Proceedings of the 1st International Conference on Science and Islamic Studies
ISSN: 3024-9058 (media online)
Volume: 1, 2023
Publisher: Universitas Islam Negeri Alauddin Makassar

Learning technology area an ethical study and practice in learning technology

Kusnadi[1], Muhammad Yaumi[2], & Arnadi[3]

[1,2,3]Postgraduate Program, Universitas Islam Negeri Alauddin Makassar

Correspondence Email: nadikoez@gmail.com

ABSTRACT

The development of education in the world today is inseparable from the development of educational technology and learning technology. Technology that most people understand today is a tool or media, but in reality, this is not the case. The Association for Educational Communication and Technology (AECT), which was founded in 1963 and operated until 2004, and definitions offered by experts are examples of how understanding or definition of learning technology is constantly evolving. There is no need to distinguish between the terms educational technology and learning technology because they can both be used interchangeably depending on the situation. This paper aims to provide clarity about the understanding of the learning technology area. The method used is the systemic literature review. Based on the findings of the literature review, it can be said that the field of learning technologies is separated into five areas: design, utilization, development, management, and assessment. The design section includes the creation of learning systems, messages, learning strategies, and learning characteristics. Media use, innovation diffusion, implementation and institutions, policies, and regulations are all areas of utilization. Print technology, audiovisual technology, computer-based technology, and integrated technology are the categories into which the development area is split. The management field includes project management, resource management, delivery system management, and information management. Problem analysis, benchmark reference measurement, formative evaluation, and summative evaluation comprise the assessment area. There is a synergistic interaction between the two areas. One area with another area has a synergistic relationship.

Keywords: Technology; education; learning

1. INTRODUCTION

When we talk about learning technology today, it is inseparable that we have to talk about learning technology, because long before the term learning technology emerged, there was educational technology terminology that had been used for a long time, especially in the United States. Educational technology at that time was seen as a scientific discipline. If we accept the idea of technology as a concept, then the first forms of educational technology have existed since the dawn of civilization, when parents taught their children through hands-on learning and making use of the surroundings. To facilitate learning anywhere, anytime, by anyone, in any form, and from any source according to their needs, educational technology aims to create, produce and use various learning tools.

Agus Retnanto [1] stated that those who chose to use learning technology terminology had two reasons Firstly, that the term learning is more appropriate than the terminology of educational technology because it is more appropriate to describe the function of technology. Second, the terminology of educational technology is more general in nature in the sense that the setting is an educational unit or the education itself and some even argue that the setting can also be in the form of training. Whereas those who tend to use educational technology terminology argue that learning is part of education, they also believe that education refers to various environments, including the school environment, work environment, home environment, while learning terminology seems to only refer to the school environment.

Furthermore, E.F Rasydah[2] views the definition of learning technology put forward by the Association for Educational Communication and Technology (AECT) as showing the difference between the understanding of educational technology and learning technology. These differences exist in the scope, where educational technology refers to implementation as a goal, realized in the classroom as a component and learning system. Learning resources play a direct role, are designed, prepared, and adapted to the competencies and needs of students. Besides that, there are also groups that use the terms (educational technology and learning technology) interchangeably, because according to them the difference between the two terms does not need to be debated, because they both have a very long history of use in educational discourse. The United Kingdom and Canada mostly use the term educational technology, while the United States uses the term learning technology more.[3]

Taking into account this condition, the authors are very interested in discussing further about learning technology, especially regarding the area of learning technology.

[1] Agus Retnanto., Dr.,M.Pd., Teknologi Pembelajaran, CV. Idea Sejahtera, Yogyakarta, 2021, hal. 7

[2] Evi Fatimatur Rasydah., Dr.,M.Ag., Teknologi Pembelajaran Implementasi Pembelajaran Era 4.0, UIN Sunan Ampel Press, 2019, hal 9

[3] Muhammad Yaumi, Terminologi Teknologi Pembelajaran: Suatu Tinjauan Historis, Jurnal Inspiratif Pendidikan, Volime V, Nomor 1, 2016, hal. 204

2. METHODS

This paper is written using the library or literature study method, namely research conducted by collecting data or scientific writing that aims to solve a problem which is basically based on critical and in-depth analysis of relevant library materials. The descriptive technique involves describing the object of the problem based on the facts in a methodical, precise, and typical manner of research studies.

