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Effect of QR Code-Mind Map Teaching Book on Students' and Teachers' Enviromental Awareness Characters

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ABSTRACT
This study aims to analyze and describe the environmental care attitudes of students, teachers, lecturers, and students after using QR Code-Mind Map-based textbooks on environmental topics. This study used a combined approach, namely the ADDIE development model which includes analysis, design, development, implementation, and evaluation, with a survey design. Data were collected through an online questionnaire involving 62 teachers (15 lecturers and 47 teachers) and 126 students (65 high school students and 61 university students) from various institutions in Pekanbaru. Data analysis was conducted using descriptive-quantitative techniques and the Miles and Huberman model which includes data reduction, data presentation, and conclusion drawing. The results showed that the average score of environmental care attitude of lecturers was 90% with a good category, while students reached 89.5% with a good category. In addition, the criteria for the effectiveness of QR Code-Mind Map-based coursebooks in improving the Environmental Care Character of students and teachers showed 100% with the category "Very Good." Thus, it can be concluded that this textbook is very effective in increasing awareness of environmental care and can be used as a guide and disseminated to be widely implemented by stakeholders. The QR Code-Mind Map-based textbooks on environmental topics will provide a good understanding, a good understanding will result in a good attitude towards the environment so that it can make characters us rahmatan lil alamin.

Keywords: *teaching book, effectiveness, qr code-mind map, environmental awareness characters.*

INTRODUCTION

The global issue on the environment is the global issue that is discussed these days that many environmental damages occurred due to wildfire by irresponsible people (Narut & Nardi, 2019). This ignorance occurs as a result of a large number of individuals not caring about the environment, which leads to poorer environmental circumstances. (Azmi, 2017). Forest fires frequently happen in Indonesia, especially in Riau province, resulting in negative impacts for all individuals, namely thick smog, and make the school has to be closed and the students have to study from home. Moreover, many people suffer from Acute Respiratory Infection due to forest fires and the standard index of air pollution in Riau province is in the „dangerous" category. Further, forest fires cause Riau province damaged of around 10 trillion from January to March 2014 (Qodriyatun, 2014).

Some prevention efforts by contributing materials and education to people have been frequently conducted by both the local government and volunteers. However, those efforts are not maximal. In some areas, they can be conducted well and effective (as stated in studies conducted by Andriani et al., 2019; Badri et al., 2018; Mavhura & Mushure, 2019; Salim et al., 2018) through the action performed by the central government, local government, and public figures in controlling forest fires. Nevertheless, several studies conducted by Fajar Ahmad, 2015; Muttaqin et al., 2019; Nurdin et al., 2018; Suwondo et al., 2018 stated that ecological crisis due to forest and land fires is complex and has many factors, such as the non-transparent involvement by the government, traditional leaders who do not take part, and the people's poor knowledge of the impacts of forest and land fires.

In order to address the issue of people's inadequate understanding of the effects of forest fires, efforts must be made to reduce the effects of land and forest fires in society through the use of basic technological tools. People can even use their smartphones to help explain the effects of land and forest fires. Fadli et al (2019) explained that the effort, such as providing services to people by using information technology facilities, was also one of the ways to improve the public services in villages. The obstacles in educating people are the speakers or volunteers only focus on the village officers, and the presented materials are abstract without any concrete data in the form of both visual and audiovisual. Muttaqin et al (2019) explained that the obstacles in managing forest ecosystem services were a limited amount of social funds and people‟s low skills and poor knowledge. The utilization of a simple technology with a sufficient amount of funds that can be used by many people is needed, namely a QR Code-Mind Map.

