MULTIMODAL LEARNING DESIGN IN IMPROVING TECHNOPRENERSHIP CAPABILITIES IN THE EQUALITY EDUCATION PROGRAM

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Article history:		Abstract:
		The equality education program in Semarang Regency faces challenges in improving the technopreneurship capabilities of program participants. Innovative and technological learning design is the key to achieving these goals. This study aims to describe multimodal learning and learning design in improving the technopreneurship ability of equality education program participants. The main focus is on creating a holistic learning experience, integrating various media, and strengthening aspects of creativity and business skills. This study uses a qualitative approach by detailing a structured multimodal learning design. Data was collected through observation, interviews, and analysis of learning-related documents. Multimodal learning design is effective in improving the understanding of technology, the development of creativity, and the mastery of business skills of program participants. Through various types of media, program participants can learn holistically and apply technopreneurship concepts in real contexts. This study concluded that multimodal learning design contributes positively to improving the technopreneurship ability of equality education program participants in Semarang Regency. The implications of this research include recommendations for curriculum development, instructor training, and increased accessibility of technology in support of multimodal learning. These findings could provide a foundation for continuous improvement in equality education programs.

INTRODUCTION

Education is one of the important factors in determining the quality and competitiveness of a region's human resources (1). The equality education program in Semarang Regency is one of the government's efforts to provide access to education to those who have not had the opportunity to attend formal education. However, the problem that is often faced in equality education programs is the limited facilities, resources, and learning methods used (2; 3), thus often producing graduates who do not have adequate skills and competencies, especially in the field of technoprenership (4; 5).

Technoprenership is a blend of technology and entrepreneurial skills that are becoming increasingly important in today's digital age (6). Technoprenership skills are indispensable to be able to compete in the job market and create new jobs through innovation and the use of technology (7). Therefore, efforts are needed to improve the quality of equality education in Semarang Regency, especially in developing technoprenership capabilities.

The objectives of this study include (a) Describing multimodal learning in improving Technoprenership Capabilities in the Equality Education Program in Semarang Regency. (b) Knowing the design of multimodal learning in improving Technoprenership Capabilities in the Equality Education Program in Semarang Regency.

The urgency of this research includes overcoming gaps in access and quality of education, meeting the needs of the job market in the digital era, and encouraging local economic growth through increasing technoprenership capabilities. It is hoped that the results of this study will provide recommendations and guidelines for related parties in designing and implementing effective and sustainable technoprenership education programs, so as to improve the quality and competitiveness of human resources in Semarang Regency and its surroundings.

In conclusion, this research is expected to make a significant contribution in efforts to improve the quality of equality education, especially in developing technoprenership capabilities in Semarang Regency. By implementing an effective and efficient multimodal learning design, it is expected to overcome the limitations of existing resources and facilities, and create a more interesting, flexible, and adaptive learning process.

METHODS

This study used a mixed methods research design, which combines quantitative and qualitative methods to produce a more comprehensive understanding of the phenomenon under study (16; 17). This design allows researchers to explore deeper aspects of multimodal learning design and its effect on the technoprenership ability of equality education program participants in Semarang Regency. This study used observation techniques, in-depth interviews, and document analysis to collect qualitative data on the learning process, participants' perceptions of multimodal learning designs, and the effectiveness of multimodal learning designs in improving technoprenership capabilities (19). Trianggulation is done by triangulation of sources and methods: trianggulation of sources by collecting data from various sources, such as participants, teachers, and managers of equality education programs, to ensure consistency and validity of information (20). Method triangulation: Using quantitative and qualitative methods to collect data, thus enabling validation of findings through confirmation of complementary results (21). Data analysis is carried out using content and thematic analysis techniques. Interview transcripts, observation notes, and documents will be coded to identify emerging patterns, themes, and categories. Researchers will look for relationships, contradictions, and interesting findings in qualitative data to support or invalidate quantitative findings.

