Study on Environmental Issues of Community Residents around Krirk University

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Abstract. Humans enjoyed rich resources, location, climate and so on. Develop our technical civilization on this azure planet. Excessive use of natural resources leads to extreme weather changes, drought, acid rain, flood, animal extinction, and other disasters. The purpose of this study was to explore the environmental education literacy of residents living near Krirk University. This study used a questionnaire, issued 120 copies on campus, 81 copies issued outside the school. The total number of questionnaires is 201. The invalid questionnaire is 26. The effective questionnaire is 175. The results of this study are as follows: The first education level is related to environmental literacy. Second, the environmental literacy of males is higher than females. Third, the national environmental literacy from high to low is China, Thailand, Myanmar. Fourth, the age of environmental literacy from high to low is 46-55 years old, 26-35 years old, above 56 years old, 36-45 years old, 19-35 years old, under 18 years old. At last, the comparison of the educational level of parents is directly proportional to environmental literacy. The study concluded that environmental literacy is highly correlated with the level of education and provides a reference for future environmental education policy development based on the research results.

1. Introduction
According to the report at the Fourth United Nations Environment Assembly on March 13, 2019, it proposed warning that the planet has been severely damaged. If human beings no longer protect the environment, ecosystems will be severely damaged. Based on news reports, if deforestation continues, all virgin forests may be lost in the next 15-20 years, and tens of thousands of organisms will suffer an ecological crisis. Thailand in 2004, the annual hazardous waste generated in Thailand is about 40W tons and performed an increasing trend. At present, Thailand does not have a complete system to regulate and decompose these hazardous wastes. When entering the rainy season, hazardous wastes and toxic sewage flows into Hanoi, causing health loss to animals and people.

For international environmental issues, the goal of environmental education has always been the focus of society. The level of environmental literacy determines the development of nature and affects the promotion of human quality and civilization. Therefore, we must increase students' acknowledgment of the environment if we want to change the environmental problems, environmental
learning, and behavior on campus and society, to improve its literacy. The environmental literacy of this study is a survey of the environmental awareness and cognition of residents and students in the surrounding communities of Krirk University. Based on the analysis of the survey results, suggestions are proposed to improve their environmental knowledge and attitudes. The improvement of environmental protection and the enhancement of environmental behaviors further cultivate a sense of environmental responsibility.

The school in this study is located in Bangkok, Thailand. The public environment of schools around the community is poorly managed. The communities around the school do not have specific waste separation bins. When it rains, it is usually accompanied by foul odors and harmful substances, which will harm the health of residents and students. Therefore, this research focuses on universities, surveys students and local community residents, and explores literacy research on surrounding environmental issues. The purpose of this study is to provide reasonable planning content and environmental literacy recommendations for the residents of the environment around the university by investigating the environment surrounding the university. The main topic of this study is to explore the relationship between age, education level, nationality, and environmental literacy. Review the related kinds of literature in the past, the research focuses on environmental protection and environmental energy conservation. The research in this article is slightly different from the above research. With Krirk University as the core of geography and surrounding students and the community as the research object, it comprehensively investigates the environmental literacy of students and the public and environmental literacy recommendations. Based on the background and purpose of the above research, the main issues of this research are as follows:

1. What is the correlation between education level and environmental literacy?
2. What is the relationship between gender and environmental literacy?
3. What is the correlation between age and environmental literacy?
4. What is the correlation between parental education and environmental literacy?
5. What are the relevance of nationality and environmental literacy?

2. Literature reviews

With global climate change, countries around the world are reducing and controlling carbon emissions. With the development of environmental governance, global environmental literacy has continued to improve. For example, Germany was the first country to implement mandatory waste sorting, and Germany’s waste recovery rate increased from 15% at the beginning to 65%. It has a very strict plan for daily waste. [1]. Another example is environmental education in Japan since childhood, which has given them good environmental literacy and has become a well-known "environmental protection country." [2]. Crick University is located in the north of Bangkok. Most Chinese students study abroad. Under the influence of Chinese and Thai living culture, locals have formed different environmental attitudes and cultural literacy. Therefore, exploring environmental literacy factors can be used as a reference for improving environmental education literacy in the future.

