



Bamboo Woven Websites for Elementary School Students through Social Collaborative Learning Approach

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ABSTRACT

The effectiveness of cultural recognition through a collaborative social approach adopting the role of technology in preserving culture to elementary school students is undeniable. Hence, this study aimed to develop a bamboo woven educational website using the same approach. This study applied an explanatory research design approach. Quantitative data regarding website development and evaluation of website trials were detailed. This was to determine the accuracy of the website in terms of its development and implementation for users. 39 students, who are close to the bamboo woven culture in the Jepang regency of Kudus, Central Java, Indonesia, were used as the subjects. The instruments involved for data collection were observation, documentation, and questionnaires. The questionnaire validation was carried out by four experts. Meanwhile, the data analysis adopted descriptive statistics to determine the analysis of student needs and responses to the bamboo woven education website. The implementation of the bamboo woven educational website resulted in 87.5% of the respondents acknowledged the ease of use, 81.25% believed that that website enhanced the understanding of the knowledge of cultural concepts within the community, 81% determined that the features used were according to children's needs, 78% considered that fun learning methods were utilised, and 67% verified the sustainable use of the website. Bamboo woven education websites can be used to form skills-based teaching curricula. The displayed information on bamboo woven education websites give impact on sustainable development in facing sustainable cultural and economic challenges.

1. Introduction

The bamboo woven culture is the result of bamboo-producing communities in tropic area. Bamboo woven creations are developed to fulfill the needs of Indonesian household utensils. Bamboo woven crafts are cultural products with aesthetical, ethical, and logical values that are

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related to resources used as a commodity [1,2]. The creations of woven bamboo include household utensils, souvenir products, and home decoration ornaments.

The creations of woven bamboo are arranged by the community to become a superior commodity in the cultural and economic sectors. The created cultural products are inherited through the family from social, cultural, and economic aspects. The growing bamboo woven crafts are developed as local works by adapting to the needs, novelty, uniqueness, and originality of a work. In addition, local crafts become the community's identity with innovations that prioritise the diversity of quality, processes, and craft creation systems. Innovation will build technological progress, cultural dynamics, and changes in the economy of society [3-5].

Factors that support the development of bamboo woven craft products consist of the quality of natural resources, the ability of human resources, the courage to design, and mastery of technology. The need for innovative creations of bamboo woven crafts has not been balanced with efforts to maintain superior products through sociocultural preservation among generations. This old pattern of cultural enculturation developed low efforts to preserve skills from generation to generation [6,7]. The community's perception in developing bamboo woven craft skills is not supported by the community's culture. Only the monological type of society that accepts the results of innovation without generating innovation lose ability to maintain its culture. The process of cultural preservation constrained the awareness of building community social skills. The pragmatic point of view causes families and communities to lose reasons for urging children to continue the bamboo woven culture.

The pandemic was the momentum of transferring knowledge from the environment due to the delay in face-to-face learning. Learning during the pandemic resulted in the decline in 60% of the children's knowledge [8]. Thus, it was the role of the community and educational institutions in providing an understanding of the social potential through collaborative learning to manage natural resources. Many students have made significant success with collaborative learning, according to past study findings, and most students claim that integrating collaborative learning makes their learning simple and interesting, and dramatically increases their learning ability [9]. Collaborative social learning involves educational units and the local community of weaving craftsmen to develop a common goal of cultural preservation.

The collaborative social learning process is an open learning process that involves interactive participation, democratic learning, constructive conflicts, and various sources of knowledge. Learning facilities through face-to-face and digital websites with various information from local communities and practical learning experiences are characteristics of collaborative social learning [10–12]. It is the community's effort to balance children's knowledge during a pandemic so that they are able to respond appropriately to adversity in social, economic, and cultural aspects. Schools can change the pattern of centralised education into collaborative education that involves the environment as an educational centre. Knowledge of cultural history and skills in mastering the elements and design principles of bamboo woven can be transferred through technological adaptation.

Public awareness of cultural sustainability is believed to be adapted through an informative system based on product visualisation [1,7]. A website can visualise the materials, train skills through video tutorials, and evaluate community activities. Learning through technology, in particular, has been shown to motivate students to actively participate in their studies [13]. The development of adapted bamboo woven educational technology through websites is aimed to (1) introduce bamboo woven education to a wide audience, (2) provide active community participation in social education through bamboo woven skills, (3) seek to transfer skills to children in bamboo woven craftsman circles, and (4) establish collaborative education supported by schools.