A QR Code-Mind Map is a mind map equipped with a map or a hot spot area that is QR Codeassisted. The Quick Response Code (QR Code) technology is a type of matrix code developed by Denso Corporation aiming at becoming one of code readers with a high-speed reading, and the QR Code technology can also be used for securing data by encrypting the data to an image using a Pattern Matching method (Labolo, 2019). The use of a QR Code-Mind Map is expected to be able to improve the Environmental Awareness Characters. It is supported by a study conducted by Irfan et al (2019) that a video-based multimedia product was also effective in improving the patriotic and Environmental Awareness Characters. Based on the explanation, a QR Code-Mind Map can be developed to improve the Environmental Awareness Characters after forest fires. so, This study aims to analyze and describe the environmental care attitudes and perceptions of students, teachers, lecturers, and students after using QR Code-Mind Map-based textbooks on environmental topics.

METHODOLOGY

This study was an evaluation of a QR code product toward the Environmental Awareness Characters (Tayibnapis, 2008). This study uses a combined approach, namely the ADDIE development model which includes analysis, design, development, implementation, and evaluation, with a survey design. This was chosen to obtain data quickly and answer research questions effectively. The effectiveness of a teaching book can be seen from the educators‟ and students‟ Environmental Awareness Characters after conducting learning using the teaching book and the educators‟ students activities during the learning process. The study was done by conducting education in some schools and universities to help improve people‟s awareness of the importance of protecting the environment. This study involved 62 educators (15 lecturers and 47 teachers) and 126 students (65 senior high students and 61 university students) from UIN Sultan Syarif Kasim Riau. The data was collected by distributing an online questionnaire and the data related to Environmental Awareness Characters were analyzed using a descriptive-quantitative technique.

The success of learning objectives in this study could be seen from the achievement in passing the minimum score in the students‟ learning outcomes, namely a minimum of 75% according to the Minimum Mastery Criteria (KKM) or 75 (Diniyah et al., 2018). Table 1 presents the effectiveness criteria for teaching towards the Environmental Awareness Characters (Hermita et al., 2018).

Table 1. Effectiveness Criteria of the QR code-Mind Map Book on Environmental Awareness Characters

Effectiveness Criteria	Range
High	N ≥ 75%
Moderate	50% ≤ N < 75%
Low	N < 50%

Table 1 shows that if the score of the educators‟ and students‟ environmental awareness characters reaches ≥ 75%, it indicates that the QR Code-Mind Map book has high effectiveness on improving the Environmental Awareness Characters. If the score of the educators‟ and students‟ environmental awareness characters is 50% ≤ N < 75%, it shows that the QR Code-Mind Map book has a moderate level of effectiveness. In addition, if the score of the educators‟ and students‟ environmental awareness characters is < 50%, the QR Code-Mind Map book has a low level of effectiveness.

RESULT AND DISCUSSION

In developing this teaching book, the result related to Environmental Awareness Characters by developing a QR Code-Mind Map book on the topic of environmental awareness is shown below.

Design and Development

The teaching book was designed and developed by referring to the students‟ characteristics and the characteristics of the QR Code-Mind Map. The illustration of the design and development is presented in Figure 1 below.

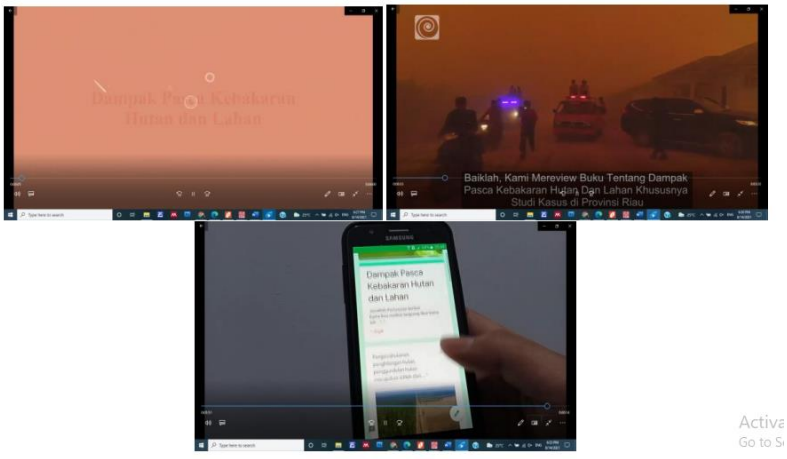

Image 1. The Design of QR code-Mind Map-based Teaching Book

Figure 1 presents the design of the QR code-Mind Map-based teaching book that, in the initial presentation, the book presents a video related to the impacts of forest fires. It was done to inform the users to be aware of the negative impacts of forest fires. The video was aimed to illustrate the book‟s content. Further, the QR code-Mind Map-based teaching book is supplied with a tutorial for using the book to make the teaching book accessible for the users. It is in line

