

Learning Needs Software Development in Determining Community Learning Needs Priority at the Community Learning Center (CLC)

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Abstract. Community education programs, which implement community empowerment, face challenges to Industry 4.0. To address this challenge, the integration of technology into community empowerment programs serves as a strategic approach to meeting community needs. In Pagerwangi Village, Lembang District, a Community Learning Center (CLC) encountered difficulties in gathering data on community learning needs, necessitating a technological advancement to assist facilitators in data collection and mapping community empowerment program needs for successful implementation. Through the Digital Needs Assessment, facilitators will find it easier to explore, record, process, analyze, and report data. This research aims to create a prototype of the Digital Needs Assessment software that can effectively assist the community in prioritizing their education and learning needs. This research method uses a quantitative approach in the form of descriptive statistics with a total of 42 respondents who are CLC facilitators. It was carried out for 5 months, from February 2023 to June 2023. Based on the research results, digital needs assessment software can make it easier for facilitators to find community learning needs. This study addresses the novelty of integrating technology into community empowerment programs, particularly within the framework of Industry 4.0 challenges. The development of a Digital Needs Assessment software specifically tailored for CLC facilitators in Pagerwangi Village offers a unique solution to bridge the gap between community needs and effective program implementation in a rapidly evolving technological landscape.

Keywords: needs assessment; CLC; learning needs

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INTRODUCTION

Community education programs implement Industry 4.0's adaptive efforts in the field of community empowerment. Ideologically, the process of community education is a process towards empowerment, both at the individual and collective levels. The approach to community education as an interactive movement not only talks about the content (subject matter) but also the methodology and decision-making, meaning that in implementing community empowerment programs, it must be in line with technological advances so that the

program can run effectively and efficiently in making decisions. Recognized and significant is the contribution of community education: (a) reaching the wider community, often capturing disadvantaged communities; (b) pioneering new approaches to learning that are based on community needs; (c) community life experience (participants) as a starting point for decision-making.

To achieve the challenges mentioned above, the role of technology in community empowerment programs is to facilitate the aims and objectives of the community itself (Kato et al., 2024; Zhou et al., 2023). Technology as a strategic approach to meet the needs of society with a wide range, limited by space and time, as well as limited interaction or communication. Because the factor of community empowerment as an educational process is in the gaps or gaps in the problems of human life needs—environmental problems that do not support the lives of the people—on the contrary, people's lives are not conducive to their environment. Community education is education and learning that is rooted in processes of empowerment, social justice, change, challenge, respect, and collective awareness (Namoog & Agyekum, 2024). This process exists within the community, and the community acts as an actor, reflecting the individual and local needs of the developing community. The process of building community capacity is carried out in the form of involvement in decision-making and policy formation within the community (Wagaman et al., 2023; Wahyudi, 2023).

The community empowerment program, as an educational process, has a heterogeneous approach to services, programs, and resources. From a sociological perspective, community education is a complex one because it is related to technique, location, and more than just content. Regarding adult education, consider community education as an ideology, namely "a process of communal education towards empowerment, both at the individual and collective levels. It is an interactive and challenging process, not only in content terminology but also in terms of methodology and decision-making (Biney, 2023b; Nordjo et al., 2023).

The link between need assessment and community education argues that need assessment has an immediate and ultimate purpose. What is meant by immediate is the identification of needs that must be fulfilled immediately. While the ultimate goal directs the activity of collecting information intended for program planning according to the needs they specify, need assessment is directly related to the identification, organization, and documentation of information about the needs that must be met (Al-Ismail et al., 2023; Korpela et al., 2023).

The identification of needs necessitates the application of the appropriate method to ensure comprehensive information acquisition. The goal of community empowerment in community education is to develop a process whereby community members work together to identify problems and seek solutions to these problems (Biney, 2023a). Therefore, a technological approach in the process of identifying needs will assist the analyzer in gathering information and mapping the appropriate community needs (Utomo, 2019).

If an optimal database program supports the processing of needs assessment data on a computer, it can be an effective step. All data and information collected is stored systematically on a computer to be processed or manipulated using software (application programs) to produce information. Defining data includes specifications in the form of data types, data structures, and also the boundaries of the data to be stored. The database plays a crucial role in the information system, serving as a warehouse to store data for subsequent processing (Alam, 2023; Winker et al., 2023).