RESULT AND DISCUSSION

Multimodal learning in improving technopreneurship capabilities in equality education programs in Semarang Regency reflects a factual condition involving the use of various media and learning methods. This approach is designed to provide a more holistic and relevant learning experience to today's technological and business challenges (22). In this context, teachers and instructors in the Semarang Regency equality education program use a combination of various media such as visual presentations, learning videos, online business simulations, and direct interaction in the classroom. The use of technology, such as online learning platforms and applications related to technopreneurship, is the main foundation. In addition, hands-on activities, case studies, and collaboration between students become an integral part of a multimodal learning strategy.

This condition also includes alignment of the curriculum with the latest developments in the world of technopreneurship, including the application of technological and entrepreneurial concepts in a practical context. Thus, learning focuses not only on theory, but also on real applications that allow students to develop their technopreneurship skills (23). In addition, the assessment of technopreneurship capabilities is carried out holistically, including evaluation of creativity, innovation, adaptability to technology, and courage to face risks in a business context. It describes a results-oriented learning approach and practical proficiency that is appropriate to the demands of the ever-evolving era of technology and business.

Thus, the factual conditions of multimodal learning in Semarang Regency create a dynamic learning environment, integrated with technology, and prioritize the development of students' technopreneurship abilities. This approach not only provides conceptual understanding, but also encourages practical applications, providing relevant provisions to face the challenges of the modern world of work.

Multimodal learning design in improving Technoprenership Capabilities

The systematics of multimodal learning design in improving technopreneurship capabilities in equality education programs in Semarang Regency can be divided into several stages.

Learning Objectives

Determine clear and specific learning objectives to be achieved by equality education program participants. For example, goals could include understanding technology, developing creativity, and mastering business skills relevant to technopreneurship (24). The learning objectives in this equality education program are formulated to provide clear and specific guidelines for program participants.

First, the goal includes understanding technology, which can be interpreted as the ability of program participants to understand the basic concepts of technology, the application of technology in business, and the impact of technology on the development of technopreneurship. This objective encourages program participants to become familiar with the latest developments in the world of technology.

Second, the development of creativity becomes an important goal. It includes the ability of program participants to think creatively, identify new opportunities, and generate innovative ideas in the context of technopreneurship (25). Increased creativity can help program participants to be more adaptive to change and find creative solutions in facing business challenges.

Lastly, the objectives include mastery of business skills relevant to technopreneurship. Program participants are expected to develop the ability to plan, execute, and manage businesses by utilizing technology. This includes an understanding of business models, digital marketing strategies, and effective resource management. By detailing these objectives, equivalency education programs can provide more detailed guidance for program participants in achieving the technological competencies, creativity, and business skills required in the world of technopreneurship.

Program Participant Identification

Recognize the characteristics or profiles of program participants, including education level, background, experience, and special needs. This will help you structure content and learning methods that resonate with the target

audience (26). In identifying program participants in the design of equality education programs, we need to understand in depth their characteristics or profiles. This includes consideration of participants' level of education, their background, work or practice experience, and any special needs.

Knowing the education level of participants helps in adjusting the level of difficulty of learning materials and curriculum (27). The background of participants, be it related to the industry or sector in which they work, provides insight into the context of the industry and the practical application of the concept of technopreneurship. Participants' work or practical experience becomes a valuable learning resource, enabling them to apply the concepts learned in everyday work situations.

It is also important to identify participants' specific needs, such as the level of technological skills they already have or areas of expertise that need to be strengthened (28). This allows program organizers to provide additional support according to individual needs. Evaluation of learning abilities, including learning styles and learning preferences, guides the preparation of learning methods that are appropriate to the learning characteristics of each participant.

Lastly, knowing participants' career goals, whether it's starting their own business, working in a specific industry, or developing specific skills, helps tailor learning materials to individual career aspirations. With a deep understanding of the characteristics of program participants, program organizers can compile relevant learning content, select effective learning methods, and provide support that suits the needs of individual program participants.

