

Development of E-learning to Improving Knowledge Fishing Capability for Fishermen in East Nusa Tenggara

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Abstract. E-learning is one of the factors that can affect the quality and quality of training, in this case, village assistants for fishing communities. E-learning provides non-formal distance interactions to carry out learning activities by carrying out activities including obtaining learning materials, learning resources, guides or step-by-step guidance or tutorials. The purpose of this study is to present a Village Assistant information system framework for fishermen in East Nusa Tenggara Province, because there is a growing concern that fishermen need empowerment using e-module technology. Our study uses a module development research methodology with quantitative and qualitative approaches. The results of data analysis show that the village companion e-module has the potential to empower fishermen. empowerment e-module suggesting access to information, competence, impact; self-determination, and meaning are components of empowerment for fishermen in NTT. Improved communication, opportunities to access fishing regulations, access to health and safety information, increased confidence related to the capabilities, and opportunities for professional development of fishermen. Potential empowerment results from the use of e-learning for village assistants. Comprehensive e-learning development for fishermen empowerment, because most of the literature approaches the economic point of view of fishermen, not in an organizational setting. This study contributes by providing practical knowledge to fishermen, government, and development organizations in the empowerment process, components, and results of empowerment using e-learning.

Key words: e-learning, fishermen, companion, empowerment

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INTRODUCTION

The fishermen's economic empowerment strategy must cover several areas, including individual capabilities, economic decision-making, access and control over resources, and organizational capabilities (Alami & Raharjo, 2017). To implement these strategies, Alami & Raharjo, (2017) emphasizes that effectively, there needs to be coordinated cross-institutional cooperation from government, private and civil society with the private sector and civil society by ensuring and enforcing gender mainstreaming strategies in fisheries resource management.

The problem of fishermen's poverty is multidimensional so that to solve it, a comprehensive solution is needed, and not a partial solution (Hidayati & Sholichah, 2011). Efforts to eradicate poverty must prioritize programs that take sides and empower the community through economic development and improving the people's economy (South African National Treasury, 2018). The program must be realized in strategic steps directed directly at expanding the access of the poor to development resources and creating opportunities for the lowest-income communities to participate in the development process so that they can overcome their backwardness conditions (Wignaraja, 2003).

Common conditions and problems experienced by fishermen are as follows: coastal villages, basic service facilities including physical infrastructure are still limited, environmental conditions are poorly maintained, which do not meet the requirements of health standards, low society, because technology does not support large-scale fisheries, ownership of fishing equipment limited, equity problems due to the scarcity of financial institutions, education, and knowledge owned is low, can be.

First, the national program for empowering independent communities. Second, the family of hope program (PKH); third, other government programs aimed at increasing access of the poor to sources of micro and small business capital, rural electricity, land certification, microcredit, and others. Fourth, the formation of village assistants (Shalfiah, 2013).

Empowerment of rural communities, in this case, village assistants, is an integrative process involving many parties in building the initiation and motivation of rural communities to identify, understand, and solve problems faced to achieve social and economic change (Korten, 1980). Currently, fishers and other marginalized communities have almost the same problem: sing information technology to access knowledge (Triwardhani & Chaerowati, 2019). The use of internet technology in education and training

needs to be encouraged as one of the innovations in the use of learning media and learning resources for fishers (Triwardhani & Chaerowati, 2019).

Empowerment of coastal communities is one of the new trends in the development paradigm after a long time the marine and coastal areas have become forgotten areas in development in Indonesia. So far, development in Indonesia has been very land-oriented and more specifically heavily oriented towards the heavy industry.

Various forms of applications and facilities available on the internet can be utilized optimally to improve village assistants' quality, and quality of learning develops coastal communities (Pappas et al., 2019). In addition, it can also facilitate learning activities when viewed from the aspect of media use. One of them is e-training. E-training uses T-based or internet-based learning and training media (Al-Fraihat et al., 2020). This means that E-training will be one of the factors that can affect the quality and quality of training, in this case, village assistants for fishing communities.