with a statement by Rahmatullah (2019) that good media is the media that is accessible for both educators and students, so they will not be confused in using it. The experts were asked to evaluate the product, which was a teaching book, using both formative and summative evaluations. Then, a trial test was applied to 62 educators and 126 students related to their Environmental Awareness Characters. It was obtained from the affective domain in the form of a questionnaire distributed to them after using the QR code-Mind Map-based teaching book. The percentage of the achievement of Environmental Awareness Characters can be seen in Table 2 and 3.

Table 2. The Percentage of the Educators Achievement Level of Environmental Awareness Characters

	Achievement Level		
	Proficient	**Unproficient**	**Total**
Total educator	62	0	62
Percentage	100%	0%	100%

Table 3. The Percentage of the Students Achievement Level of Environmental Awareness Characters

	Achievement Level		
	Proficient	**Unproficient**	**Total**
Total student	119	7	126
Percentage	94.44%	5.56%	100%

Table 2 and Table 3 displaying the score in the final test show that the percentage of proficient educators is 100%, while the percentage of proficient students is 94.44%. The proficient educators and students have a score exceeding the minimum classical score of 75%. It means that the QR code-Mind Map-based teaching book has high effectiveness on the educators' and students‟ Environmental Awareness Characters. Based on the learning outcomes, the educators' and students‟ Environmental Awareness Characters have a classical mastery level exceeding the minimum score of 75%. This result is reinforced by the opinion stated by Nopiyanto & Raibowo (2020) that the effectiveness criteria are met if the students achieve the specified score of Minimum Mastery Criteria of 75. This indicates that university students can comprehend the lesson and enhance their knowledge by using the developed teaching book. According to Subagia & Wiratma (2016), learning will reflect the students‟ competencies to measure the students‟ performance level, and the performance of basic competencies functions as a guide for the students to achieve behavioral changes related to learning activities. It is in line with the perception by Henry Januar Saputra (2018) in the conclusion that if the teachers use a teaching material that is effective for the learning process, it will positively impact the students‟ performance. Besides affecting the students‟ performance, using an effective teaching book also affects the students‟ thinking skills, students‟ basic skills, and students‟ motivations in learning (Budi Permana & Pujiastuti, 2017; Hasanah et al., 2018; Nurmita, 2017).

From the analysis result, the educators' Environmental Awareness Characters were in the "Excellent" category with a percentage of 100%, while the student's Environmental Awareness Characters were in the "Excellent" category with a percentage of 94,4%. Attitude formation is generally the result of education and someone's interaction with his/her environment. The environment is the manifestation of someone's thoughts, feelings, and evaluation towards knowledge, understanding, opinion, and belief, so it results in a behavioral tendency (Suharyat, 2009). According to Soekarjo & Ukim (2009), if teachers want to change the students‟ behavior, they shall try to change their beliefs or opinions at first. The students‟ perceptions are strongly correlated with behavior because the behavioral concept is someone's behavior or response to the stimulus or sealed objects (Azhar et al., 2016). It is supported by the opinion by Karso (2019)

that students tend to imitate; if the educators' behaviors do not show a good example, it will be imitated by the students, and on the other hand, if educators reflect a good behavior, the students will imitate the good behavior.