Since the beginning of the pandemic, it has been reported that non-formal education units, including CLC in Pagerwangi Village, Lembang District, have experienced many problems in collecting data on community learning needs due to strict health protocols and preventive efforts being made so that the pandemic would not spread. Thus, there is a need for technological breakthroughs to make it easier for facilitators to collect data, thereby mapping the needs of community empowerment programs.

Through the Digital Needs Assessment, facilitators will find it easier to explore, record, process, analyze, and report data. Large community populations create heterogeneous needs, necessitating priority analysis of both quantitative and qualitative data (Santoso et al., 2023; Darmawan, 2024). Facilitators can collect data with software that is compatible with smartphones, so manual paper notes are not required, which is an obstacle for them to work in the field. In addition, to avoid many activities in the field, this software can

replace the process of processing and analyzing community needs data, which is usually carried out jointly by a team of facilitators.

Previous researchers examined the need assessment process as the most important component in mapping problems in the community, determining priority needs so as to produce programs that are relevant to community needs (Santoso et al., 2023). One implementation of the community empowerment program to overcome current population problems is the CLC program implemented by the National Population and Family Planning Agency. However, problems were found in the realization of the CLC program due to the lack of synchronization between community needs and program implementation, so that some programs were not fully felt by the community (Wahyudin et al., 2020).

Several things underlie this novelty software, including: 1) being able to understand the specific needs of individuals and community groups (Belete et al., 2022; Rogers, 2019). This software makes it possible to compile learning programs that are tailored to each individual's level of understanding and learning style. 2) With the right data, educational institutions can allocate resources efficiently (Agyekum & Amponsah, 2024). This software will reduce waste and increase teaching effectiveness. 3) Through direct community involvement in the learning needs mapping process (Fagerholm et al., 2021), the community feels heard and their values are appreciated, which can increase their sense of ownership of the educational program being held. 4) Curriculum according to needs (Agyekum & Amponsah, 2024). The software results recommend curriculum development based on empirical data collected through the software.

If an optimal database program supports the processing of needs assessment data with a computer, it is an effective step. All collected data and information are stored systematically on a computer to be processed or manipulated using software so that it can produce information. Processing the data resulting from the needs assessment requires software called a database management system. This software is a system that allows database users to maintain, control, and access data in a practical and efficient manner. Utilization of the Digital Needs Assessment Ver. 1.3 application by implementing community needs can be mapped accurately and can easily obtain regional potential data (Hufad et al., 2023). Digital needs assessment software is currently in the form of a prototype, so it is necessary to test its benefits directly with the facilitator. The purpose of this research is to develop digital needs assessment software that is effectively developed for use by the community in determining priority learning needs for community education at CLC Pagerwangi Village, Lembang District.

METHOD

This study uses a quantitative approach in the form of descriptive statistics, namely interpreting the percentage data from the answers given by respondents (Fatimah et al., 2020). We conducted this research for 5 months, from February 2023 to June 2023. This descriptive statistic is only in the form of the accumulation of basic data in the form of descriptions in the sense that it does not seek or explain interrelationships, test hypotheses, make predictions, or make conclusions (Hasmirati et al., 2023; Rasmussen et al., 2023). We processed the questionnaire results using descriptive statistical methods to generate data in the form of averages, the number and percentage of questionnaires distributed to CLC facilitators in Pagerwangi Village. The data collection technique used a purposive sampling technique, namely that respondents were limited by several provisions, including being active in managing the CLC program and having been facilitators for more than 2 years. Based on this technique, 42 research respondents were obtained. This research was conducted at CLC, which is located in Pagerwangi Village, Lembang District, West Bandung Regency.

RESULTS AND DISCUSSION

This research delves into the development and implementation of Digital Needs Assessment software as a solution to address the challenges faced by community education programs in the era of Industry 4.0. Specifically, this study focuses on the Community Learning Center in Pagerwangi Village, Lembang District, where facilitators encountered difficulties in effectively gathering and analyzing data on community learning needs. Recognizing the urgency of integrating technology to bridge this gap, this research aims to provide a practical tool to empower CLC facilitators in designing and implementing more impactful community empowerment programs.