The next step after gathering all the data is to analyse it and come to a decision. The authors employ content analysis approaches to produce accurate and precise results when analysing data. An in-depth examination of the material included in written or printed documents is known as content analysis.

Based on the literature that is currently available, the concepts and theories used are evaluated in this section. Textbooks, scholarly journals, research findings presented in theses and dissertations, the internet, and other pertinent sources are only a few of the sources used.

3. RESULTS AND DISCUSSION

1) Definition of Learning Technology

The word technology (technology) comes from the Greek which consists of two words, namely from the word *techne* which means art, craft, or skill and *logia* which means word, study, or body of knowledge.[4] Based on the definition developed by Simon: 1993, Saeftler: 2004, Cheung: 2003, Siemens and Tittenberger: 2019, Yaumi[5] concludes that there are three main aspects of the meaning of technology, namely the application of knowledge, practical goals and dynamics of change. According to Prawiradilaga in Mustafa and Suryadi[6], the technological limitations are as follows;

a) Technology related to rational and scientific nature;
b) Technology refers to knowledge, skills, be it arts or crafts;
c) Technology can be translated as a technique or method of implementation;
d) An activity or a process;
e) Refers to the use of machines and hardware.

[4] Ibid
[5] Ibid
[6] Pinton Setya Mustafa dan Muhammad Suryadi, Landasan Teknologis Sebagai Peningkatan Mutu Dalam Pendidikan dan Pembelajaran: Kajian Pustaka, Fondatia, Jurnal Pendidikan Dasar, Volume 6, Nomor 3, 2022, hal. 72

Salisbury in Nurdyansyah and Andiek Widodo[7] provides the notion of technology as the well-organized and systematic application of science or knowledge to practically complete works.

According to E. Mulyana in M. Suradji[8], learning is a process of interaction between the learner and his environment, from this interaction a change in behavior for the betterness emerges. Behavior change will occur if during the process the teacher conditions a supportive learning environment. Two-way communication between teachers as educators and students as learners can also be interpreted as learning. Learning is essentially a process of preparing students to be able to practice learning outcomes in the real world. In the following, five definitions of learning based on learning theory are presented, namely; 1) learning is an effort to convey knowledge to learners (students) at school; 2) learning is the process of passing on culture to the next generation through schools; 3) learning can be interpreted as organizing the environment to create conditions for student to learn; 4) learning is an effort to prepare students to create a good society; 5) learning is an effort to help students live their lives in society.[9]

Based on some of the opinions of the experts above, it can be concluded that learning is a process of changing environmental conditions that are designed in such a way as to help students achieve their learning goals. The following presents the development of the formulation of the understanding of learning technology in the Association for Educational Communication and Technology (AECT) as follows:[10][11][12][13]

a) AECT 1963; The primary focus of audio-visual communication, a subfield of educational theory and practice, is developing and using messages to direct the learning process. Activities in this field include: (a) analyzing the benefits and drawbacks of a message in the learning process; (b) structuring and systematizing the educational environment through people and tools, including: planning, production, selection, management, and utilization of components and the entire learning process. Using all available tools and forms of communication to help students reach their maximum potential is the practical goal.

b) AECT 1972; The field of educational technology focuses on discovering, creating, organizing, and using multiple learning resources while controlling the entire learning process to facilitate human learning.