Learning Material Development

Design learning materials that are structured and relevant to learning objectives. The material should cover aspects of technology, creativity, and business skills relevant to technopreneurship. Incorporate different types of media such as text, images, audio, video, and online resources into learning materials to create a multimodal learning experience (29). The development of learning materials in the context of multimodal learning requires special attention to the diversity of media types and approaches used. Material design should ensure that specific learning objectives are met, while still providing an engaging and effective learning experience.

First of all, material design should consider the diversity of aspects of technopreneurship, including understanding of technology, creativity, and business skills. The material should cover key concepts and practical applications relevant to the technology-based business world. The use of different types of media is key in building multimodal learning experiences. This includes text, images, audio, video, and online resources. Text can provide a conceptual foundation, images and videos can provide visual illustrations, while audio can provide an auditory dimension. The integration of online resources, such as links to articles, case studies, or interactive simulations, can enrich content and provide a holistic learning experience.

It is important to consider the diversity of learning styles of program participants in material development. Some program participants may be more responsive to text, while others prefer to learn through images or videos. By blending different media, material design can reach program participants with different learning styles, improving information retention and understanding of concepts.

In addition, material development must also pay attention to attractive visual design aspects. A good layout, selection of appropriate colors, and the use of graphic design elements can help convey information clearly and attract the attention of program participants (3). The integration of technology in learning materials also supports multimodal aspects. Utilizing online learning platforms, interactivity, and other elements of technology can increase program participant engagement and provide a dynamic learning experience. Thus, the development of multimodal learning materials is a holistic effort to create a learning environment that is rich, diverse, and responsive to the needs of program participants.

Selection of Tools and Technology

Selecting appropriate tools and technologies to support multimodal learning. This can include online learning platforms, interactive software, hardware, and access to the internet. The process of selecting tools and technologies in the context of multimodal learning is a critical step to ensure the effectiveness and sustainability of learning. This selection covers various aspects that need to be carefully considered. First of all, the choice of an online learning platform becomes a key element (31). The platform should support the integration of different types of media, including text, images, audio, and video. The sustainability and availability of the platform should also be considered, so that program participants can access it consistently.

Interactive software becomes an important element to increase the engagement of program participants. For example, the use of interactive presentation software, business simulation applications, or collaborative platforms can enrich the learning experience. The software must fit the learning objectives and support the use of a variety of media. Hardware selection is also an important consideration. Ensuring that program participants have access to devices that support multimodal learning experiences, such as computers, tablets, or mobile devices, is a critical success factor. The diversity of devices must also be considered in order to reach program participants with various needs.

Stable internet access is the basic infrastructure in multimodal learning. Program participants must have an adequate internet connection to access various online resources, attend virtual classes, and participate in learning activities that require online connectivity (32). In addition, data security and privacy should also be a focus in the selection of tools and technologies. Ensuring that the platform and software used meet the necessary security and privacy standards is an important step to protect the information of program participants.

In the context of multimodal learning, flexibility of tools and technology is key. Considering the diversity of devices and platform accessibility can increase the participation and comfort of program participants in the digital learning environment. Thus, the selection of tools and technologies is integral to the successful design of multimodal learning, which recognizes the needs and characteristics of program participants and ensures the availability of the necessary resources to achieve the learning objectives.

Learning Activity Design

Design a variety of learning activities, including business simulations, technology projects, creative tasks, online discussions, and group collaboration. Ensure these activities support the achievement of learning objectives (33). In designing multimodal learning, several key aspects need to be considered. First, it is necessary to set clear and specific learning objectives, including understanding of technology, developing creativity, and mastering business skills relevant to technopreneurship. Next, identify the characteristics of program participants, such as education level, background, experience, and special needs, in order to be able to structure content and learning methods that suit the target audience.

The development of learning materials is the next step, by designing structured and relevant material to the learning objectives. This material should cover aspects of technology, creativity, and business skills relevant to the context of technopreneurship (34). The integration of different types of media, such as text, images, audio, video, and online resources, becomes essential to create a multimodal learning experience. The selection of tools and technologies supports multimodal learning, including online learning platforms, interactive software, hardware, and access to the internet. The design of diverse learning activities, such as business simulations, technology projects, creative tasks, online discussions, and collaboration in groups, should also be considered. Ensure these activities support the holistic achievement of learning objectives.