According to Suharyat (2009), the students' behaviors towards a certain object are developing and they learn along with the development process. In learning, a behavior is strongly correlated with students' knowledge and skills. It is crucial because information about the environmental knowledge obtained from learning will be processed in the brain through a series of activities, namely analysis, synthesis, and evaluation, resulting in values in the form of behavior. Bradley et al (1999) augmented that besides life experience, socioeconomic status, and culture, behavior strongly depends on what is taught by the teachers in the classroom. When conducting the school Adiwiyata program, the teachers' roles need to be reinforced, especially for the course associated with environmental issues. By providing straightforward examples that are easy for students to understand, teachers will be able to incorporate environmental issues that arise in everyday life. The teachers shall also receive training to improve their skills for preventing them from dealing with difficulties in integrating environmental issues into the learning process.

To form an positive attitude towards environmental issues, the teachers shall apply several learning models. Landriany (2014) revealed that if the students' attitude against the environment is still low, it may be caused by the misunderstanding of the environmental protection concept. Meanwhile, according to (Costel, (2015); Guo et al., (2017), the basic concept of Environmental Awareness Characters comprises the factor of the institution and school management, students‟ conceptual knowledge, environmental factor, and educational strategy. Besides, to maximize the awareness characters, the educators are suggested to adopt the constructive approach in the curriculum for the topic of people living with HIV/AIDS (PLWHA). The reason is that ensuring someone about the importance of a value requires us to construct an understanding of the value and natural phenomena step by step (Istiqomah, 2019). In turn, Suharyat (2009) showed that to change the students' attitude through the learning process, the transmission of knowledge and information should be persuasive, namely getting the belief through the process of analysis, synthesis, and evaluation.

According to the researchers, besides the course of people living with HIV/AIDS (PLWHA), another method to improve environmental awareness is by putting religious and spiritual values into all aspects of school activities. It is consistent with the Indonesion national education goals and important to instill spiritual values to achieve the whole character. Instilling spiritual values helps motivate people to obey God's commands and learn to be responsible for themselves and other people. Besides becoming an educator, a teacher can play a role as a role model and instill a habit. Suharyat (2009) supported the perception that to grow an attitude, a teacher should be a role model by creating a situation and condition that make the students care about their environment, especially in the learning process, and habits and reinforcements should be continuously developed. A study by Vita wulandari (2016) showed that a teacher could use a simple example, such as erasing the blackboard after the learning, picking up litter around the students, participating in a community service activity, and always motivating the students to grow positive values. Dagiliūtė & Niaura (2014) showed that behavioral changes would be affected by many factors, such as age, sex, culture, motivation, available school infrastructures, and social pressure. Making the environment as part of life can also improve emotional attitudes. Loughland et al (2003) and Baartman and De Bruijn (2011) discovered that some teens only made the environmental issues as a separated object and considered some unimportant things outside their life. Only a few people think that environment is important for life and awareness (Baartman & De Bruijn. 2011, Loughland et al. 2003).

According to Roswita (2016) and Nuzulia et al (2019), the school Adiwiyata program can develop a program aiming at growing the students‟ Environmental Awareness Characters.

Besides their study on people living with HIV/AIDS (PLWHA), they can also include the topic of people living with HIV/AIDS (PLWHA) in all subjects, environmental management, environmental protection facilities, extracurricular activities, anniversary parties, and a beautiful environment. Moreover, the students who violate the school regulations shall be punished by cleaning the college environment and developing slogans about environmental protection to grow the students‟ mindset.

The following table presents the initial environmental care attitudes among the educators' and students as one of the forms of researchers' concern on the environmental care attitudes.

Table 4. Educators Environmental Care Attitude

No	Statement	Assessment Alternative				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Always preserving the environmental sustainability	68%	27%	-	-	5%
2	Not taking, cutting, or uprooting the plants found along the road	68%	27%	-	-	5%
3	Not doodling and writing on trees, stones, roads, or walls	82%	14%	-	-	5%
4	Always disposing of trash in the its place	77%	18%	-	-	5%
5	Not burning trash around housing	55%	41%	-	-	5%
6	Implementing environmental cleaning activities	77%	18%	-	-	5%
7	Hoarding used goods	50%	23%	9%	14%	5%
8	Cleaning up the garbage that clogs the waterways	73%	18%	5%	-	5%
	Average	**73%**	**23%**	**-**	**-**	**4%**

Based on Table 4 above, it shows the educators' environmental care attitudes based on 8 items. In general, the educators' environmental care are categorized as GOOD with mean percentage of 96% (73% strongly agree and 23% Agree).