---

[7] Nurdyansyah, M.Pd, Andiek Widodo, M.M, Inovasi Teknologi Pembelajaran, Nizamia Learning Center, Sidoarjo, 2015, hal. 12

[8] Muchamad Suradji, Teknologi Pembelajaran dalam Pendidikan Islam, Jurnal Dar El-Ilmi, Volume 3 No.1, 2016, hal. 68

[9] Ibid

[10] Muhammad Yaumi, Terminologi Teknologi Pembelajaran: Suatu Tinjauan Historis, Jurnal Inspiratif Pendidikan, Volime V, Nomor 1, 2016, hal. 196-201

[11] Muhammad Ramli, Drs., M.Pd, Media dan Teknologi Pembelajaran, Antasari Press, Banjar Masin, 2012

[12] Agus Retnanto., Dr.,M.Pd., Teknologi Pembelajaran, CV. Idea Sejahtera, Yogyakarta, 2021, hal. 17-23

[13] Pinton Setya Mustafa dan Muhammad Suryadi, Landasan Teknologis Sebagai Peningkatan Mutu Dalam Pendidikan dan Pembelajaran: Kajian Pustaka, Fondatia, Jurnal Pendidikan Dasar, Volume 6, Nomor 3, 2022, hal. 74-76

c) AECT 1977; To evaluate problems, plan, implement, assess and manage problem solving in all aspects of human learning, educational technology is a complex and integrated process including people, processes, ideas, facilities and organizations.

d) AECT 1994; Instructional technology is the theory and practice of design, development, utilization, management and evaluation of learning processes and resources.

e) AECT 2004; Educational technology is the study and ethical practice of facilitating learning and enhancing performance by creating, using and managing appropriate technological processes and resources.

According to Yaumi[14], there is a difference in emphasis between the 1994 and 2004 AECT definitions. The 1994 AECT definition emphasizes laying a strong foundation in the area of learning technology, while the 2004 AECT definition focuses on learning facilities and improving performance. Furthermore, according to Januszewski and Molenda in Yaumi[15], there are seven main things in the 2004 AECT definition, namely; 1) the shift in terms used, which was originally research into study, 2) the position of ethical practice becomes very important and essential, 3) the object of study in the field of learning technology, 4) the placement of learning as the center of definition, 5) performance improvement, 6) description of the main function of the study learning technology as a factual form of the area of design, development and evaluation in the form of creation, use and management, 7) definitional emphasis on the use of equipment and methods that must suit the people and conditions in which learning takes place.

According to the definition given above, the area of educational technology includes; 1) study, 2) ethics, 3) learning/learning facilitation, 4) performance improvement, 5) creation, use, and management of learning processes with adequate technology, and 6) creation, use, and management of learning resources processes with appropriate technology availability.[16]

We can conclude the following conclusions from the above definitions: 1) Learning technology is a scientific subject or field of endeavor 2) The terms "learning technology" and "educational technology" are interchangeable; 3) The main purpose of learning technology is to: (a) overcome learning problems or help learning process; and (b) improve performance; 4) adopt a systematic approach (holistic or comprehensive); 5) Activities related to the analysis, planning, development, use, management, implementation, and evaluation of both learning processes and resources can be included in the category of learning technology; 6) As far as efforts to solve learning problems and improve performance are concerned, learning technology is not only used in schools but also in all human activities (such as: business, family, community groups, etc.); 7)

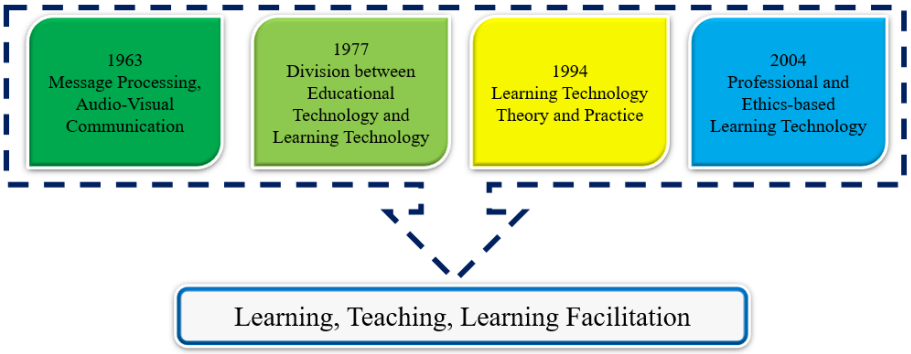
[14] Muhammad Yaumi, Terminologi Teknologi Pembelajaran: Suatu Tinjauan Historis, Jurnal Inspiratif Pendidikan, Volime V, Nomor 1, 2016, hal. 202

[15] Ibid

[16] Kaharuddin Nasution, Teknologi Pendidikan Untuk Meningkatkan Kualitas Pembelajaran, Prosending Seminar Nasional Teknologi Pendidikan Pascasarjana UNIMED, 2019. hal. 389

Technology is defined broadly, both technology in physical form (hard-tech) and non-physuical form or soft technology (soft-tech).