2.1 Comparison of educational level and environmental literacy

In 1973, American scholar Maloney and Ward[3] pointed out that education level had an impact on environmental protection. Pan Yue, deputy director of the State Environmental Protection Administration of China, emphasized: "At present, the level of overall awareness of the environment among Chinese college students and the requirements for sustainable socio-economic development are still very different. Some environmental college students do not take environmental protection as a lofty cause and lack environmental awareness Mission and enthusiasm is a worrying phenomenon." [4] Therefore, it is particularly important to continuously strengthen public environmental education and strengthen environmental literacy education for student groups. [5] In one of the high countries, the environmental quality and environmental awareness of Germans are inseparable from environmental education. [6] In most schools in China, there are few environmental education courses. To disseminate environmental education courses, students can infiltrate and influence themselves, so that
Students are aware of environmental issues and change themselves. [7] The basic principle of education is to improve the educational environment, achieve educational goals, and provide students with good moral and natural education. [8]

2.2 Comparison of gender and environmental literacy
Surveying "student environmental literacy" in an experiment found that women's environmental literacy is generally higher than men's. The analysis indicates that women's physiological conditions are more mature than men's in junior high school, so women are more mature than men in environmental cognition, environmental ethics, and environmental sentiment [9]. But according to a survey by five universities in Guangzhou, men have more knowledge than women in terms of environmental knowledge, that is, men have more knowledge to guide them to form the right values. In other words, this is the linear effect of "knowledge-attitude-knowledge". The suggestion proposed by Ramary and Rickson in 1976 is also a cyclic process of environmental literacy cultivation. [10].

2.3 Comparison of age and environmental literacy
The education received by different age groups is different. According to Wang Xiangdong's research data, the environmental awareness of different age groups is very different. In the process of promoting ecological civilization in today's country, the level of environmental awareness among young people and middle-aged people is high. Young children are a more serious issue in the rural environment of western China [11]. The sex ratio also indicates that differences exist in different age groups, and environmental knowledge will increase with age.

2.4 Comparison of parents' education level and environmental literacy
In China, research in the primary school of Ganzhou City indicates that 13% of parents have low environmental awareness. They fail to realize that their personality and moral education have a lasting effect on their children. Habits can affect children's growth, so research in Liu Yufei [12] stated that to improve parents' environmental literacy and environmental awareness, and to improve parents' understanding of environmental issues through lectures and social activities. In recent years, with the implementation of the second child policy, China has paid more attention to environmental protection and established a green awareness to protect the environment and the natural harmonious atmosphere between children and new parents. The content of environmental protection in family education is increasing, environmental literacy is improving, parents' concepts are changing, learning channels are expanding, and new environmentally friendly families are being cultivated in the future. [13].

2.5 Comparison of nationality and environmental literacy
Environmental protection has become a global concern. The United Kingdom adopted the Lucas model [14], which teaches students how to protect the environment through the goal of environmental knowledge, teaches them how to solve problems through practical problems, and cultivates students' sustainable development concepts through the infiltration of environmental education. The teaching model of the Lucas model focuses on outdoor teaching and scientific practice, emphasizing the value of sustainable development and education [15]. In the United States, environmental education promotes the coordinated development of government, society, and schools. Drawing on the teaching methods of the United States and Germany, China's environmental education should establish a legal system of ecological civilization education with Chinese characteristics, make full use of the coordination of early government, society, schools, and families, and attach importance to the content, methods, and innovation of environmental teaching. Today, environmental education is a big topic [16]. Implementing environmental education is a long and arduous process. Only when it is highly valued by society and educators, and the environmental education concept is integrated into the education concept can be authentically implemented.

3. Research method
According to the research content of this article, three research methods are used:
1. File analysis: In recent years, researchers have collected relevant literature on environmental knowledge, environmental attitudes, environmental behaviors, and environmental education.
2. Questionnaire method: Researchers distributed samples to teachers, students, or residents of communities within five kilometers of Krirk University. A total of 201 questionnaires were issued and 26 invalid questionnaires. The effective questionnaire recovery rate was 87%. There are 175 teachers and students on and off-campus. The research tool refers to a research questionnaire on environmental knowledge, environmental attitudes, and behaviors prepared by Zhu Xiangling.
3. Data analysis methods: After passing the questionnaire, they used SPSS 22.0 for data processing and analysis and used one-way analysis of variance.

4. Results and discussion

4.1 Univariate Analysis of Education Level
In the education level and environmental knowledge, teachers > Ph.D. > Master > People > Undergraduate, which shows that the higher the education level, the broader the knowledge level. The data shows that the undergraduate students' environmental knowledge level is poor. Improve the environmental knowledge level of undergraduate students (see Table 1).

