (one) Madrasah Aliyah in Semarang City, Kendal Regency, and Kudus Regency. Data is collected by questionnaire techniques, interviews, and focused discussions. The questionnaire technique was carried out to get data of the implementation of quality assurance in schools and the implementation of learning quality assurance systems based on applied education technology in general. Interviews and focused discussions were conducted to explore data quality assurance systems based on applied education technology more intensely, about various substantive and technical aspects of implementation in the field. Data analysis was carried out in a descriptive quantitative manner.

3 Results and Discussion

The results and discussion of the findings of this study are outlined in 3 main points as follows.

3.1 Quality assurance of learning in schools

Learning quality assurance in schools is the process of how schools make efforts to ensure that the learning process that takes place in schools meets the quality standards as promised. In this study the focus of learning quality assurance is directed at aspects of learning plans, learning implementation, monitoring and evaluation of learning.

The results of the quantitative data shows that the implementation of learning quality assurance in schools is as follows.

Table 1. Profile of Implementation of Learning Quality Assurance in Schools

ASPECT OF LEARNING QUALITY ASSURANCE	AVERAGE SCORE	%
Learning plans quality standard	12,26	87,55
Learning plans quality achievement tools	9,69	80,77
Learning process implementation standard	11,87	84,82
Quality achievement tools of learning process implementation	12,29	87,75
Monitoring and evaluation standard of learning	7,02	87,76
Quality achievement tools of learning monitoring and evaluation	7,28	91,02

Reading Table 1 can be found that quantitatively the implementation of learning quality assurance in schools can be stated to be good. It means that generally schools have and or set learning quality standards both from the dimensions of planning, implementation of processes, monitoring and evaluation, and have been supported by the required quality achievement tools. In detail the general description of the learning quality assurance in schools can be explained as follows.

First, the quality standard for the planning of learning developed by the school, including; (1) preparation of syllabus, (2) preparation of learning implementation plans, (3) development of teaching materials, (4) selection and use of learning methods, (5) development of learning media, (6) development of student worksheets, and (7) development of measuring instruments for student learning success.

Second, supporting tools for achieving quality standards for learning planning developed and used by schools, including; (1) standard operational procedures (POS) preparation of learning planning, (2) instruments for monitoring learning planning, (3) availability of monitoring planning team exclude the Head and Deputy Principal, (4) presence audit or validation of learning planning documents, (5) reporting of the results of the

learning planning audit, and (6) the follow-up program of the results of the learning planning audit.

Third, the quality standards for the implementation of the learning process developed by the school include; (1) the maximum time limit for the teacher to come late in class, (2) minimum time limit for the teacher to leave the class or end the lesson before the time is up, (3) the learning stage which includes the introduction, core and closing, (4) the use of learning strategies that encourage (stimulate) student-centered learning processes, (5) the selection and use of media that supports the achievement of student competencies, (6) the use of various assessment techniques to measure students' learning success, and (7) reporting students' learning result by teachers to students.

Fourth, supporting tools to achieve the quality of the learning process implementation developed and implemented in schools, including; (1) standard operational procedures (POS) for the implementation of learning, (2) monitoring instruments of learning implementation, (3) the monitoring team of learning implementation exclude the Head and Deputy Principal, (4) learning implementation journals which must be filled by the teacher according to the schedule, (5) audit or validation of teaching journals by the monitoring team, and follow-up program on the results of the audit of the learning implementation.

Fifth, quality standards for the implementation of learning monitoring and evaluation developed by schools include; (1) the time for monitoring and evaluating learning in schools, (2) the evaluation mechanism of learning by students, (3) reporting of the results of the learning process monitoring and evaluation, and (4) follow-up program on the result of the learning process monitoring and evaluation.

Sixth, supporting tools to achieve the quality of monitoring and evaluation of learning developed and used in schools including; (1) standard operating procedures (POS) of learning monitoring and evaluation, (2) instruments of learning monitoring and evaluation, (3) reporting of the results of learning monitoring and evaluation, and (3) follow-up programs on the results of monitoring and evaluation of learning.

Quantitatively, based on the score of the implementation of the learning quality assurance system, it has reached more than 80% in all aspects. This indicates that the learning quality assurance process has been carried out quite well. But another facts that need to be criticized is that there is no documents that records the quality assurance process of learning in school, and no written evidence regarding the learning quality assurance process. For this inconsistent phenomenon, it can be explained as follows.