The following is a chart of the development of the definition of educational/learning technology.



Graph 1 The Development of Education Technology Definition

There is a high probability that learning technology will continue to progress and strengthen its position as a scientific discipline in the future, especially considering the rapid development and progress of science and technology, especially in the fields of education, psychology, and Information and Communication Technology (ICT).

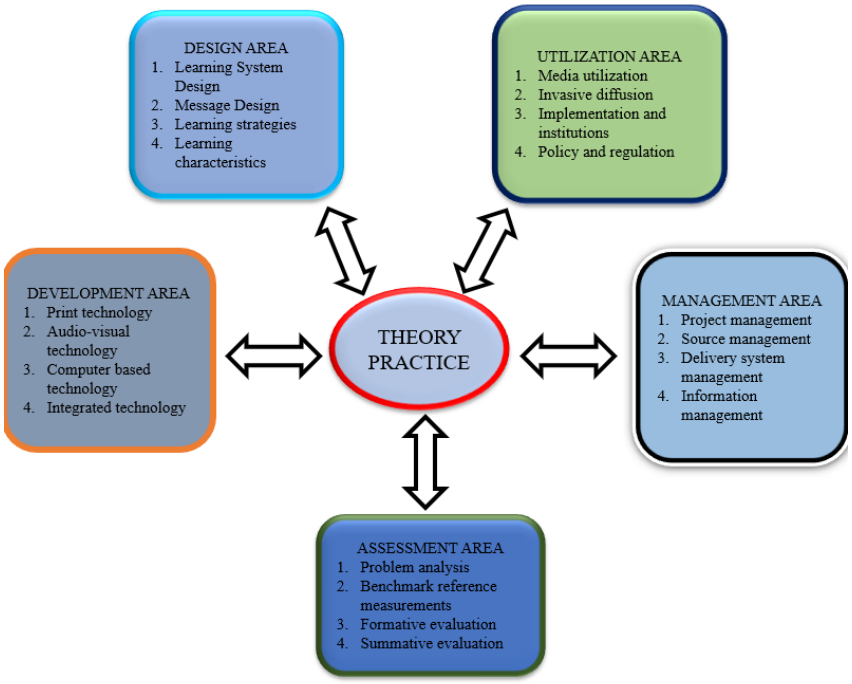
2) Learning Technology Area

Etymologically, the terms "domain" and "area" refer to areas of legal jurisdiction or areas of study, activity, or work that are more specialized, in-depth, or narrowly focused than bodies of knowledge. Regarding the factual theory and practice of educational technology, it has become an important component in efforts to develop human resources, especially in the education and training system. Every student should ideally be proficient in various fields of educational technology, especially those who receive academic instruction. To examine difficulties involving all aspects of learning, as well as design, implement, assess and manage solutions to these challenges, educational technology functions as an integrated complex process including people, procedures, ideas, tools and organizations.

Compared to the field of educational technology, the formulation of the field of learning technology has a smaller scope. The field of learning technology continues to use the term controlled and directed learning. The location of learning technology areas in the classroom is described in this statement. One important part of the learning system is learning resources. In the field of learning technology, learning resources are deliberately made (by design) in accordance with the infrastructure that is commonly used. The following standards must be met by the learning resource:

a. Created and used primarily based on expertise and teaching materials
b. Selected and used from existing school collections according to teaching materials and competencies.[17]

As stated in the definition of learning presented by the Association for Educational Communication and Technology (AECT) 1994 that there are five areas and twenty scopes of study as stated in the following figure:[18]