2. Methodology

2.1 Design of The Study

The cultural research was conducted on woven bamboo artisans in the Jepang village of Kudus regency, Central Java Indonesia. It is a social reality that can be raised in the context of education. The creative crafts of woven bamboo occupied by woven craftsmen constrain several problems, such as appreciation of cultural products, cultural practices, social practices, cultural sustainability, including efforts to develop economics and technology. Therefore, an innovation is needed to transfer knowledge of cultural-based creative crafts to children through technology. Therefore, the method used in this applied research was explanatory research design [14,15]. The quantitative data were detailed to determine the accuracy of product development and implementation, which was supported by observing the impact of product development in elementary school students. The stages of the research can be seen in Figure 1.

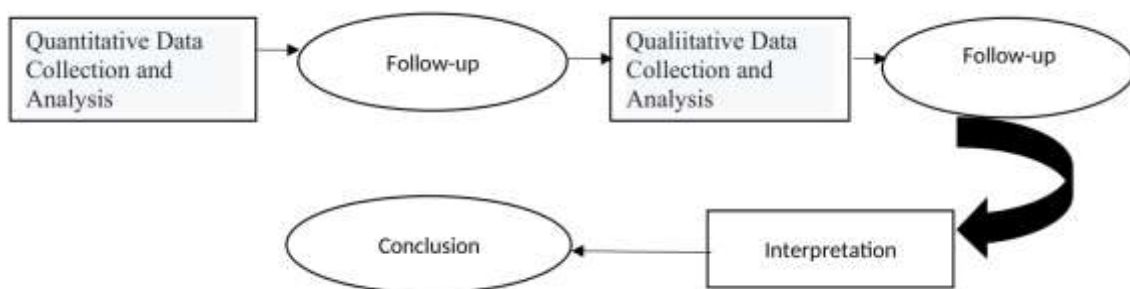


Fig. 1. Explanatory research design

The first stage was a needs analysis carried out via questionnaires on awareness of cultural preservation, knowledge needs and technology adaptation for students, as well as schools and communities of bamboo woven artisans. The questionnaires were used to determine the types of learning applications that allow learning about bamboo woven cultural heritage. The needs analysis survey was conducted on five woven bamboo artisans, 39 students, and four teachers from a fourth-grade elementary school.

In the second stage of the website design, the researchers designed workflows and work systems used in the bamboo woven educational websites. The design stage applied the principle of ease of access for elementary school children, teachers, and the community. The amount of data needed in this case included access to the culture of the community of bamboo woven craftsmen, cultural products of woven bamboo, cultural discussions, and evaluation of culture-based learning programs.

The third stage was identified as data import, where the analysis results were imported into an application supported by data, logos, and images that were ready to be imported into the application. Next, a website-based application was created by entering program listings and setting the display on the system. The next stage was connecting the website to the database and entering the data into the database. Further applications that could be run through the device were built. Then, the website testing stage was carried out by implementing the use of students, teachers, and the community to test the strengths and weaknesses of the applications used.

2.2 Study Participants

The subjects of this research were elementary students in SD 5 Jepang Kudus. This is because the students are close to the bamboo woven culture. A purposive sampling of 39 fourth grade students

were involved. The indicators used were students who know the bamboo woven culture, participate in the community activities of bamboo woven craftsmen, and have an appreciation of the bamboo woven culture.

2.3 Instruments for Data Collection

Data collection techniques included observation, documentation, and survey. The survey questionnaires used a Likert scale with the range of 1-5. The validation of the questionnaires was carried out by four experts (culture, education, technology, character). The result of the verification covered three fields of 20 statements. Sentences were corrected by the experts to be simplified so that the students could easily understand and fill out the questionnaires. The statements developed in the questionnaires include the concept of appreciating cultural ideas, participating in social activities, and appreciating the bamboo woven culture using bamboo woven education websites.

3. Results

3.1 Needs Analysis Stage

The analysis of children's needs in cultural-based learning of woven bamboo artisans was based on the low opportunity and awareness of children's learning of the culture in their environment. The children's need for bamboo woven education was based on the data analysis regarding awareness of knowing and developing bamboo woven skills, being able to carry out the production of woven bamboo, preserving woven bamboo, as well as instilling cultural values from the bamboo woven community. The data from the analysis of the student needs on Table 1, are as follows

Table 1

Analysis of student needs in cultural-based learning of bamboo weaving craftsmen

| No | Need of Analysis | Percentage |
|----|--|------------|
| 1 | Willingness to know and develop bamboo weaving skills | 92.2% |
| 2 | Carry out the production process of woven bamboo | 71.79% |
| 3 | Maintaining the sustainability of woven bamboo | 94.9% |
| 4 | Instilling the cultural values of the bamboo woven community | 77% |