First, principally, school have gained an awareness that high quality learning is the school's duties and responsibilities that must be realized. Management (Head and Deputy Principal), teachers, education staff together have been called upon to realize a quality learning process as a product of institutional performance. All school components will feel proud if they receive recognition and appreciation from the community and all stakeholders for the learning

performance they are able to provide. For this matter, various efforts have been made by schools (including the quality assurance process) for the realization of quality learning services for students.

Second, the school's understanding of the concepts and application of quality control as an integrated quality management process towards sustainable quality improvement is incomplete and needs to be improved. Technically, schools are encouraged and forced to carry out educational quality assurance processes both internally and externally with the enactment of Minister of National Education Regulation No. 13 of 2009 concerning the Education Quality Assurance System (SPMP). But they tend to focus on administrative matter to achieve the categorical recognition status of the school. The technical mastery of education quality assurance itself seems to be the task and responsibility of the management, while the implementing component (teachers and education personnel) is only supporting the completeness of administrative documents.

Third, there is a misconception in providing an assessment or justification of the concept of quality learning. Most people, including actors and stakeholders of school education, have an understanding that quality learning is learning that can make students achieve their target to get high score in learning result, can be accepted at favorite schools or colleges. Such understanding is not entirely wrong, but it becomes unwise if the implications are not proportional, especially from the education actors in schools. It will be a wrong and misleading understanding, if quality learning is only interpreted as what most people understand. The quality learning process is not sufficiently understood when it is planned / prepared properly and then stops students being able to achieve good academic performance, then deems it to be a good or quality learning process.

3.2 The learning quality assurance system based on applied educational technology

Educational technology is an ethical study and practice in facilitating learning and improving performance through efforts to create, utilize and manage various processes and sources of technology appropriately (Januszkeski, 2008). The learning quality assurance system is based on applied educational technology in the context of this study, including; (a) limitation and scope of learning quality assurance in schools, (b) quality and organizational policies, (c) quality standards of learning and achievement mechanisms, (d) learning quality manuals and instruments.

3.2.1 Limitation and scope of learning quality assurance in schools

Learning is the process of interacting students with educators and learning resources in a particular learning environment. In the context of learning schooling means the process of interaction between students and teachers and other learning resources in the learning environment at school. Referring to the Standards of the Learning Process as stipulated in Minister of National Education

Regulation No. 65 of 2013, learning is directed at achieving change in the cognitive, affective, psychomotor, and cooperative domains. The achievement of the cognitive realm refers to the ability with regard to knowledge, reasoning, and / or thought. Affective domain refers to the ability to prioritize different feelings, emotions, and reactions based on reasoning such as acceptance, participation, and attitude determination. Psychomotor domains point to abilities that prioritize physical skills, such as perception and creativity. The cooperative domain refers to the ability to work together, build networks, and work together with others.

In order to make the learning process developed by teachers in schools to be able to produce changes in all four domains in a balanced manner, and to produce graduates who meet the competency standards as determined in the curriculum and expectations of stakeholders, a quality standard of learning is required based on legislation, the vision and the mission of the school. Learning quality standards are measures and criteria that must be met in every learning process that takes place in schools, functioning as a form of learning quality assurance provided by schools to customers, namely students, parents, and other educational stakeholders. Learning quality standards in the context of this research are limited to learning planning, implementation of learning processes, monitoring and evaluation of learning.

The learning quality standards developed and determined by the school then become guidelines for the Principal, Deputy Principal, school learning quality assurance team, teachers, students, and education personnel in carrying out the learning quality assurance function in accordance with their respective roles. Referring to the quality standards of learning that are developed, the learning quality assurance system is directed at efforts to meet the standards of learning planning, implementation of learning, monitoring and evaluation of learning.

3.2.2 *Quality policy and learning quality assurance organization in schools*

The school organizes learning based on the awareness that students have unique talents, abilities, and personalities. Through student-centered learning as mandated by the 2013 Curriculum, schools responsible for helping students develop toward a complete personal achievement by mastering the field of science from existing subjects, having conscience, and compassion. Learning by standards as determined by the school is a promise to the stakeholders that must be realized by the teacher assisted by all relevant school components in accordance with their respective functions and roles.

The organizational structure of quality assurance in schools is regulated and determined by the school. Technically, the learning quality assurance system is under the responsibility of the Principal, controlled by the Deputy Principal for Curriculum and Learning, and is carried out operationally by the school learning quality assurance team. Teams or learning quality assurance groups are formed and assigned by schools to develop quality standards for learning in schools, develop manual

quality attainment of learning standards and monitoring instruments, periodically monitor and evaluate the learning process in schools, report the results of monitoring and evaluation of learning implementation at school, and designing follow-up programs to improve the quality of learning in schools.