Graph 2 Learning Technology Area

a. Design Area

The design area is rooted in educational psychology. According to Reiser and Dempsey, et al., a design that incorporates learning technology is similar to a coin that cannot be divided into a two-sided of coin. Design is basically the act of identifying a learning environment with the aim of developing strategies and outcomes. This area consists of:

1) Learning System Design

Designing a learning system includes structured and methodical analysis (the process of formulating what will be learned), designing (the process of explaining how to

[17] Dewi Salma Prawiradilaga, Wawasan Teknologi Pendidikan, Kencana Prenanda Media Grup, Jakarta, 2012, hal. 45

[18] Muhammad Yaumi, Terminologi Teknologi Pembelajaran: Suatu Tinjauan Historis, Jurnal Inspiratif Pendidikan, Volime V, Nomor 1, 2016, hal. 201-202

learn it), development (the process of writing or producing learning materials), implementation or application (use of materials and strategies), and the assessment step (the process of determining learning feasibility).[19]

Learning system design can also be interpreted as an organizing system which includes the following steps: (a) planning (the process of deciding what to learn); (b) design (the process of describing how to learn); (c) development (the process of writing and producing/producing study materials); (d) implementation/application (use of materials and strategies); and (e) assessment (the process of determining the accuracy of learning).[20]

Learning system design is usually a linear and interactive process that requires accuracy and consistency. All these steps must be carried out for the system to work as a mutual control mechanism. Because trust to a product is process dependent, the process in learning system design is as important as the product itself.

2) Message Design

By adjusting the physical form of the message, the design of the message is intended to facilitate communication between the sender and receiver while taking into account the principles of attention, perception and understanding. Designing messages takes into account small details like visual content, page and screen separation, as well as sequencing. Both media and learning tasks must be specifically stated in the design. This suggests that design principles for messages will vary depending on the type of media, such as static images, moving images, or computer graphics, or a combination of the two.[21]

3) Learning Strategy

Learning strategies are guidelines for selecting and organizing learning activities or events in a subject. The intended type of learning, learning environment, and content all play significant roles.[22]

Learning strategies are guidelines for selecting and sorting learning activities or events in a lesson. Learning arrangements and learning/teaching components are included in the theory of learning strategies. The concept of learning technology is based on theory or elements of learning techniques. The learning situation determines how to apply a learning method.

---

[19] Dewi Salma Prawiradilaga, Wawasan Teknologi Pendidikan, Kencana Prenanda Media Grup, Jakarta, 2012, hal. 49,

[20] https://spada.uns.ac.id/pluginfile.php/30868/mod_resource/content/1/TM%204-Kawasan%20Teknologi%20Pendidikan.pdf diakses 3 April 2023

[21] Ibid

[22] Evi Fatimatur Rasydah., Dr.,M.Ag., Teknologi Pembelajaran Implementasi Pembelajaran Era 4.0, UIN Sunan Ampel Press, 2019, hal 15

4) Characteristics of Learners

Characteristics of Students, namely aspects of the background of students' experiences that affect the effectiveness of the learning process. The characteristics of students include the socio-psycho-physical conditions of students. Psychologically, Attention need to be put to the characteristics of students that is related to their abilities, both potential and real skills and personality, such as attitudes, emotions, motivation and other personality aspects.[23]

b. Areas of Development

The design implementation process covers the following areas of development: (1) printing technology; (2) audio-visual technology; (3) computer-based technology; and (4) integrated technology. The area of development is based on the production of media through processes which, as media capabilities change over time, affect the region. The design of learning messages and strategies is influenced by the complex relationship between theory and technology in the field of development. In general, development occurs because: (a) messages are directed by content; (b) learning procedures are driven by theory; and (c) learning materials, hardware technology, and software that are physically tangible.[24]

1) Print Technology

Print technology is a method of creating or transmitting a static visual item, such as a book, primarily by mechanical or photographic printing. Most additional learning resources are created or used based on this technology. Text resources with verbal and visual content form two parts of this technology. Visual perception theory, reading theory, human information processing theory, and learning theory all play an important role in the production of these two types of educational materials. The characteristics of print/visual technology include; its growth relies heavily on linguistic principles and visual perception, text is read linearly, whereas images are captured spatially, both typically provide one-way passive communication, both are in static visual form, both focus on the learner, and information can be rearranged and organized by user.[25]