Digital Literacy Biography of CLC Facilitator's Capability in Conducting Needs Assessment

The digital literacy of CLC facilitators in Pagerwangi Village, Lembang District, was not entirely negative, but it was also found that the knowledge, skills, and attitudes of CLC facilitators were in line with current technological developments. To find out the general description of respondents regarding digital literacy, the researcher describes it in the form of percentage frequency from the number of CLC facilitator respondents, which have been distributed as follows:

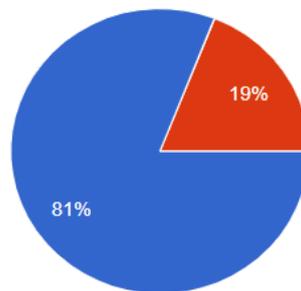


Figure 1. Use of the Internet by the Facilitator

The use of the internet does not only use computer media but also other media, such as smartphones. Based on the results of a survey conducted on 42 respondents, it is known that 81% (34 people) have used the internet in their daily lives. Meanwhile, the remaining 19% (8 people) were not accustomed to using the internet. This means that most of the respondents are familiar with the internet for several activities, such as browsing, downloading, and communicating. However, there are respondents who do not use the internet effectively and routinely; for example, the internet is only used for communication purposes such as Whatsapp.

CLC facilitators in Pagerwangi Village themselves, who are none other than the respondents of this study, revealed that they accessed the internet for the first time at work. This shows that the work environment requires them to be able to utilise technology (Arici, 2024; Theodorio, 2024). Everyone must have digital literacy skills so that they can easily search, find, evaluate, create, utilise, and redistribute this information (Hanik, 2020; Restianty, 2018). Humans are said to be digitally literate if they are able to “use these skills and the appropriate technology to communicate and collaborate with peers, colleagues, family, and, on occasion, the general public.”. Digital literacy emphasizes communication and collaboration as key components.

CLC Facilitator's Knowledge Needs Assessment

Knowledge determines an individual's attitude towards a visible and known object (Mutuyaba et al., 2024; Yadassa et al., 2023). Meanwhile, behaviour is all human activity that can be observed directly or cannot be observed by outsiders. Meanwhile, knowledge can influence a person's attitude and behaviour towards doing

something. Thus, knowledge about needs assessment possessed by CLC facilitators is an aspect that determines behaviour and attitudes, which so far have been referred to as competence.

In the presentation of descriptive statistics in this field finding, researchers refer to 3 categories of knowledge levels, which are summarised in percentage form, among them: 1) the level of knowledge is in the Good category if the value is $\geq 75\%$. 2) enough category knowledge level if the value is $56\% - 74\%$. 3) less knowledge level category if the value is $\leq 55\%$. Based on the results of distributing the questionnaire to 21 CLC facilitator respondents, an overview of the CLC facilitator's knowledge of needs assessment was obtained. in Table 1 below.

Table 1. The CLC facilitator possesses the knowledge and ability to prepare for the needs assessment.

No	Question	Number of Answers	
		Correct	Wrong
1	Competencies that need to be possessed by CLC facilitators in carrying out need's identification	30	12
2	Characteristics of the readiness of CLC facilitators in addressing social and environmental problems	40	2
3	The skills possessed by the CLC facilitator before the identification is carried out	42	0
4	Behavior that shows the ability of the CLC facilitator to carry out a needs assessment of the community	30	12
Percentage		84%	16%

Based on Table 1 above, the maximum score from the questionnaire is 4 questions x 42 respondents x weight 1 = 168. It is known that the CLC facilitator's knowledge about the ability to prepare for self-assessment shows a score of 142 correct statements (84%) and 26 wrong statements (15 %). Thus, the CLC facilitator's knowledge is in the good category, which means that the CLC facilitator has understood the concept of self-readiness when carrying out a needs assessment.

Digital Needs Assessment Software in Developing Learning Needs in CLC

The CLC facilitator possesses the knowledge and ability to prepare for the needs assessment. The software in this study begins with a design as a basic framework and reference, which will be compiled into a more operational model so that it is easy to implement. Digital needs assessment software is the development of an information and communication technology (ICT) approach as a strategy for determining the need for effective learning programmes in accordance with the abilities of CLC facilitators, the majority of whom are aged 30 years and over, by utilising smartphones and computers.