In the implementation of multimodal learning, implement the learning design according to the plan that has been made, and ensure program participants have adequate access to resources and technical support. Evaluate learning effectiveness periodically and use feedback from program participants for improvement. Finally, stay abreast of technological developments and business trends to update and improve learning materials, so that learning remains relevant and responsive to the needs of program participants.

Assessment and Evaluation

Determine the assessment method to be used to measure the progress of program participants. This can include questionnaires, assignments, projects, and technology-based exams. The assessment considers various aspects of technopreneurship capabilities such as technological understanding, creativity, and business capabilities. In multimodal learning, assessment and evaluation have a crucial role in measuring the progress of program participants (35). At this stage, it is important to determine the assessment method that is appropriate to the learning objectives. This method can involve a variety of instruments, such as questionnaires, individual or group assignments, projects, and technology-based exams.

Questionnaires can be used to obtain responses from program participants regarding their understanding of the learning material, the creativity they apply, and the extent to which they can apply business concepts in the context of technopreneurship. The questions in the questionnaire can be designed to cover different aspects of the ability you want to measure. Individual or group assignments can provide a more in-depth picture of program participants' ability to apply the knowledge and skills they learn. Involving projects, such as business simulations or the development of technological solutions, can also be an effective component of assessment. These projects can provide insight into the creativity, technological understanding, and business capabilities of program participants. Technology-based exams are an alternative assessment that can provide a comprehensive picture of program participants' understanding of learning material. This exam can include questions of varying degrees of difficulty, reflecting technological understanding, creative abilities, and the application of business concepts in real situations.

It is important to ensure that the assessment covers various aspects of technopreneurship capabilities, including understanding of technology, creativity, and business capabilities. Thus, the assessment results can provide a holistic picture of the development of program participants in responding to multimodal learning materials.

Flexibility and Accessibility

Ensure that the design of multimodal learning is flexible so that program participants can access it anytime and anywhere according to their schedule and needs (36). Consider accessibility for program participants with special needs, such as accessibility for the disabled. Flexibility and accessibility in multimodal learning design are key to supporting program participants in accessing learning materials more easily and according to their individual needs. Flexibility refers to the ability of program participants to manage the time and place of learning according to their schedule and personal life.

The flexible multimodal learning design allows program participants to study at any time, be it at night, weekends, or during work breaks. This gives program participants the freedom to adapt learning to their own rhythm of life (37). Some program participants may more effectively study at night, while others prefer morning or midday. This flexibility creates a more personalized and customizable learning experience. In addition, accessibility is a key factor to ensure that all program participants can access learning materials without barriers. This includes accessibility for program

participants with special needs, such as disabilities. Multimodal learning designs should consider the use of accessible formats, such as alternative text for images or videos, and accessibility features on online learning platforms.

It is also important to provide adequate technical support, so that program participants do not experience technical obstacles that could hinder their access. Clear guides and tutorials can also help program participants take advantage of the flexibility and accessibility offered by multimodal learning design. With this flexibility and accessibility in mind, multimodal learning design can provide inclusive learning experiences and ensure that program participants can reap maximum benefits from equity education programs.

Instructor Training

Provide training to instructors or teachers to ensure they understand how to implement multimodal learning effectively. Instructor training is a crucial step in ensuring the successful implementation of multimodal learning. This training should be designed to give instructors a deep understanding of the principles, methods, and tools involved in multimodal learning.

Instructors need to understand how to integrate different types of media and technology into the learning process. Training can include an in-depth understanding of the use of online learning platforms, interactive software, and multimedia tools. Instructors also need to be provided with guidance on how to design learning activities that support learning objectives in a multimodal manner (38). In addition to the technical aspects, training should also focus on classroom management in the context of multimodal learning. Instructors need to learn how to provide support to program participants online, manage discussion forums, and provide effective feedback through various communication channels.