| Table 1. Univariate Analysis of Education Level |
|-----------------------------------------------|
| sum of square | Degrees of freedom | Mean square | F        | Saliency |
|----------------|---------------------|-------------|---------|----------|
| Environmental knowledge | Between groups | 28.76 | 4 | 7.20 | 13.43 | ***.000 |
|                      | Within the group  | 91.03 | 170 | .54 | |
|                      | total              | 119.79 | 174 | | |
| Environmental attitude | Between groups | .95 | 4 | .24 | 1.88 | .12 |
|                      | Within the group  | 21.51 | 170 | .13 | |
|                      | total              | 22.46 | 174 | | |
| Environmental behavior | Between groups | .54 | 4 | .14 | 1.12 | .35 |
|                      | Within the group  | 20.72 | 170 | .12 | |
|                      | total              | 21.26 | 174 | | |
| Overall environmental literacy | Between groups | 5.19 | 4 | 1.30 | 13.44 | ***.000 |
|                      | Within the group  | 16.40 | 170 | .096 | |
|                      | total              | 21.59 | 174 | | |

*p < .05 , **p < .01 , ***p < .001

4.2 One-Way Variation Analysis of Gender
Showing male environmental knowledge in gender and environmental knowledge > Female environmental knowledge, in the first part of the environmental knowledge of the questionnaire, physical chemistry knowledge is more common, and male physical chemistry knowledge is greater than female physical chemistry knowledge, and men pay attention to current affairs news More than women. Not only that, among the interviewees, the education level of 89 men was greater than that of 86 women. The broader the knowledge of men, the greater their awareness of the environment, and the more positive their attitude. And in the environmental attitude, question 11 appears: Are you willing to change brands for environmental protection? Men are more willing than women are, so there is a significant difference between men and women in overall environmental literacy. The results of this
study found that in gender, environmental knowledge, environmental attitudes, and environmental literacy were significantly different ($F = 6.63, p = 0.01 <0.01; F = 11.74, p = 0.001 <0.001; F = 14.83, p = 0.0001 < 0.001) (see Table 2).

### Table 2. Univariate analysis of gender

|                                | sum of square | Degrees of freedom | Mean square | F    | Saliency |
|--------------------------------|---------------|--------------------|-------------|------|----------|
| Environmental knowledge        |               |                    |             |      |          |
| Between groups                 | 4.42          | 1                  | 4.42        | 6.63 | **.011   |
| Within the group               | 115.37        | 173                | .67         |      |          |
| total                          | 119.79        | 174                |             |      |          |
| Environmental attitude         |               |                    |             |      |          |
| Between groups                 | 1.43          | 1                  | 1.43        | 11.74| ***.001  |
| Within the group               | 21.04         | 173                | .12         |      |          |
| total                          | 22.46         | 174                |             |      |          |
| Environmental behavior         |               |                    |             |      |          |
| Between groups                 | .39           | 1                  | .38         | 3.18 | .08      |
| Within the group               | 20.88         | 173                | .12         |      |          |
| total                          | 21.26         | 174                |             |      |          |
| Overall environmental literacy |               |                    |             |      |          |
| Between groups                 | 1.71          | 1                  | 1.71        | 14.84| ***.000  |
| Within the group               | 19.89         | 173                | .12         |      |          |
| total                          | 21.59         | 174                |             |      |          |

*p < .05 , **p < .01 , ***p < .001

### 4.3 Analysis of univariate number of age

In the comparison of age and environmental knowledge, age is proportional to environmental knowledge. The younger the age, the worse the environmental knowledge. In the comparison of age and environmental behavior, environmental behavior are ranked from best to worst: 46-55 years old> under 18 years old> 19-25 years old> 36-45 years old> 26-35 years old> 56 years old or older. It can be concluded that people over 56 years of age do not pay attention to their environmental protection behaviors, and the research targets of researchers between the ages of 36 and 55 are mostly teachers. This indicates that only educators value their environmental literacy behaviors. In order to have a good effect on the educated. Under the age of 18 with good environmental behavior, it can be concluded that in the current social education, environmental education for students is gradually attached importance. The results of this study found that environmental knowledge, environmental behavior, and environmental literacy were significantly different in all age groups ($F = 2.58, p = 0.03 <0.05; F = 2.35, p = 0.04 <0.05; F = 2.87, p = 0.02 <0.05) (see Table 3).