Persistence in structuring E-Learning has become an increasing subject in recent years (Chiu & Wang, 2008). Various theoretical models already exist that offer new offerings regarding the determination to launch (Lin, 2011). The advantage of the learning media aspect is that e-training can also increase the number of activity interactions because it is not limited by a tight schedule (Arkorful & Abaidoo, 2015). The application of an information system that can accommodate all information related to fisheries in coastal areas has a good impact (Darmawan et al., 2021).

E-training can be used as an alternative that can provide remote interaction (Hofer et al., 2021). In a non-formal way, to carry out learning activities by carrying out activities including obtaining learning materials, learning resources, guides or guidance or tutorials in stages (Kumar Basak et al., 2018).

E-Training itself belongs to e-learning through a collection of educating (content, curriculum, training design) used to assist town aides in accomplishing educating objectives as a problem to improve their abilities and efficiency, delivered digitally by mouth, in writing, illustrations, computer animations, video clips. or a mix (Arkorful & Abaidoo, 2015).

The e-training application system in its use also needs to be considered, whether the system created can meet the needs of its users or vice versa. If the process of developing the application system, it is not following the existing rules, then the quality of the application system will also be difficult to say is good. To know the quality of the application system

created, a measurable value is needed (Pressman, 2009).

The application of e-training can improve knowledge, skills, and attitudes. E-training is also an improvisation of productivity, independence, and competitiveness of village assistants. So that the community can play a role as the subject of development to realize regional prosperity and development. (Mukherjee, 2016).

Therefore, the e-training program must be dynamic, sustainable, able to anticipate the community's needs and the job market, and can be implemented effectively and efficiently to create the quality of human resources expected in coastal areas. This study aims to apply e-training to increase knowledge, skills, attitudes and productivity, independence, and competitiveness of village assistants as part of the community to play a role as development subjects to realize their welfare and regional development. Therefore, the e-training program must be dynamic, sustainable, anticipate the community's needs and the job market, and be implemented effectively and efficiently to create the expected quality of human resources.

METHODS

This study is a mixed-method approach with the core education and community development (Mertens, 2014). Apply e-training to increase knowledge, skills, attitudes and productivity, independence, and competitiveness of fisherman through village assistants as part of the community to play a role as development subjects to realize their welfare and regional development. The data was collected using a sample objective and data analysis using descriptive analysis (Bhattacharjee, 2012). This study was based on a sample survey of 30 mentors from several locations selected for a closer study, 100 e-learning users through a learning management system (LMS).

The qualitative data in this study is based on an interpretive approach that studies human behavior in operating and developing complex IT systems, taking into account the surrounding social and business context. The phenomenon of the development of the use of complex e-learning is a dynamic socio-technical process. Data was collected through semi-structured interviews. This method is very suitable for intensive and in-depth investigations (Leavy, 2020). Interviews provide more information when a study aims to explore where, when, how, and under the circumstances a situation occurs. Kim et al. (2017) also find benefits in interviews because it allows researchers to select and control research participants resulting in more valuable data.

The quantitative analysis measures attitudes, behavior, opinions, and other variables to support or reject the premise in this study, namely an understanding of metacognitive about e-learning that has been carried out, namely economic problems. This is done by collecting numerical data, which is easy to measure to identify statistical significance. Data were collected using closed, such as Likert scale or type of choice questions and presented descriptively (Walliman, 2010).

The research and development approach, according to (Gall et al., 2006), is used to create e-learning with the following steps:



Figure 1. Process Development E-Learning

RESULTS AND DISCUSSION

The collection of research data collection was carried out utilizing group discussion forums involving a mentor. The description of the results of the accompanying group discussion in the use of the E-Learning learning program shows the tendency of the facilitator to give his opinion on what material is suitable for fishers in e-learning. In facilitating the analysis of discussion group forums, descriptions are carried out on each statement item on each variable.