The process of knowing the skills of bamboo weaving can be formed by opening oneself to the surrounding environment. Various activities carried out by the community are a means of learning media for children. Therefore, visualisation of bamboo woven activities requires technology as a contemporary learning pattern. Willingness to try in producing woven bamboo is an activity that must be created in the students' learning process [16,17]. When they have tried it, creative ideas in work can develop bamboo woven innovations. The decision to respect a culture oriented towards product conservation in the inheritance of community social values can be realized along with the series of experiences that children have carried out.

Meanwhile, the role of community in supporting the success of children's learning is analysed with the capacity of the community as an information agent. Needs analysis of role community in the development of culture-based learning is a form of the need for information transfer from learning resources to children's learning subjects. Hence, the bamboo woven educational process was carried out based on data analysis regarding a concern for culture and education has an effort to understand and promote collaborative education and culture, develop product creations according to expertise,

as well as develop technology-based product creations. The results of the data from the community need analysis are as follows (Table 2)

Table 2

Analysis of community needs in cultural-based learning of bamboo weaving craftsmen

| No | Need of Analysis | Percentage |
|----|---|------------|
| 1 | Concern for culture and education | 62.5% |
| 2 | Efforts to understand and promote education through a collaborative culture | 56.25% |
| 3 | Develop product creations according to expertise | 75% |
| 4 | Commitment to pass on culture to the younger generation | 100% |

Concern for culture and education can be done through visual promotion within the family environment and its surroundings. This visual promotion dispels the perception of the complexity of the work, the wasted time in the production process, and the low level of commercialisation to fulfil needs. Learning is a solution to understand the children by avoiding negative perceptions of the weaving culture continuity. Therefore, product creations that are learnt by the students should be able to compete and meet the demand of today's generation. Not less important is the community's consistency and commitment to sustainable weaving activities, so that children feel accompanied in their project activities [18,19].

The implementation consistency of activities is anticipated through the collaboration of educational units that have a programmed curriculum. Thus, the collaborative process of bamboo woven education was carried out based on the data analysis regarding a concern for environmental-based education, active in the implementation of environmental-based collaborative education, as well as support of educational facilities to implement collaborative education. The data from the analysis of student needs are as follows (Table 3)

Table 3

Analysis of the needs of education units or teachers in the development of culture-based learning

| No | Need of Analysis | Percentage |
|----|---|------------|
| 1 | Concern for environment-based education | 75% |
| 2 | Active in the implementation of environmental-based collaborative education | 87.5% |
| 3 | Support of educational facilities for the implementation of collaborative education | 100% |

The learning process that involves children with the environment is a challenge in itself. This is because children are central in learning. Meaningful education is an education that provides learning experiences for children who are ready to face social problems in each period of society change [20-22]. The educational curriculum that supports solving social problems is a benchmark for the sustainability of community culture-based education programs. The high percentage of the development of bamboo woven educational needs can be realised by adapting online learning designed through the websites.

3.2 Website Development Stages

The design of the website used an application of file workflow on computer and android devices. The bamboo woven educational web application design was based on the low awareness of knowing and the ability to develop bamboo weaving skills for elementary school students in the community of bamboo woven craftsmen. Furthermore, the data for elementary school-aged

children, teachers, and the community in the bamboo woven craftsman environment were recorded. Website development stages explain in Figure 2.