### Table 3. Analysis of age and environmental literacy variation

|                                | sum of square | Degrees of freedom | Mean square | F    | Saliency |
|--------------------------------|---------------|--------------------|-------------|------|----------|
| Environmental knowledge        |               |                    |             |      |          |
| Between groups                 | 8.50          | 5                  | 1.70        | 2.58 | .03      |
| Within the group               | 111.30        | 169                | .66         |      |          |
| total                          | 119.79        | 174                |             |      |          |
| Environmental attitude         |               |                    |             |      |          |
| Between groups                 | 0.78          | 5                  | 0.16        | 1.22 | .30      |
| Within the group               | 21.68         | 169                | .13         |      |          |
| total                          | 22.46         | 174                |             |      |          |
| Environmental behavior         |               |                    |             |      |          |
| Between groups                 | 1.38          | 5                  | 0.28        | 2.35 | .04      |
| Within the group               | 19.88         | 169                | .12         |      |          |
| total                          | 21.26         | 174                |             |      |          |
4.4 Univariate Variation Analysis of Parental Education Level

The analysis of this study found that there was no significant difference between parents' educational level and environmental knowledge, environmental attitudes, environmental behaviors, and overall environmental literacy (F = 0.73, p = 0.54 > 0.05; F = 0.48, p = 0.7 > 0.05; F = 1.66, p = 0.18 > 0.05; F = 1.10, p = 0.35 > 0.05), the interviewees are all students and people around Krirk University, and their environment and education are similar (see Table 4).

| Table 4. Analysis of univariate number of parents' educational level |
|-----------------|------------------|-----------------|------------------|
|                  | sum of square    | Degrees of freedom | Mean square | F     | Salienty |
| Environmental knowledge | Between groups | 1.51 | 3 | .50 | .73 | .54 |
|                     | Within the group | 118.28 | 171 | .69 |        |
|                     | total            | 119.79 | 174 |        |
| Environmental attitude | Between groups | .186 | 3 | .062 | .48 | .70 |
|                      | Within the group | 22.28 | 171 | .130 |        |
|                      | total            | 22.46 | 174 |        |
| Environmental behavior | Between groups | .60 | 3 | .20 | 1.66 | .18 |
|                      | Within the group | 20.65 | 171 | .121 |        |
|                      | total            | 21.26 | 174 |        |
| Overall environmental literacy | Between groups | .41 | 3 | .136 | 1.10 | .35 |
|                         | Within the group | 21.18 | 171 | .124 |        |
|                         | total            | 21.59 | 174 |        |

*p < .05, **p < .01, ***p < .001

4.5 Analysis of single factor variation of nationality

The research analysis found that there was no significant difference between nationality and environmental knowledge, environmental attitude, environmental behavior, and overall environmental literacy (F = 2.212, p = 0.11 > 0.05; F = 0.573, p = 0.565 > 0.05; F = 0.19, p = 0.827 > 0.05; F = 2.034, p = 0.134 > 0.05), the interviewees are all students and people around Krirk University, and their environment and education are similar (see Table 5).
Table 5. Analysis of single factor variation of nationality

|                          | Degrees of freedom | Mean square | F     | Saliency |
|--------------------------|--------------------|-------------|-------|----------|
|                          | sum of square      |             |       |          |
| Environmental knowledge  | Between groups     | 3.00        | 2     | 1.50     | 2.21     | .113     |
|                          | Within the group   | 116.79      | 172   | .68      |          |          |
|                          | total              | 119.79      | 174   |          |          |          |
| Environmental attitude   | Between groups     | .149        | 2     | .074     | .57      | .565     |
|                          | Within the group   | 22.32       | 172   | .13      |          |          |
|                          | total              | 22.46       | 174   |          |          |          |
| Environmental behavior   | Between groups     | .047        | 2     | .02      | .19      | .83      |
|                          | Within the group   | 21.213      | 172   | .12      |          |          |
|                          | total              | 21.26       | 174   |          |          |          |
| Overall environmental    | Between groups     | .50         | 2     | .249     | 2.03     | .13      |
| literacy                 | Within the group   | 21.09       | 172   | .13      |          |          |
|                          | total              | 21.591      | 174   |          |          |          |

*p < .05, **p < .01, ***p < .001

4.6 Discussion

4.6.1 Comparison of education level and environmental literacy

Teachers and doctors have a higher level of environmental knowledge at the educational level, which indicates that cultural growth has accumulated over time. Undergraduates at the University of Crick have the worst understanding of the environment. Most undergraduates are between 18-22 years old. Most undergraduates have weak academic abilities. In Chinese classrooms, not many teachers can reveal the current state of the environment. Under the pressure of study, it is difficult for college students to see environmental-related reports on TV or mobile phones. This shows that under the pressure of Chinese students, schools have not paid much attention to environmental education. Although environmental education courses have been offered for young children and school children in recent years, environmental education courses are now offered to college students today. Knowledge changes attitudes. As students gain more knowledge, their attitudes to the environment will change accordingly, thereby improving their overall environmental literacy.

4.6.2 Comparison of gender and environmental literacy

It can be concluded through analysis that male belongs to rational consumption and women belong to emotional consumption, and women pay more attention to appearance. Eating animals means killing animals. In terms of environmental attitudes, the female often cares about whether such behaviors affect themselves, while male considers the situation at the time.