Concept analysis explores with a scientific approach. the summary of the material is described through the characteristics of the indicators needed by fishermen and up-to-date teaching materials. Facilitators and facilitators discuss together and formulate materials. The results of the questionnaire are described as follows.

Table 1. Identify the needs of fishermen

E-learning Materials	Actual	Problematic
Maintaining the quality of fish on pole & line boats	91	86

Fishing standards on board	77	71
Techniques to prevent fish quality degradation	88	85
Handling and use of live fish bait	84	86
Environmentally friendly fishing code of ethics	92	77
Safety on board	70	86
Self-registration and registration of ships	70	77
Recording of fish catch data	82	77
Average	81,8	80,6

The results of the needs analysis include several criteria as an innovation model. The first, e-training as a guideline for village assistance in empowering fishing communities in the coastal areas of NTB can develop with focus group discussion. Second, human resources who have the skills, knowledge, and experience will develop the e-Training model. The third is developing a mobile learning-based clinical supervision model.

As the development of e-learning material, implementing fishing business is an activity that is primary production. The material also refers to the offshore community in NTT at first catching fish and another marine biota from shallow waters, rivers, lakes, and along the coast. Fish have not been caught or very rarely caught because humans do not have the equipment to catch fish or take shellfish or the like in shallow waters or around the coast. Fishermen in NTT only need fish, shellfish, or other biotas for their own needs and are directly consumed through special storage or handling processes so that food products can be stored longer. Along over time, the human population is increasing which results in an increasing need for food, including fish. The shift in the purpose of fishing activities has resulted in the fishing business having various fundamental aspects that need to be considered in depth.

The development produces learning tools in the form of e-learning modules. Furthermore, the results of the fishermen's e-learning module validation include contextual validity, understanding validity, material validity, and coherent material that adapts the concept to the material. The fishing community of NTT has a very strong, diverse network of patron-client relationships, and covers many aspects of socio-economic life. Such relationships are formed because of the consequences of the characteristics of work as fishermen as well as environmental conditions and the nature of natural resources that become the economic basis of fishermen's lives (Darmiawati, 2016).

The characteristics of these characteristics are the availability of fishery resources that depend on seasonal fluctuations, and various risks that occur in fishing activities. Patterns of patron-client social relations between owner fishermen and labor fishermen are characterized by working relationships and the exchange of economic resources. Proof of the validity of the content of the material is carried out by experts using observation sheets. Then these results are used to calculate the magnitude of the content validity coefficient of Aiken's V. The magnitude of the validity coefficient is acceptable if the loading factor is 0.70 (Azwar, 2011).

Table 2. The Validity of Materials Learning

Instrument	Coefficient V	Information
The material with the needs of fishermen	0,83	Valid
Update and actual material	0,82	Valid
Material according to scientific	0,85	Valid

Based on Table 3, it can be seen that the learning material has a high V Aiken's content validity coefficient, namely of 0.7. After the contested material is validated, the material is then displayed in e-learning in the form of modules, videos, and assignments.

With the development of computer systems and interaction technology, the traditional andragogic strategy of adult education and learning was encompassed online learning atmospheres. Jeong et al. (2019) explained that computers and other digital technologies can provide many conveniences for collaborative learning. Some attention needs to be paid to those aspects of the online class that have led to its success as one of the most efficient learning environments (Stern, 2018).

There are some basic features involved as complies with: (1) Motivate independent learning. Web-based learning is independent. On this basis, the learning environment must provide learning products that are customized and adjusted to the needs of trainees. Independent learning can overcome some learning obstacles, such as stress and anxiousness, reduced self-confidence, reliance, and so on (Dhawan, 2020). (2) Advertise communication between instructor and trainee, trainee and student, and maximize online trainee involvement in online classrooms. Communication can make trainees share experiences and develop their knowledge (Zalat et al., 2021). (3) Helping contextual learning and

conversation. In learning tasks, various trainees with various social histories have various understandings of the same knowledge (Rabiman et al., 2020). So, the contextual conversation is extremely important. (4) Provide live and spontaneous learning sources for learners (Park & Kim, 2018).