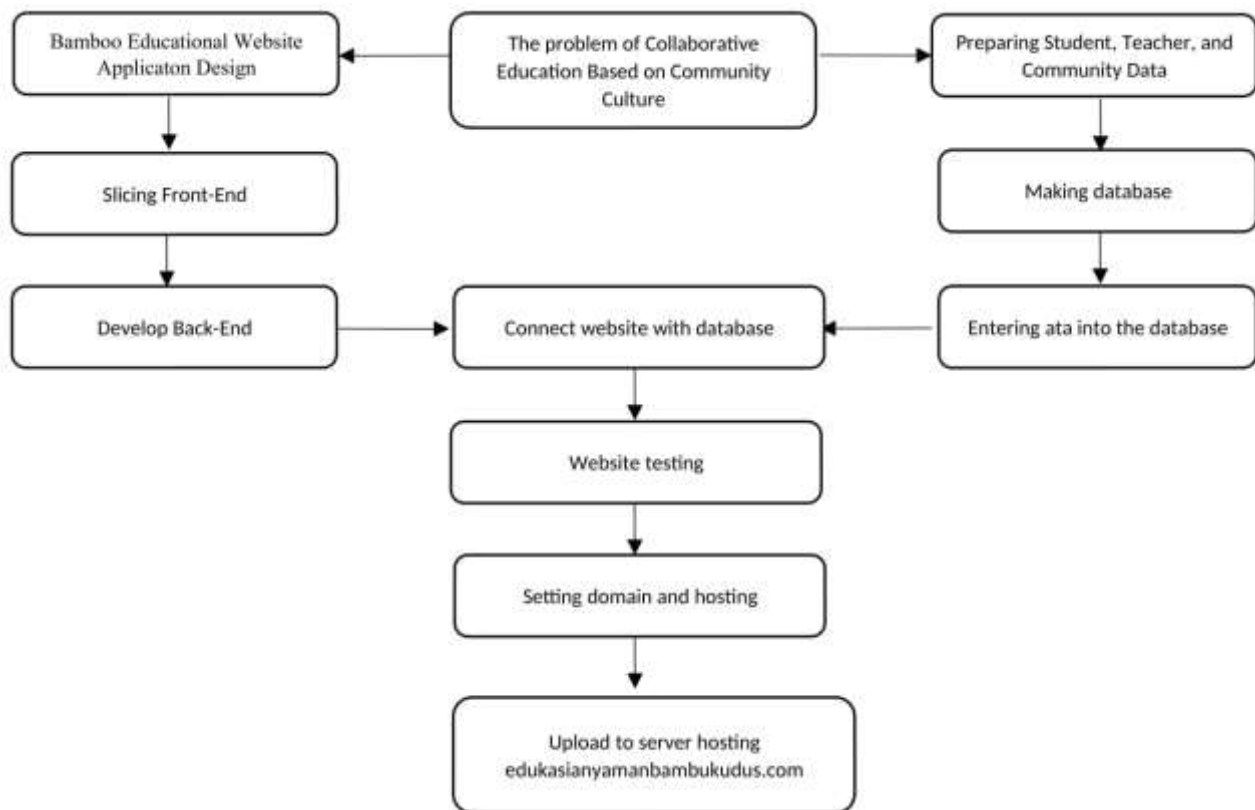


Fig. 2. Application development stages

Front-end is a website development that uses HTML, CSS, and Javascript lines of code to produce an attractive appearance. Back-end is develop code that works behind the scenes of the system that functions as a liaison between the database and the website.

The website was planned by looking for information on the needs of the learning process, analysing the users' character, as well as student learning environment. The collected data were used to prepare user data and linked between the databases and the website layout [23-25]. Furthermore, what users need on the website, which was related to the information about bamboo weaving, was presented in the form of veranda layout, profile (bamboo woven culture), study rooms, public publications, discussion forums, and output layouts. At the web-testing stage, the development of bamboo woven education was illustrated through a website on social science learning. The created website database was entered on the server [26-27]. Data consisted of module texts, videos, pictures, assignments, and discussions were uploaded on the educational dashboard of anyamanbambu.com. The use of the web is described in the following flowchart on Figure 3.

The website of Kudus bamboo woven educational, which was developed for learning, refers to a collaborative learning model for elementary school students. It is designed with social science materials that are accessible, fun, practical, communicative, and flexible. Children can learn through modelling and technology-based interactions to find information and explore website pages. The website is able to reconstruct knowledge from discussion activities, practices, and problem-solving of children's adaptive behaviour towards culture. The website is designed to make it easier for children to get a visual culture of bamboo woven. This visual culture has an impact on children's skills in digging up information about products, manufacturing techniques, designs, product creativity, and

social values. The application of technology in bridging knowledge is significant in distance learning instruction. Learning practices that demand theoretical understanding and direct knowledge give rise to digital learning technology as an alternative to learning outcomes. Visual understanding has an impact on students motivation and learning outcome so that website development is in accordance with student visual needs [31–33].