Table 5. The Students Achievement Environmental Care Attitudes

No	Statement	Assessment Alternative				
		Strongly agree	Agree	Neutral	disagree	Strongly disagree
1	Always preserving the environmental sustainability	67%	33%	-	-	-
2	Not taking, cutting, or uprooting the plants found along the road	61%	35%	4%	-	-
3	Not doodling and writing on trees, stones, roads, or walls	71%	28%	1%	-	-
4	Always disposing of trash in the its place	64%	33%	3%	-	-
5	Not burning trash around housing	45%	45%	8%	1%	-
6	Implementing environmental cleaning activities	69%	31%	-	-	-
7	Hoarding used goods	29%	24%	32%	7%	8%
8	Cleaning up the garbage that clogs the waterways	71%	20%	9%	-	-
	Average	**61%**	**37%**	**2%**	**-**	**-**

Based on Table 5 above, it shows the students Achievement‟ environmental care attitudes based on 8 items. In general, the teachers' environmental care are categorized as GOOD with mean percentage of 98% (61% strongly agree and 37% agree).

Always preserving the environmental sustainability

According to table 4 above, it was found that in terms of environmental care attitude of always preserving the environmental sustainability, 68% of the educators were strongly agree, with the statement, 27% of the educators agreed with the statement, and 5% of the educators strongly disagreed with this statement. This indicates that almost all the educators involved chose

that the statement of always preserving the environment is an activity that shows environmental care attitude.

Furthermore, table 5 shows that in terms of the environmental care attitude of always preserving environmental sustainability, 67%, of the students strongly agreed with the statement, while the remaining 33% agreed. This shows that the entire students chose that always preserving the environment is one of the activities showing an environmental care attitude.

Not Taking, Cutting, or Uprooting Plants along the Road

Table 4 above shows that 68% of educators strongly agreed, 27% of educators agreed, while 5% of educators disagreed on the second indicator that not taking, cutting, or uprooting plants along the way indicates an environmental care attitude. This indicates that almost the entire educators involved chose that not taking, cutting, or uprooting plants along the road is one of the activities that shows an environmental caring attitude.

Meanwhile, Table 5 shows the percentage results among the students. It describes that although there were 4% of students who did not agree with the environmental care attitude in the forms of not taking, cutting, or uprooting the plants along the road, there were still 61% of the students who strongly agreed and 35% of students also agreed on this statement. This indicates that almost the entire students always choose not to take, cut, or uproot the plants they find along the road as an activity that shows an environmental care attitude.

No Doodling, Writing on Trees, Stones, Roads or Walls

Based on Table 4 above, there were 82% of educators who strongly agreed and 14% of educators who agreed with the attitude of environmental care in the forms of not doodling and writing on trees, stones, roads, or walls, even though there were other 5% of the educators who disagree with this indicator. This means that almost the entire sample of educators chose that not doodling and writing on trees, stones, roads, or walls is one of the activities which shows an environmental care attitude.

Meanwhile, Table 5 shows that only 1% of students who disagreed that not doodling, writing on trees, stones, roads and walls are forms of environmental care attitude, while 71% of students strongly agreed and 28% of students agreed on the indicator proposed. This means that almost the entire sample of students chose not to scribble and writing on trees, stones, roads, or walls as one of the activities that showed an environmental care attitude.

Always Disposing of Garbage in Its Place

Table 4 describes that 77% of the educators strongly agreed and 18% of them agreed that always disposing of garbage in its place is one of the forms of environmental care attitude, while 5% of the educators disagreed on this indicator. This indicates that almost the entire sample of educators chose to always dispose of garbage in its place as an activity that shows an environmental care attitude.