Software needs assessment is disclosed through: (1) planning, namely identifying real problems in the field, analysing problem-solving strategies, and guiding CLC facilitators in planning; (2) implementation, including guiding CLC facilitators in completing tasks that have been designed in the previous stage and guiding participants in collecting data and information related to the needs of the CLC programme; and (3) evaluation, namely evaluation of the process and results of the needs assessment management that has been carried out. The application of digital-based needs assessment for CLC facilitators is based on the knowledge, skills, or competence of CLC facilitators in utilising information and communication technology to collect data on CLC programme needs so that they become a reference for data houses.

The characteristics of the prototype developed include: 1) using web-based software with an internet connection; 2) simple use can take advantage of mobile phones to collect data. 3) The decisions of community leaders are important in determining initial needs assumptions; 4) The involvement of the government, especially the UPTD, is important in determining the budget assumptions needed (especially for government subsidy programmes); 5) The involvement of CLC facilitators is important in terms of determining the required budget. 6) Discussion of programme problems and needs is carried out in a cooperative and

participatory manner; 7) Priority needs become a collective agreement on the basis of considerations such as cost, time, infrastructure, location, sources, and other facilities.

In general, in the development of this prototype, it was agreed upon the criteria for participants to be included, including: 1) mastering technology, namely smartphones and computers or one of them. 2) having resided in the concerned area, I am familiar with the social and environmental conditions. 3) have sufficient time to collect data. In general, the digital needs assessment software developed aims to improve the competence and abilities of CLC facilitators in utilising digital technology to collect data or information on the needs of community empowerment programmes through the CLC ram. In particular, this model aims to: 1) introduce several programmes that have identified community needs to stakeholders or the government; 2) identify community empowerment programme needs based on priority needs; 3) apply a participatory approach in planning community empowerment programmes; and 4) facilitate facilitators CLC to be adaptive to technological developments.

Comparison of Software Usage

The activities of CLC facilitators and village government programmes, as well as the planning process for community empowerment programmes, need to consider various matters such as funding, location, and others based on knowledge and confirmation from the government, community leaders, and nizations. Utilisation of the Digital Needs Assessment Ver.1.3 software is used to accommodate the needs of the community and also the needs of the government, meaning that it pays attention to all aspects of needs, both top-down and bottom-up, as well as being collaborative in nature. Based on observations from CLC facilitators who have used the software and those who have not used it, there are several differences, including:

Table 2. Comparison of Software Usage

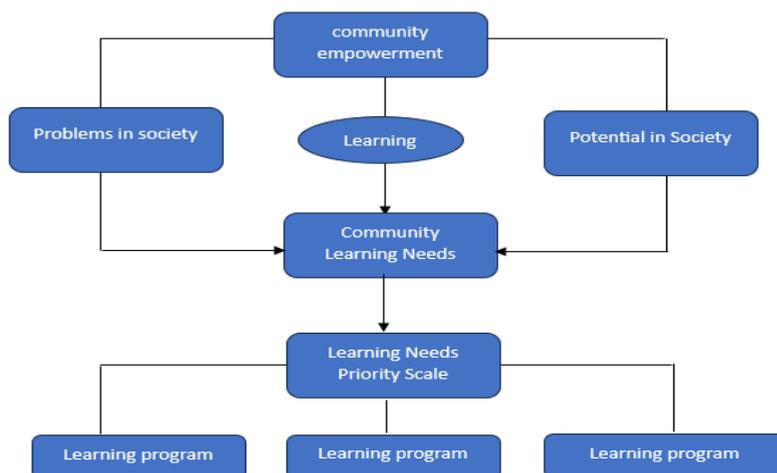
Component	Users Without Software	Software Users
Prepare to do a needs assessment	<ol style="list-style-type: none"> 1.Coordination with leadership to conduct needs assessment. Including receiving a letter of assignment / assignment 2.The facilitator maps out all the needs needed to carry out a needs assessment, including forms, notes, stationery, smartphones for documentation purposes. 	<ol style="list-style-type: none"> 1. Coordination with leadership to conduct needs assessment. Including receiving a letter of assignment / assignment 2. The facilitator maps out all the needs needed to carry out a needs assessment, including preparing software, filling quotas.
Designing a Needs Assessment	<ol style="list-style-type: none"> 1.The facilitator develops indicators based on predictive needs/anticipated needs that are arranged on a form and recorded 2.Carry out data collection by relying on records and forms filled out manually 3.The dominant data collection method uses interviews 	<ol style="list-style-type: none"> 1. The facilitator develops indicators based on predictive/accepted needs and felt needs that are compiled in software and recorded automatically 2. Carry out data collection by relying on digitally recorded instruments 3. Data collection methods are complementary, namely interviews, observation, surveys and FGD
Set priority needs	The facilitator does a manual recapitulation, compiling predictive/predictive needs as needs that represent the whole in general. Data processing takes an estimated time of 1 to 2 days.	The facilitator does a recapitulation automatically, needs are accommodated based on the source of the expected need and felt need. Data processing does not take a long time, processing data in less than 1 minute can display results, including interview results, observation results, survey results and FGD results.