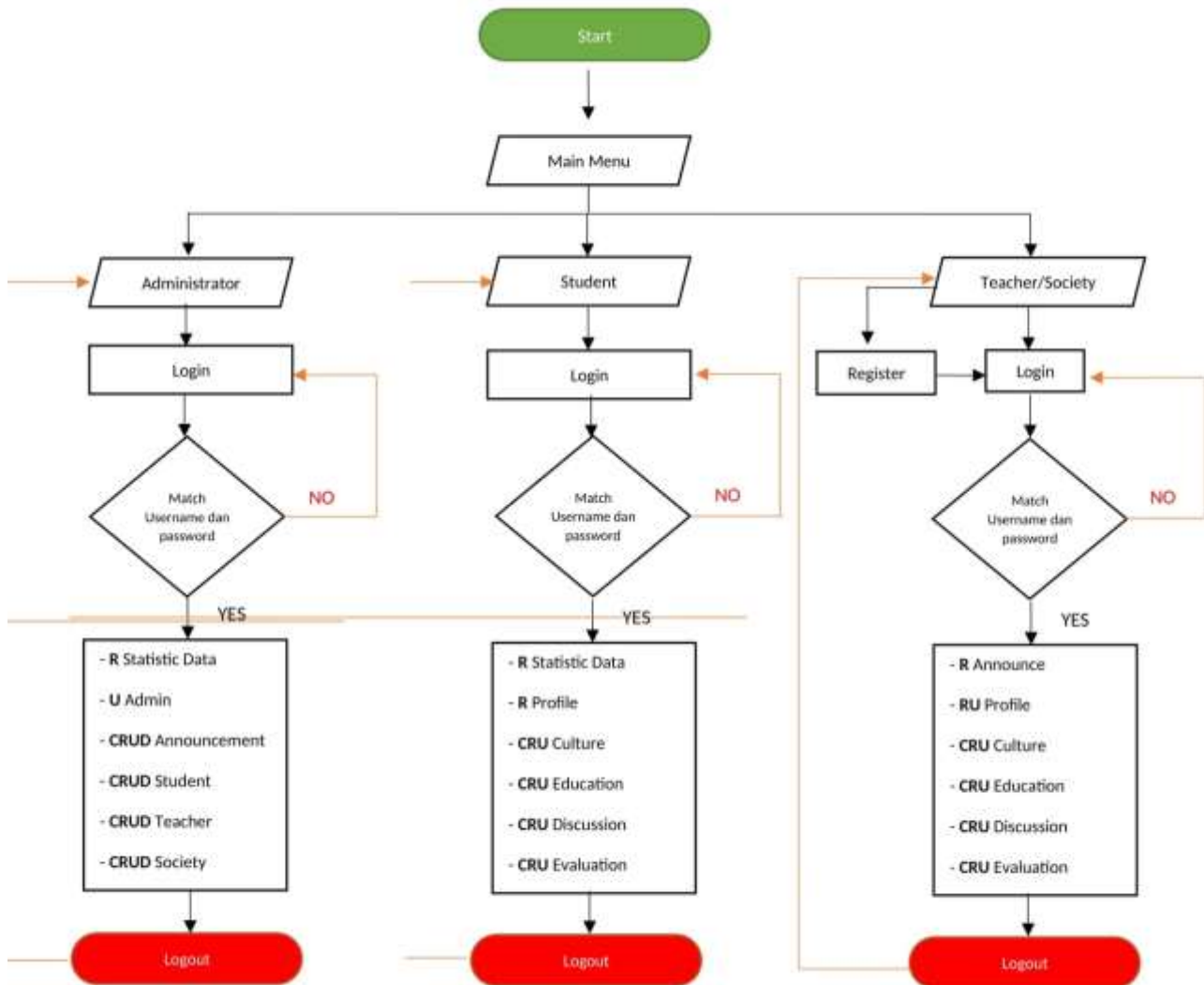


Fig. 3. Flowchart model

The implementation of collaborative learning using a website is designed with a model of student involvement and study groups to solve problems with activities. The learning steps that can be applied to children through collaborative education include: (1) establishing a learning forum, (2) presenting problems on the website, (3) assigning and discussing problem-solving with activities to produce cultural products in accordance with the instructions that have been described on the website, (4) learning practices in a cultural environment, (5) appreciation of student-generated cultural skills, (6) social behaviour towards cultural sustainability, and (7) communicating cultural problem-solving as a form of awareness of cultural preservation. The appearance of the bamboo woven educational website that is developed can be seen in the Figure 4.