3.2.3 *Learning quality standards and standard achievement mechanisms*

The learning quality standard is a measure and or a benchmark for the quality or quality of learning in schools which includes planning, implementation, monitoring and evaluation.

Quality standards for learning planning, containing provisions that; (1) the teacher makes a learning implementation plan (RPP) based on the syllabus of subjects with a format standardized by the school, (2) the teacher chooses and determines learning strategies, methods, and techniques according to the subject characteristics by orienting on student-centered learning, (3) the teacher chooses, determines, designs, and makes learning media to support the success of the planned learning process, (4) the teacher develops materials or teaching materials in accordance with the competencies that will be achieved in learning, (5) teachers develop an instrument for assessing student learning outcomes.

Quality standards for the implementation of learning, containing provisions that; (1) the teacher must start and end the lesson with a certain time limit, (2) the teacher conducts learning activities according to the stages that must be passed (introduction, core, and closing, (3) the teacher in learning needs to make maximum use of learning resources and media , (4) teachers fill learning journals at the end of each learning hour.

Quality standard of learning supervision or commonly used terms of monitoring and evaluation, contain provisions that; (1) there is a monitoring and evaluation mechanism for learning carried out by authorized parties of the school, (2) monitoring and evaluation of learning carried out transparently within the framework of learning quality assurance, (3) the results of monitoring and evaluation are used as the basis for the development of learning quality improvement programs, (4) teachers use the results of monitoring and evaluation as a basis for self-reflection and improvement effort.

To meet the quality standards described above, the mechanism that is carried out is;

- 1) Learning planning, (a) The teacher prepares Learning Implementation Plan (RPP), develops teaching materials, develops learning media and measurement instrument of student learning outcomes. RPP and learning tools needed are developed (made) per basic competency (KD). (b) The team or learning quality assurance group or the party authorized by the school validates the learning planning developed by the teacher.
- 2) Implementation of learning, (a) Teachers carry out learning according to the schedule by implementing RPP that has been prepared in advance. (b) The teacher fills the learning implementation journal in the form provided by the school through the school

learning quality assurance team or group. (c) The team or school learning quality assurance group or the party authorized by the school validates the implementation of the learning carried out by the teacher.

- 3) Monitoring and evaluation of learning implementation, (a) The school quality assurance team or group or the party authorized by the school conducts periodic learning monitoring and evaluation, they are at the beginning of the semester, mid semester, and the end of the semester. (b) The school's teaching quality assurance team or group reports the results of periodic monitoring and evaluation in a forum attended by the Head and Deputy Principal, the school learning quality assurance team, teachers and related educational personnel. (c) The school learning quality assurance team together with the Deputy Principal in the field of curriculum and learning compiles a follow-up program on the results of the monitoring and evaluation in the form of learning quality improvement programs in schools. (4) Teachers utilize the monitoring and evaluation results as a material of self-reflection for further improvement.

3.2.4 Learning quality manual and instruments

Schools as formal education institutions besides being responsible for carrying out teaching in quality, but also must provide certainty and assurance that the learning held is truly high quality. For this reason the school needs to develop a quality learning manual as a reference and / or guideline for all learning activities ranging from planning, implementation, monitoring and evaluation. The learning quality manual contains the rationales for quality assurance of learning, school vision and mission, learning quality standards and mechanisms for achieving standards, quality policies and quality assurance organizations of school learning, and instruments of monitoring and evaluation.

The learning quality manual is developed based on the applicable laws and regulations specifically the Regulations of National Education Minister (Permendiknas) No. 65 of 2013 concerning the Standards of the Learning Process, combined with good learning practices that have been built in schools. Thus the quality manual is more documenting the practices exist in school, strengthened to facilitate the process of quality learning that must be carried out by the school. This quality learning manual developed later becomes a guideline and criteria for schools in providing an assessment of the learning performance carried out by the teacher.

The quality learning manual developed by the school is completed with an instrument of monitoring and evaluation as an integral part of the learning quality assurance in schools. This instrument is used in the quality learning audit process carried out by a team or school learning quality assurance group. The data collected through this instrument is the subject of reports of the team and it also becomes a material of self-reflection for the teacher.

The model of learning quality assurance system based on applied education technology comprehensively can be visualized in the flow chart as follows.