Component	Users Without Software	Software Users
Report and utilize identification results	Reporting is done manually, retyping it into digital data so that it can be stored digitally and displayed in digital form at any time.	Reporting is in digital form, the database has been stored automatically and can be tracked at the time of data collection activities.
The ability of CLC facilitators	CLC facilitator's limited knowledge of assessment	<ul style="list-style-type: none"> • CLC facilitators are involved in the needs assessment process based on the clarity of the CLC program objectives • Ability to prepare a need assessment design • The process of determining priority needs by the CLC facilitator
Use of digital needs assessment	Lack of ability to operate a computer	CLC facilitators have the ability to operate needs assessment software developed for the benefit of community empowerment programs
Data collection	Incomplete and still manual data regarding community needs	The results of data and information collection carried out by CLC facilitators for the community are inputted into instruments that have been programmed into web-based applications
Results of needs assessment	The lack of synchronization between community needs and program implementation has resulted in some programs not being fully enjoyed by the community	The availability of accurate population data. Data and information obtained or field officers/facilitators regarding community needs can be accurately mapped which will be used as the basis for setting priorities, targets and programs to be implemented.
Impact on society	Lack of community participation	<ol style="list-style-type: none"> 1. Increasing community participation in expressing their opinions 2. CLC program needs represent the needs of the community 3. Participate in the management and implementation of all activities that will be carried out at the village CLC on an ongoing basis.

Digital Needs Assessment Software for the Compilation of Learning Needs in CLC

The following describes the schematic model for digitising needs assessment in the context of efforts to develop community empowerment programmes.

Figure 2.Digital Learning Needs Assessment



The assumptions of this digital-based digital needs assessment prototype are an overview of the needs assessment implementation process. This model also describes the abilities of CLC facilitators in collecting and processing data and information on the process of identifying learning needs. The application of this model is carried out cooperatively, namely by encouraging the participation of community leaders, CLC facilitators, and the community in designing community learning needs. Collaboration is a social communication effort built to create a participatory program atmosphere or climate. Empowerment programmes with careful planning will be in accordance with what is needed by the community based on the results of needs assessment activities (Latif et al., 2022; Sholichah & Oktoliya, 2021).

People are stimulated to recognise their abilities so that they are willing and able to: (1) choose and determine the right resources for self-improvement and the environment in an effort to improve the quality of life; (2) take advantage of opportunities to increase productivity so that it has an impact on their income or income in the economic sector; (3) take advantage of opportunities and rights obligations as citizens in the political sector; (4) educate people's lives by utilising access to education; (5) build a healthy life and environment in the health sector; and (6) cooperate with other parties that can expedite all of their business.

The digital needs assessment prototype for this empowerment programme is a continuous process. The cycle repeats continuously every time the implementation of one activity is complete. CLC facilitators, related units, and community leaders will continuously discuss other issues in order to empower the community. We continue to encourage the community to harness the potential in their environment. Therefore, we can assert that the empowerment process is perpetual, ongoing, and requires a cycle of empowerment stages.

CONCLUSION

Digital Need Assessment Software This can increase the competence of CLC facilitators, especially in processing data or information on the results of identifying learning needs. The output of this prototype implementation is the competence of CLC facilitators in designing community empowerment programmes with the principles of collaboration, participation, relevance, efficiency, and effectiveness. By utilising software in the form of a computer or network, it is easier for CLC facilitators to map the priorities of community learning needs so that they can produce programmes that are relevant to community needs. This research contributes to the growing body of knowledge on technology-enhanced community empowerment by demonstrating the potential of Digital Needs Assessment software to enhance facilitator capacity and program effectiveness in rural Indonesian contexts.

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