2) Audio Visual Technology

The production and distribution of content using equipment and electronics to display audio-visual messages is known as audio-visual technology. Since audio-visual learning uses hardware during the teaching process, it is easy to identify it. Massive visual display, sound playback and live video projection are all possible with audio-visual equipment. The creation and use of materials related to learning through sight and

[23] Muhammad Ramli, Drs., M.Pd, Media dan Teknologi Pembelajaran, Antasari Press, Banjar Masin, 2012. hal 25

[24] Ibid

[25] Ibid

hearing which do not exclusively rely on understanding comparable symbols and expressions is known as audio-visual learning.[26]

In particular, audio-visual technology tends to be linear, displays dynamic visuals, is usually used in a predetermined way by the designer or developer, tends to be a physical representation of concrete and abstract ideas, developed using behavioral and cognitive psychology. principles, are often teacher-centered, and pay little attention to student learning interactivity.

3) Computer Based Technology

Microprocessor-based devices are used in computer-based technology to produce and deliver goods. In essence, computer-based technology uses displays on monitor screens to present information to students. These software programs are almost exclusively built using behavioral theory and programmatic learning, but are now increasingly based on cognitive theory. Hard and soft computer technology typically exhibits the following characteristics:[27]

1. Can be applied at random order;
2. Can be used according to the preferences of students other than the way intended by the creator;
3. Words, symbols, or visual representations are usually used to express abstract ideas;
4. During development, the principles of cognitive science are used;
5. Learning can be centered while incorporating multiple interactions.

4) Integrated Technology

Various computer-controlled media can be combined to produce and deliver materials using integrated technologies. The use of this integrated technology is made possible by computers with large memory, video players, high-resolution screens, and smooth networks. The challenges of building interactive technologies, applying constructivism theory and social learning, using expert systems and automating development tools, and applications for distance learning, are the main challenges integrated technology and computer.

The following are some of the characteristics of learning with integrated technology, including: it can be used randomly, it can also be used linearly, according to the preferences of students, apart from what is intended by the developer, ideas are often presented realistically in the context of learning. the learner's experience, related to the

[26] Ibid
[27] Ibid

state of the learner, and under the control of the learner, the principles of cognitive science and constructivism are applied in development.[28]

c. Areas of Utilization

Utilization is the process of using tools and resources for learning. Policy and technical developments often impact areas of utilization. The idea of using any kind of technology for education has been proposed by many groups. In fact, the technique for its use requires a long list of tasks, procedures that require the diligence and cooperation of related parties, including teachers, government, field implementers, and others. Media use, diffusion of innovation, implementation and institutionalization, and policy and regulation are examples of use cases.

1) Utilization of Media

The systematic use of materials for learning is known as the use of media. The decision to use media depends on the learning design requirements; in this situation, the sequence, student characteristics, and learning environment are some of the factors that need to be considered.

2) Diffusion of Innovations

The practice of communicating through a deliberate approach with the goal to achieve acceptance is known as diffusion of innovation. The spread of this innovation is done so that a media can be accepted and used in learning on a regular basis without any pressure from outside. The secret of diffusion is smooth communication; the result is change or acceptance of an innovation.[29]

The diffusion steps according to Rogers (1983) are: (1) knowledge; (2) persuasion or inducement; (3) decisions; (4) implementation; (5) and confirmation.

3) Implementation and Institutionalization

Implementation is the application of instructional tactics and tools in an actual setting, not a simulation. The common application and preservation of learning innovations within an organizational structure or culture is known as institutionalization. Ensuring proper use by personnel within the organization is the goal of implementation. Integrating innovation into organizational structures and day-to-day operations is the goal of institutionalization.

[28] Ibid
[29] Ibid

4) Policies and Regulations

The rules and actions of society or its representatives that have an impact on the adoption and use of educational technology are known as policies and regulations. Ethical and financial issues often become the challenges of policies and laws.