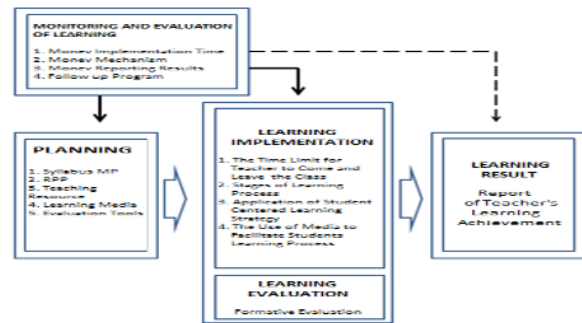


Fig. 1. Model of Applied Learning Quality Assurance System Based on Educational Technology

3.3 Implementation of learning quality assurance system based on applied educational technology

The implementation of learning quality assurance systems based on applied educational technology in the context of this study is explained from the dimensions of the application of the learning process standards and the feasibility of the system in the learning quality assurance process in schools.

The results of data analysis show that the level of application of the learning process standard in the school that implements the learning quality assurance system based on applied educational technology is summarized in Table 2 below.

Table 2. Application of Learning Process Standard in School

STANDARD LEARNING PROCESS	ASPECT OF	AVERAGE SCORE	%
Encouraging students to gain curiosity		3,48	86,88
Based on various learning resources		3,48	86,88
Striving to Strengthen the scientific implementation	Strengthen the approach	3,20	80,00
Competency based		3,39	84,87
Integrated Learning		3,30	82,50
Multi-dimensional Learning		2,97	74,34
Aiming to Applicative skills		3.30	82,50
Balancing improvement between hardskills and softskills.		3,28	81,80
Cultivation of students to become a lifetime learner		3,18	79,38
Application of exemplary values, gaining willingness, and developing students' creativity		3,48	86,88
Learning that takes place at home, school, and society		3,15	78,75

Applying principle that everyone is an educator, a student, and everywhere is a learning place	2,90	72,50
The use of Information and Communication Technology to improve learning effectiveness and efficiency	3,43	85,63
Acknowledgement of Individual and cultural background diversities of students	3,18	79,38
Total	45,38	81,03

In general, the application of the standard process in learning in the school that implements the quality assurance system of learning based on applied educational technology, can be stated as follows.

First, learning in schools has implemented the process standard quite well with average score achievement of 45.38 from the theoretic score of 56, which means it has reached 81.03%. Teachers at the school have attempted to implement teaching process standards as mandated by Minister of National Education Regulation No. 65 of 2013 in the practice of learning for their students.

Second, from a number of process standard components that must be implemented by the teacher in the learning process, components that encourage students to gain curiosity, based on various sources, applying values through exemplary, building willingness, and developing creativity, as well as utilizing information and communication technology in improving the effectiveness and efficiency of learning has been implemented in the teacher's learning practise. The average score has reached 3.4 from the theoretical score of 4, which means it has reached above 85%.

Third, beside the fact that a number of components of the process standard have been implemented very well, there are a number of components whose level of application needs to be improved because the achievement score is less than 3.0, which means less than 75%. Components that are lacking are kind of learning that must be able to provide multi-dimensional and learning-responsive opportunities that must be able to take place at school, at home, and in the community.

The feasibility of an applied quality assurance system for learning based on educational technology to be implemented in schools is concluded in Table 3 as follows.

Table 3. Feasibility of Learning quality assurance System based on Applied Educational Technology

DIMENSIONAL FEASABILITY	AVERAGE SCORE	%
Relevance of system with the schools' vision and mission which is oriented on quality achievement	3,25	81,25
Suitability of System function and school's objective which is oriented on quality achievement	3,00	75,00

Adequacy of system aspects with the field of quality learning in schools	2,98	74,38
Application of the system in the practice of learning quality assurance in school	2,80	70,00
The compatibility with the capacity of human resources in schools	2,78	69,38
The compatibility with learning infrastructure availability in school	2,75	68,75
Its Benefit for the management in controlling learning quality control in school	3,08	76,88
Its benefit for the teacher in learning performance improvement in school	3,13	78,13
The benefit for education personnel in the contribution of improving the learning quality	3,15	78,75
The benefit of the system for the learning quality achievement effort	3,05	76,25
The benefit of the system for the effort of learning quality culture development in school achievement effort	3,10	77,50
Total	33,05	75,11

From Table 3 can be seen that in principle the learning quality assurance system based on applied educational technology developed can be said to be suitable for its use or implementation. The average score of system feasibility of reached 33.05 or 75.11% of the theoretical score of 44. This indicates that the system that is built is relevant to the vision, school, and school objectives that are oriented towards achieving quality, containing the fields of learning quality assurance in schools, can be applied in practice, useful for the efforts of achieving the learning quality in schools.