In addition, instructors should be provided with an understanding of the diversity needs of program participants. They need to know how to identify the characteristics of program participants, recognize their level of education, background, and experience. This will help instructors devise more relevant and effective learning strategies. Instructor training should also include concepts about assessment and evaluation in the context of multimodal learning. Instructors need to know how to design assessments that fit the online learning environment, and how to utilize digital tools to measure program participants' progress. By providing comprehensive instructor training, educational institutions can ensure that instructors have the necessary skills and knowledge to effectively manage multimodal learning, creating an adequate and competitive learning environment.

Learning Implementation

Implement a multimodal learning design in accordance with the plan that has been made. Ensure program participants have adequate access to resources and technical support (39). The implementation of multimodal learning is a crucial stage in providing a diverse and responsive learning experience. After the learning design is developed, the next step is to implement it according to the plan that has been prepared.

Program participants should have adequate access to a wide range of learning resources. This includes technological devices such as computers or tablets and stable internet access. Ensure that program participants can easily access online learning platforms, interactive tools, and other multimodal learning materials. In terms of technical support, the instructor or support team needs to provide assistance if program participants experience technical difficulties during the learning process. This could include technical guidance, training sessions, or direct access to technical support through an online platform.

Flexibility in execution is also important, allowing program participants to study according to their own rhythm and schedule. The learning activities designed should be accessible and complete easily, either independently or through online collaboration with fellow program participants. As the implementation process progresses, the teaching team can monitor the involvement of program participants and provide feedback as needed. In addition, formative evaluations during implementation can provide insight into the effectiveness of learning design, enabling necessary adjustments to enhance the learning experience of program participants.

Continuous Evaluation and Development

Evaluate the effectiveness of multimodal learning periodically and use feedback from program participants to make improvements. In addition, follow technological developments and business trends to update and improve learning materials (40). Continuous evaluation and development in multimodal learning design is key to ensuring program success and relevance. Periodic evaluations are conducted to measure the extent to which learning objectives are achieved and the extent to which program participants benefit from learning materials. The evaluation process includes data collection, either through questionnaires, exams, projects, or observations, to assess the understanding and application of technopreneurship concepts by program participants. Feedback from program participants becomes an important element in this evaluation, as it provides immediate insight into their experience in learning. This information can be used to identify areas for improvement, adjust learning methods, or overcome obstacles participants may face. In addition to evaluation, continuous development also takes into account the dynamics of technological changes and business trends.

Multimodal learning designs need to be kept up to date to stay relevant and responsive to the latest developments. This involves constant monitoring of changes in the technopreneurship industry, new developments in technology, and market needs. Program development teams can respond to evaluation findings by updating learning

materials, adjusting curriculum, or integrating new technologies that support multimodal learning. Thus, continuous evaluation and development is not only a tool to assess program effectiveness, but also as proactive measures to ensure that programs remain relevant and provide added value to program participants in the face of evolving technopreneurship challenges.

CONCLUSION

Multimodal learning design in improving Technopreneurship Ability in the Equality Education Program in Semarang Regency has contributed positively to improving the skills and understanding of program participants. Through this approach, program participants can access a variety of media types, including text, images, audio, video, presentations, and online resources, thus enabling diverse learning according to individual learning preferences. The results showed that multimodal learning design is effective in achieving learning objectives, such as understanding technology, developing creativity, and mastering business skills relevant to technopreneurship. The combination of media helps program participants to think creatively, identify new business opportunities, and develop innovative solutions in the world of technopreneurship. The conclusion of this study confirms that multimodal learning design not only increases understanding of technology, but also stimulates the creativity of program participants. The Equality Education Program in Semarang District can optimize this approach to prepare program participants with relevant skills in facing technopreneurship challenges. The implications of this research involve continuous improvements to curriculum, instructor training, and the development of technological accessibility to support more effective multimodal learning in the future.

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