Figure 2. Fisherman Learning LMS

The application of e-learning, in this case, is to be used by village assistants. E-learning requires evaluation in its development. Users give their perceptions after using e-learning in terms of Using frequency interactivity, effectiveness, enjoyable to use, active learning, and help to teach. Quality attribute cumulative satisfaction is defined as the user's effective condition based on the overall assessment of quality attributes (Lin, Chen, and Fang 2011). Therefore, the cumulative satisfaction of quality attributes has a positive impact on the user's attitude and intention to continue (Lin, Chen, and Fang 2011). The study of the determinants of users' continued intention in the E-Learning framework shows that satisfaction and perceived quality as significant factors behind the intention to use the E-Learning mechanism (Roca, Chiu, and Martinez 2006).

Table 3. Evaluation E-Learning Results

Advantages	Percentage
Using frequency	80
Interactivity	83
Effectiveness	85
Enjoyable to use	80
Active learning	76
Helpful to teach	81
Average value	79,1

Companion data has several aspects that become the focus of the question, namely the use of e-learning, presentation of material, and display. The e-learning aspect contains questions about ease of use, the economic value of use and use (M. M. Alam et al., 2021). The results of the assistance for the use aspect got a percentage of 79.91%, meaning that e-learning is easy to use, can make learning fun, and

relatively does not require a lot of cost in its use. Results The effectiveness of presenting presentation materials is 85%, meaning that the presentation of material on e-learning is good. The results of the response aspect analysis for graphic design in e-learning get a percentage of 80%, meaning that graphic design has a good and attractive appearance.

The fisherman's e-learning platform system is following web face-to-face learning and the tools included in the system and is provided to administrators, students, or facilitators according to their activities related to the system (Khan et al., 2004). There are three types of users: administrators, students, and facilitators. To login to the system, all these users have to type their username and password on the system login page (M. J. Alam & ShahzahanAli, 2020). After logging into the system, administrators can use different management tools to customize key user features and manage other personal information (Santiago et al., 2020).

The process of using e-learning is almost the same as the use of traditional learning (Muhisn et al., 2019). Some facilitators do not like the way e-learning operates because they think using the technology is still complicated (Khaldi & Erradi, 2020). After all, it is difficult for them to operate the system. However, they think the material content should be deepened, and contextual discussion forums are very helpful in the mentoring process (Muhisn et al., 2019).

Most of the students and mentors also think that e-learning and discussion forums can help students relax, reduce their fears and increase their self-confidence (Mohammed, 2017). The questionnaire shows that most fishers and facilitators do not find it easy to adapt when virtual classes are their main educational tool. Because according to their method, they cannot start face-to-face learning and discussion.

Learners and mentors think that they have mastered some new learning skills through the use of e-learning. These skills include practicing in a chat room, operating a whiteboard, asking questions in discussion forums. According to the questionnaire, most students and facilitators believe that e-learning can effectively support empowerment activities for fisherman's learning, that e-learning can effectively encourage students to learn actively.

CONCLUSION

E-learning for fishermen uses the LMS system as access that develops fishermen's fishing knowledge. The results showed that the development of fisherman's e-learning materials was divided into several parts including maintaining the quality of fish on pole & line vessels, fishing standards on ships, techniques

to prevent fish quality degradation, handling, and use of live fish bait, environmentally friendly fishing. code of ethics, safety on board, self-registration and registration of vessels, and recording of fish catches. Fishermen's e-learning evaluation data enjoy a high level of interaction with their friends and mentoring when using fisherman's e-learning. The facilitators and experts agree that the environmental praise is to encourage the empowerment of fishermen using e-learning to access education, be open to the world, and take advantage of benefits that are in line with the needs and circumstances of fishermen. Technology affects all aspects of society positively and has affected the opportunities for fishermen in NTT to master technology and learn and work.

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