Learning quality assurance systems based on applied educational technology are substantially assessed by respondents to have a high relevance to the vision and mission of schools that are oriented towards the achievement of learning quality. The system built has a high value for management (Principal) in the framework of learning quality control in schools, for teachers in maintaining and improving their learning performance, and for educational staff in contributing to the learning quality achievement in schools. In addition, the system built also has the potential to build a quality culture in the school environment.

Learning quality assurance system based on educational technology is a form of real contribution in educational technology in improving the quality of learning in schools. As an application of the concept of educational technology that is still in the process of development, at the level of implementation in schools requires commitment and willingness together with all

components of the school. Achieving school quality, the quality of learning is not enough to be carried out only by some components, but requires the contribution of all components according to their respective functions and roles. Assignment of duties and responsibilities explicitly in the organizational structure, the existence of actor who implement the learning quality assurance process in schools is an agenda and prerequisites for more efficient system implementation.

Conclusion

Principally the school has carried out learning quality assurance, has quality learning standards, operational standards procedures for achieving quality, and a system of monitoring the achievement of quality learning. There is an unwritten reference that must be met by the teacher and the school quality assurance team in achieving the determined learning quality.

The learning quality assurance system based on applied educational technology is developed within a frame of reference that contains limits and scope for learning quality assurance in schools, quality policies and organization of learning quality assurance in schools, learning quality standards and mechanism in which it affects the improvement of the learning quality in schools. As an applied system in educational technology which is not final and is a large-scale and broad-scale idea, it still needs further development to be more implementable and have an impact on improving the quality of learning in schools.

The learning quality assurance system based on applied educational technology is principally feasible to be implemented as a model in the learning quality assurance process in schools. The implementation of the learning quality assurance model based on applied education technology in schools has an impact on reaching the learning standard of learning quality.

References

1. Bahagia, Putra Johan. 2011. "Peningkatan Hasil Belajar melalui Pembelajaran Kooperatif Model Jigsaw dengan Alat Peraga pada Siswa kelas V". *Jurnal Penelitian dan Pemikiran Pendidikan (JP3)*, Volume 1, Nomor 1. September 2011.
2. Budiyo, Haryono, dan Hardjono. 2014. "Pengembangan Implementasi teknologi Pendidikan dalam Peningkatan Kualitas Pembelajaran di Sekolah". *Laporan Penelitian* (tidak diterbitkan). Semarang: LP2M Unnes.
3. Delors, Jacques. 1996. *Learning: The Treasure Within*. Paris: UNESCO.
4. Ditjen Dikti Kemdikbud. 2011. *Peningkatan Kualitas Pembelajaran*. Jakarta: Direktorat Pendidik dan Tenaga Kependidikan.
5. Fibonacci, Anita. 2012. "Peningkatan Hasil Belajar IPA Siswa Kelas X TKR 1 SMKN 7 Semarang melalui Joyful Learning Menggunakan Game Guess My Word". *Jurnal Penelitian Pendidikan*. Volume 29, No. 2 Oktober 2012.
6. Haryono. 2014. "Terapan Teknologi Pendidikan dalam Praksis Kurikulum 2013: Optimalisasi Peran Jabatan Fungsional Pengembang Teknologi Pembelajaran". *Proceeding 2014 Educational International Seminar: "Strengthening Teachers & Educational Personnel Competence in Scour Change"*. Padang, November 22th to 24th 2014.
7. Januszewski, Alan. 2001. *Educational Technology, The Development of a Concept*. Englewood, Colorado: Libraries Unlimited.
8. Januszewski, Alan and Michael Molenda. 2008. *Educational Technology: A Definition with Commentary*. New York: Taylor & Francis Group.
9. Miarso, Yusufhadi. 2002. "Konsep dan Terapan Teknologi Pembelajaran", Makalah dalam Kuliah Perdana Mahasiswa S2 TP UNNES, 14 September 2002.
10. Miarso, Yusufhadi. 2004. *Menyemai Benih Teknologi Pendidikan*. Jakarta: Prenada Media.
11. Romiszowski, A.J. 1989. *Designing Instructional System*. London: Kogan Page.
12. Salisbury. 2002. *Instructional Technology, Past, Present, and Future*. Englewood, Colorado: Libraries Unlimited.
13. Semiawan, Conny R. 1998. *Pendidikan Tinggi: Peningkatan Kemampuan Manusia Sepanjang Hayat Seoptimal Mungkin*. Jakarta: Ditjen Dikti Depdikbud.
14. Sugiyono. 2009. *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif, dan R & D*. Bandung: Alfabeta.
15. Zamroni. 2000. *Paradigma Pendidikan Masa Depan*. Yogyakarta: Bigraf Publishing