Meanwhile, table 5 above shows that the percentage of students who strongly agreed and agreed with the environmental care attitude in the forms of always disposing of garbage in its place was 64% and 33% of students, respectively, while the remaining 3% of students disagreed. This indicates that almost the entire sample of students chose that always disposing of garbage in its place is an activity that shows an environmental care attitude.

Not Burning Garbage around Housing

Based on table 4 above, the results show that the percentage of educators who strongly agreed and agreed with the environmental care attitude in terms of not burning garbage around

housing is 55% and 41% of educators, respectively, while the remaining 5% disagreed on the statement. This indicates that almost the entire sample of educators chose not to burn garbage around housing as an activity that shows environmental care attitude.

Meanwhile, table 5 shows that the percentage of students who strongly agreed and agreed with environmental care attitude in the forms of always disposing of garbage in its place was 45% each, while the remaining 8% of students less agreed, and 1% of students disagreed. This indicates that almost the entire sample of students chose that always disposing of garbage in its place is an activity that shows an environmental care attitude.

Implementing Environmental Cleaning Activities

Based on table 4 above, the results show that 77% of the educators strongly agreed, 18% of the educators agreed, and 5% of educators disagreed that implementing environmental cleaning activities is an environmental care attitude. This indicates that almost the entire sample of educators chose that implementing environmental cleaning activities is an activity that shows an environmental care attitude.

Based on table 5 above, it shows that in terms of implementing environmental cleaning activities as environmental care attitude, 69% of students strongly agreed and the remaining 31% of students agreed on this indicator. This indicates that the entire sample of students agreed upon environmental care attitude in the forms of implementing environmental cleaning activities.

Hoarding used goods

Table 4 above describes that the percentage of educators' respondents to indicators of environmental care attitudes in terms of hoarding used goods is 50% strongly agreed, 23% educators agreed, 9% less agreed, and there are 5% educators strongly disagreed. Based on the results of this percentage, some educators choose to hoard used goods as an activity that shows an attitude of caring for the environment, but others choose that hoarding used goods is not a good solution to the application of an environmental care attitude.

From table 5 above, it shows that the percentage of students who choose strongly agree with the attitude of caring for the environment in terms of hoarding used goods is 29%, 24% answered agreed, 32% answered less agreed, 7% of students chose disagreed, and the remaining 8% strongly disagreed with the indicator proposed. Based on the results of this percentage, although many students answered that hoarding used goods are an activity that shows an environmental care attitude, there were still some other students who chose that hoarding used goods is not the right thing to do in implementing an environmental care attitude.

Cleaning up Garbage That Clogs Waterways

Based on table 4 above, it was found that the percentage of educators who strongly agreed with the environmental care attitude in terms of cleaning up the garbage that clogs waterways is 73%, 18% of educators choose agreed, and 5% disagree and strongly do disagreed. This indicates that some educators choose to clean the garbage that clogs the waterways as an activity that shows an environmental care attitude, but others chose that cleaning the garbage that clogs the waterways is not a good solution to the application of environmental care attitude.

Meanwhile, Table 5 shows that the percentage of students who strongly agreed with the environmental care attitude in terms of cleaning up the garbage that clogs waterways is 72%, 20% of students agreed, and 9% of students less agreed. This indicates that almost the entire sample of students chose that cleaning the garbage that clogs waterways is an activity that shows an environmental care attitude.

Instilling character and attitude is important but not easy in terms of building or shaping character attitudes and attitudes since it needs a long process. Regarding characters and attitudes, several researchers proposed that it should be started since pre-school to university level, both formally and informally (Akkor & Gündüz, 2018; Özden, 2008; Xu et al., 2019) in (Armanda &

Saputri, 2019). In the educational field, one of the important characters that needs to be instilled is the environmental care attitude, which is defined as an attitude or an action for those who try to prevent damage to the surrounding natural environment and develop efforts to repair the natural damage that has occurred (Widyaningrum & Prihastari, 2018). In this case, various parties need to provide strong support and commitment so that students can improve their environmental care attitudes, especially prospective student educators. Future educators are expected to have positive attitudes and characters towards the environment and can spread positive things to others, especially to their students in the future.