Policies and regulations affecting use, diffusion, implementation, and institutionalization are usually at the center of trends and. How the impetus for school restructuring might affect utilization of learning resources is another issue related to this subject. The political and financial risks for those seeking adoption have increased due to the rapid development of computer-based products and systems. Learners' attitudes towards technology, the level of independence of learners, and other elements that can inhibit or promote media and learning materials in a wider context are some of the factors that influence use.

d. Management Area

Learning technology often deals with management because it is a very important component. Management requires managing learning technology through organizing, coordinating, planning, and supervising. Media center administration, media programs and media services is where the management area begins. The school's media center and expert was created as a result of the merger of the library and media program. Media programs in schools aim to combine print and non-print materials, leading to greater utilization of technology and educational resources. Management requires the regulation of educational technology through organization, coordination, planning, and supervision. The administration of media centers, media programs and media usage services is the first management task.

Management includes project management, resource management, delivery system management, information management.

1) Project Management

Planning, observing and managing project design and development are all included in project management. For the following reasons, project management differs from traditional management (line and staff management): (a) project staff may be new, ie temporary team members; (b) project managers usually do not have long-term authority over people because of the temporary nature of their assignments; and (c) project managers have greater control and flexibility than the typical line and staff organization.[30]

2) Resource Management

Planning, observing, and managing resource support systems and services are all included in resource management. The fact that resource management determines access

[30] Ibid

control makes it important. Financial staff, raw materials, time, facilities, and learning resources can all be categorized as resources. All the technologies that have been covered in the development area are included in the learning resources. Effective justification of learning and cost-effectiveness are two important aspects of resource management.

3) Delivery System Management

Planning, observing and managing the "learning materials distribution organization" is part of managing the delivery system. It is a combination of media and approaches used to convey knowledge to learners.

4) Information Management

To provide resources for educational activities, information management involves planning, monitoring, and controlling how information is received, stored, transferred, or processed. Information management is important because it has the potential to change curriculum applications and instructional designs.[31]

e. Assessment area

Prawiradilaga[32] provides an understanding of assessment as an activity to review and improve a product or program. Assessment is the process of determining the adequacy of teaching and learning which includes; problem analysis, benchmark reference measurement, formative assessment and summative assessment.[33]

There is a contrast between the evaluation of programs, initiatives, and products in the area of assessment. Program assessment is a type of evaluation that examines ongoing instructional practice and often contributes to curriculum creation. For example, an evaluation for a local government special education program, a university continuing education program, or a reading program in a school.

1) Problem Analysis

Problem analysis requires the use of information gathering and decision making techniques to ascertain the parameters and nature of the problem. Longtime proponents of rigorous evaluation claim that evaluation begins shortly after programs are developed and planned. No matter how good an idea is, initiatives that focus on unacceptable or unsatisfying goals will be seen as not meeting a need.

[31] Ibid

[32] Dewi Salma Prawiradilaga, Wawasan Teknologi Pendidikan, Kencana Prenanda Media Grup, Jakarta, 2012, hal. 54.

[33] Muhammad Ramli, Drs., M.Pd, Media dan Teknologi Pembelajaran, Antasari Press, Banjar Masin, 2012, hal. 34