Fig. 4. Appearance and various features on the website

3.3 Website Development Stages

The bamboo woven educational website was tested with 39 students as website users. They were from the fourth grade of elementary school. They were chosen as they are close to the bamboo woven learning environment. The results of the study were in the form of children's responses to the bamboo woven educational website, which is described in the following graph (Figure 5):

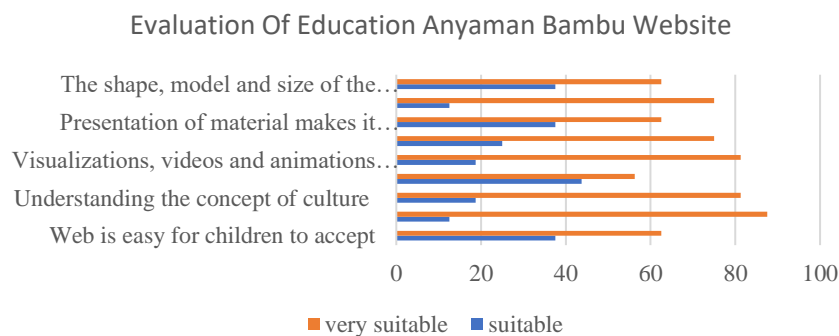


Fig. 5. Evaluation of the bamboo woven educational websites

The above graph displays Kudus, i.e., the bamboo weaving educational website. 65% agree that it can increase students' learning and understanding of the knowledge, attitudes, and skills of the bamboo woven culture. The website was claimed as very easy to use as 87.5% of the children were able to access the website independently, find the learning materials, use learning media, and discuss their findings. The learning materials about bamboo woven culture could also be understood by

81.25% of the respondents as they knew the socio-cultural values applied in the society. 78% of them felt that problem-solving and learning experiences about a culture are increasingly fading in the society, but can be resolved. Meanwhile, the visualisation of images, videos, and texts can help cultural understanding by 81%. The bamboo woven educational website is interesting for students to learn using language, visuals, and learning animations because 78% of the respondents considered them as fun learning methods. 67% believed that the bamboo woven educational website can be used sustainably as the discussion process and material development are carried out regularly.

This is in accordance with [28,29], that in order to restore the culture of bamboo woven, we can collaborate with community knowledge through digitising bamboo-weaving skills to restore weaving culture to the community's children. In addition, the digitised knowledge and skills of woven bamboo can also be used to form skills-based teaching curricula. Such learning will have an impact on sustainable development (Sustainable Development Education/ESD) in facing sustainable cultural and economic challenges

Responses were obtained from the students' learning process using the educational bamboo woven website, then questionnaires on attitude towards culture were evaluated. Several aspects of cultural value understood by children after using the website include: (1) understanding the idea; 82.75% of the children were able to know the concept of woven culture, explore ideas into action awareness, and show ideas in cultural reality, (2) show social participation; 78.32% of the respondents believed that cultural differences in society can be appreciated, adapted, and developed to solve cultural problems in the society, (3) respect norms that apply in society; 82.87% believed in the existence of good and bad values within a community rule, able to behave in accordance with norms, know the impact of cultural behaviour, and able to implement values in social life [16,30]. Understanding cultural values with bamboo weaving educational website explain in Figure 6.

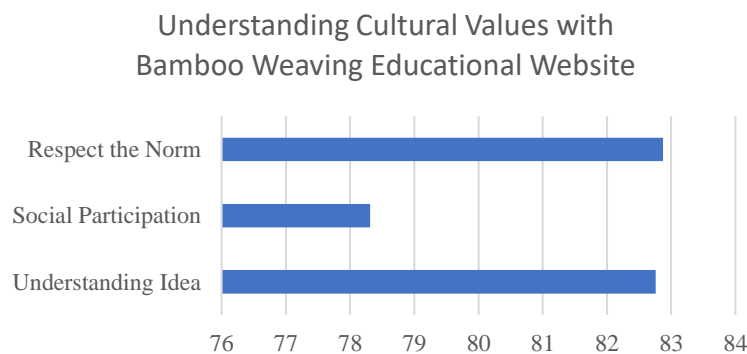


Fig. 6. Understanding cultural values

4. Conclusions

The development of bamboo woven educational website was carried out in three stages: website design, website development, and website implementation. The planning stage was conducted by analysing the learning needs of children, schools, and communities, which showed the magnitude of the need for websites to facilitate the cultural learning process. In comparison to that, the website development stage was done by looking for information on the needs of the learning process, analysing user character, and analysing the students' learning environment. The collected data were used to prepare user data and were linked to the databases and the website layout. Furthermore, they were presented in a homepage layout, and web-testing was carried out on social science learning. When implementing the website on the cultural-based collaborative learning program, data

were obtained in the form of the results of the trial implementation of the bamboo woven educational website. It was found that websites are easy to use, provide understanding of the cultural concepts, use fun learning methods, and can be used sustainably.

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