Based on Tables 4 and 5, there are 8 indicators concerning the ability of environmental care attitude which were analyzed in the current study. In general, the educators' and students' environmentally care attitude are categorized as good with an average percentage of 90% (Agree) for the educators and 89.5% (Agree) for the students. Therefore, the respondents agreed upon each statement regarding the environmental care attitude, which indicated that educators and students of UIN Sultan Syarif Kasim Riau had a good environmental care attitude.

Environment is everything around us. When we preserve the environment, we can obtain many benefits, thus the respondents agreed upon each indicator regarding the environmental care attitude and claimed that the instillation of environmental care attitude is very important and also good to be implemented in daily life. This is because if we have embedded attitudes and habits to protect and preserve the environment, it will be a positive thing in reducing the impact of environmental damage that will occur (Serepia Siregar et al., 2018).

There are many ways to provide an understanding of the environmental care attitude, so that educators, especially, who have understood the importance of environmental care are expected to be able to train the character of their students in learning practices. There are 8 indicators of environmental care attitude (Nenggala, 2007), including: (1) always preserving the environment, (2) not taking, cutting, or uprooting plants found along the road, (3) not doodling and writing on trees, stones, roads or walls, (4) always disposing of garbage in its place, (5) not burning garbage around housing, (6) implementing environmental cleaning activities, (7) hoarding used goods, and (8) cleaning the garbage that clogs the waterways. With this indicators, educators can link teaching materials with activities related to instilling an environmental caring attitude, so that students can practice this attitude both in lectures, at home, and the surrounding environment. This is in accordance with the opinion stated by Wibowo (2020) that if knowledge and environmental care can be instilled in students, it is expected that they will be equipped with positive attitudes and behaviors towards the environment when they are old. Moreover, as the times progress, there will be more and more global warming issues which are the result of natural or environmental damage. The younger generation is a milestone that plays a major role in the importance of taking care for the environment, where the caring attitude and responsibility of the younger generation are able to provide a breakthrough for environmental protection and try to prevent damage to the natural environment around them, thus they will be ready to develop efforts to repair the natural damage that has occurred (Sri Sudarsih & Widisuseno, 2019).

Therefore, it is really needed to instill the ability of environmental care attitude to the community, especially students, where educators play a significant role in teaching environmental care character education to their students. Furthermore, it is also expected that students will be able to be wiser towards the environment, able to be responsible and wise in managing natural resources and the surrounding environment (Kasi et al., 2018). In addition, within the interaction between the students and the environment, students not only understand and master concepts but are also able to develop their ideas in finding solutions to the existing environmental issues (Armanda & Saputri, 2019).

CONCLUSION

The results of data analysis show that QR code-Mind Map-based textbooks have high effectiveness in improving Environmental Care Character, both for educators and students. This is evident from the value of Environmental Care Character that meets the Minimum Completeness Criteria (KKM) of 75, with the achievement of educators reaching 100% and students by 94.44%, both of which are in the "Very Good" category. Based on the results of research at UIN Sultan Syarif Kasim Riau, the respondents, namely educators and students, agreed with the indicators of environmental care attitudes, showing good environmental care attitudes. The importance of cultivating environmental care attitudes emphasizes the need for integration in the delivery of learning materials to form sustainable environmental care characters. Thus, the implementation and dissemination of QR code-Mind Map-based textbooks evenly is needed to have a positive influence on future generations in protecting the natural environment. Thus, it can be concluded that this textbook is very effective in increasing awareness of environmental care and can be used as a guide and disseminated to be widely implemented by stakeholders and researchers.

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