2) Benchmark Reference Measurement

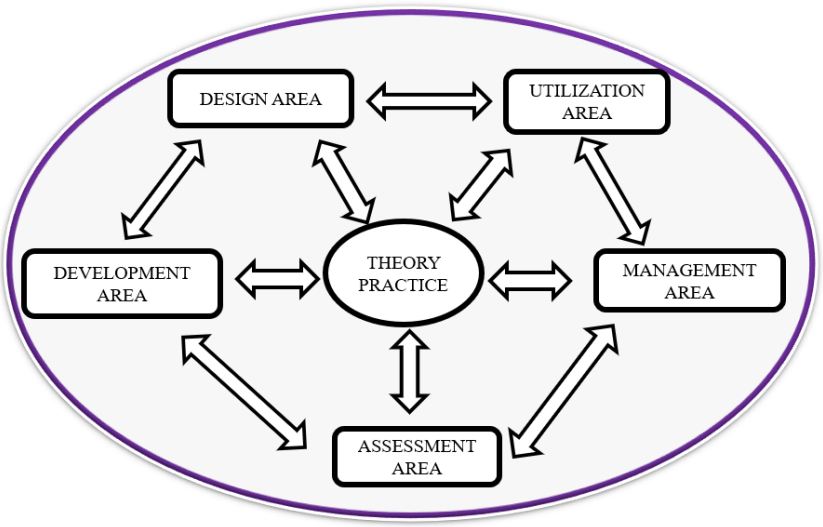
Benchmark measurement is an assessment technique used to assess learner capacities against predetermined benchmarks. Evaluation of a person's knowledge, attitudes, or abilities in relation to learning objectives is known as a benchmark reference assessment. Being able to perform special requirements is required to pass the benchmark reference measurement test. Often, a minimum score is set, and those who can reach it or exceed it are considered to have passed. Students can find out how close they are to meeting the required criteria by using benchmark reference measurements.

3) Formative and Summative Assessment

Formative evaluation requires obtaining data on suitability and using this data as a basis for further development. Summative evaluation requires obtaining information on adequacy and applying it to guide utilization of decisions. The procedures used for formative and summative evaluation vary. Technical (content) reviews, tutorials, and small or large group trials are essential for formative evaluation. Commonly used informal data collection techniques include observation, interviews, and rapid tests. Other forms of summative evaluation require more formal data collection protocols and techniques. In a quasi-experimental approach, a summative evaluation is usually a group comparison study. To balance qualitative and quantitative assessments, formative and summative evaluations need to be well thought out.

f. Relations Between Regions

The relationship between regions in the learning technology area is not always linear, meaning that between one area and another can complement each other by showing the scope of research and theory in each area. The relationship between regions is synergistic, meaning that an expert in the development area may use theory from the design area, and vice versa. Graphically, the relationship between regions can be seen in the following figure.



Graph 3. Relations among Areas

REFERENCES

Agus Retnanto., Dr.,M.Pd (2021). Teknologi Pembelajaran. CV. Idea Sejahtera: Yogyakarta.

Dewi Salma Prawiradilaga (2012). Wawasan Teknologi Pendidikan. Kencana Prenanda Media Grup: Jakarta.

Evi Fatimatur Rasydah., Dr.,M.Ag (2019). Teknologi Pembelajaran Implementasi Pembelajaran Era 4.0. UIN Sunan Ampel Press. https://spada.uns.ac.id/pluginfile.php/30868/mod_resource/content/1/TM%204-Kawasan%20Teknologi%20Pendidikan.pdf accessed 3 April 2023

Kaharuddin Nasution (2019). Teknologi Pendidikan Untuk Meningkatkan Kualitas Pembelajaran. Prosending Seminar Nasional Teknologi Pendidikan Pascasarjana UNIMED.

Muhammad Ramli, Drs., M.Pd (2012). Media dan Teknologi Pembelajaran. Antasari Press: Banjar Masin.

Muchamad Suradji (2016). Teknologi Pembelajaran dalam Pendidikan Islam. Jurnal Dar El-Ilmi, Volume 3 No.1.

Muhammad Yaumi (2016). Terminologi Teknologi Pembelajaran: Suatu Tinjauan Historis. Jurnal Inspiratif Pendidikan, Volime V, Nomor 1.

-------- (2023). Media dan Teknologi Pembelajaran. Kencana: Jakarta

Nurdyansyah, M.Pd, Andiek Widodo, M.M (2015). Inovasi Teknologi Pembelajaran. Nizamia Learning Center: Sidoarjo.

Pinton Setya Mustafa dan Muhammad Suryadi (2022). Landasan Teknologis Sebagai Peningkatan Mutu Dalam Pendidikan dan Pembelajaran: Kajian Pustaka. Fondatia, Jurnal Pendidikan Dasar, Volume 6, Nomor 3.