4.6.3. Comparison of age and environmental literacy

In terms of the research done in this question, 46-55 years old had the highest environmental behavior and environmental literacy, while the group over 56 years old had the worst environmental behavior...
and 19-25 years old had the worst environmental literacy. Most of the test subjects were teachers between the ages of 46 and 55. Teachers had the highest level of environmental knowledge, and in terms of behavior, teachers would constrain their behaviors and thus change their attitudes. Most of the people above 56 have not received higher education, so their knowledge level has declined, and their overall literacy has also declined. Between the ages of 19-25, most undergraduates and masters have average knowledge and ability and have not received environmental education. Therefore, they do not pay much attention to environmental issues.

4.6.4 Comparison of parents' education level and environmental literacy

There is no significant difference in the level of parental education in the research done in this question. Because of geographical restrictions, there is not much difference between China and Thailand on environmental education issues. Therefore, the comparison results are not much different. Due to regional restrictions, the educational level of parents has not been expanded on a large scale.

4.6.5 Comparison of nationality and environmental literacy

There is no significant difference in the nationality of the research done in this question. China and Thailand are closer, and the cultures are close. In terms of environmental education, the two countries are not very different. This is different from the countries that value environmental education. Researchers conducted surveys around Krirk University. One place does not represent the entire country. Therefore, geographical restrictions also make a comparison of nationality and environmental literacy not obvious.

5. Conclusion

5.1 Conclusion

According to the results of the questionnaire, the differences between environmental literacy and education, gender, age, nationality, and parental education reached the following conclusions:

5.1.1 Environmental knowledge affects environmental attitudes

The wider the environmental knowledge, the greater the influence on environmental attitudes. According to the data obtained by researchers, teachers have the broadest environmental knowledge, so their environmental literacy is the highest. He rarely participates in environmental protection activities, so he always has a non-concerned attitude, which affects the overall environmental literacy, which is not conducive to future environmental education.

5.1.2 Environmental attitudes do not restrict environmental behavior

Research shows that environmental attitudes and behaviors do not conflict too much. For example, some people realize that littering is wrong, but littering is still different. Contemporary education must constrain environmental attitudes, so it is necessary to strengthen attitudes to environmental behaviors from a psychological perspective so that people skillfully develop good living habits.

5.1.3 Environmental literacy is closely related to environmental knowledge, attitude and behavior

In overall environmental literacy, knowledge should determine attitudes that limit behavior. However, it is clear that only knowledge-defined attitudes have been reached, but attitude-constrained behavior has not yet been achieved. Attitude-constrained behavior should begin with education and fundamentally regulate behavioral norms. Optimize overall environmental education so that educators can continue to acquire new knowledge while showing external influences, and gradually develop good environmental literacy.
5.2 Suggestion

5.2.1 Carry out outdoor environmental education and select natural teaching materials
It is found in countries that value environmental education that they not only have environmental education textbooks, but also attach great importance to outdoor nature education, and often use natural ecology to integrate into life courses, fundamentally changing their outlook on behavior. However, in China, it is not common to include environmental education in various textbooks. Some researchers have found that the number of people participating in social-environmental protection activities is insufficient, and young people have never even paid attention to the environment and nature. Therefore, researchers suggest that environmental education should be included in outdoor teaching, life education should be included in the curriculum, and students and teachers are encouraged to actively participate in social and environmental activities to solve global problems.

5.2.2 Encourage students and parents to visit environmental issues on a regular basis
In the case of improving environmental knowledge, parents' environmental literacy should also be improved. Therefore, in the teaching aspect, as far as possible, show the environmental education topics that are closely related to life, to achieve penetrating learning methods, personal experience and problem-solving. Such a course improves the environmental literacy of both students and parents. School education is part of it, and it is family education that accompanies students to grow up. If a school, family, and society change together, then the purpose of environmental education can be authentically and effectively achieved.

5.2.3 Continuous growth of educators themselves
Knowledge is power. Educators themselves use their knowledge to teach educated people. In different courses, they can infiltrate environmental education to promote students' interest in environmental education in a subtle way. Teachers of various disciplines should strengthen their environmental vigilance and environmental education.

5.2.4 Increase implementation of community environmental activities
There are no environmental protection activities in the researcher's school, whether in the school or the surrounding community. It does not play a role in attaching importance to environmental protection for everyone, so whether it is a school or society, people should actively call on people to participate in such activities. Only by being close to the earth can we protect the earth. Everyone should start with themselves and contribute to the earth!

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