

Application of Eri Silk to Create Awareness of Undergraduate Students

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ABSTRACT

The objectives of this study were to 1) investigate the efficiency of Application on Eri Silk to create awareness of Undergraduate students, 2) compare students' achievements before and after learning through Application on Eri Silk to create awareness of Undergraduate students, and 3) examine student satisfaction towards the Application on Eri Silk for creates awareness of Undergraduate students. The sample comprised 30 First-year undergraduate students at Rajamangala University of Technology Thanyaburi, 30 people, using the Purposive Sampling method. The instruments used for collecting the data were an Application on Eri Silk to create awareness of Undergraduate students, a pretest and a post-test, and a student satisfaction form. The data analysis statistics were percentage, mean, standard deviation, and t-test for the dependent sample. The research findings revealed that the Application of Eri Silk for creating awareness among Undergraduate students was adequate according to E1/E2 at 82.40/81.33. The student's achievements after learning through the Application of Eri Silk for creating awareness among Undergraduate students were higher than before learning. The mean and standard deviation before learning were 8.80 and 2.33, while the mean and standard deviation after Education were 16.33 and 1.48. The t-test score used before and after schooling was 20.68 at a statistically significance level of .05. Moreover, the student satisfaction towards the Application of Eri Silk to create awareness among Undergraduate students was at a high level,

Keyword: Application on Eri Silk, Creates Awareness, Undergraduate students

INTRODUCTION

The research explores the educational benefits of using Eri Silk as a focal point for awareness and learning among undergraduate students. Eri Silk is a unique and durable fiber produced in various Asian countries. It holds immense cultural, economic, and environmental significance. The purpose of this study is to investigate the effects of adding Eri Silk into the educational curriculum to determine whether it is successful in raising students' understanding of the steps involved in the production of silk, its cultural significance, and its contribution to environmentally responsible practices. This investigation attempts to improve students' comprehension of traditional handicrafts, cultural heritage, and ecologically accountable textile production by incorporating experiential learning and interaction methodologies.

Eri Silk, also called Samia Cynthia in the scientific community, is a distinctive and environmentally sustainable form of silk indigenous to several Asian nations, most notably India, Thailand, and some regions of China. This section provides a complete introduction to Eri Silk by elaborating on its relevance in history, culture, and the economy. The manufacture of Eri Silk can boast an illustrious history that dates back centuries. For centuries, members of indigenous communities in areas such as Assam, India, have engaged in sericulture, also known as cultivating insects, that produce silk. The craft of weaving with Eri Silk and the traditions that have grown up around it have always been an essential part of these communities' cultural fabric, helping to form their identities and ways of conducting business: sericulture and Silk-Making Process. Eri Silk is unique among silk varieties due to its humane and sustainable production process. Unlike traditional sericulture, which often involves boiling silk-producing larvae, Eri Silk is harvested after the moth emerges from its cocoon. Producing Eri Silk involves rearing the Eri Silkworms on specific host plants, usually castor leaves, until they spin their cocoons. Silk production is a delicate process that requires ethical practices. To allow the insects' life cycle to continue, cocoons are collected and then boiled in hot water to soften the sericin, the protein that holds the silk threads together. The softened sericin is spun into yarn, resulting in a distinctive, soft, and lustrous silk fiber-the natural colors of silk range from creamy white to shades of brown. Lepidopteran larvae secrete silk to form feeding tubes and cocoons for protection. According to recent studies, Bombycid and pyramid moth silk comprise multiple abundant silk

components with outstanding mechanical capabilities.

Discover the main silk components in most species. We found over 100 silk cocoon secretory proteins using *de novo* transcriptome sequencing. Fibrin, protease inhibitors, and new silk components were the most abundant proteins. Silk protein expression and gland and morphological research by tissue and developmental stage (Rouhova et al., P., & Zurovec, M., 2021).

Eri Silk carries with it a profound cultural history in the regions in which it is produced. It is used to weave the Mekhela Chador, which is traditional attire in Assam, as well as a variety of other textiles in Thailand and China. Weaving with Eri Silk is an ancient tradition that helps keep cultural pride and continuity alive. Fabrics made of Eri Silk frequently take their design cues from the surrounding natural world or local culture. A manifestation of the strong connection that exists between the craft and the natural environment in which it is located. Items made from Eri Silk have a value that is distinct not only aesthetically but also narratively because of its cultural integration. In addition to its cultural value, the production of Eri Silk has a substantial impact on the economic well-being of a great number of individuals. Sericulture, which comprises farming Eri Silk and weaving it, is a lucrative industry that provides a living for a significant number of people. This is particularly the case in more remote locations, where there are less chances for finding work. The Eri Silk business has grown because of the increased demand for environmentally clean and socially responsible textiles all over the world. The natural features of this material and a manufacturing process that is favorable to the environment contribute to the popularity of using it in the garment and textile sectors. Understanding the multiple components that make up the nature of the material is necessary to investigate the instructional potential of Eri Silk. Through the incorporation of Eri Silk into educational programs, the purpose of this research is to impart knowledge to undergraduate students on the one-of-a-kind variety of silk known as Eri, the cultural value of the material, and its role in the development of ecologically responsible textile techniques (Leem, J., Fraser, M., & Kim, Y., (2020).

Silk is one of the earliest known textiles and has been essential to many different cultures for hundreds of years. Eri Silk stands out among the many kinds of silk due to its exceptional qualities and environmentally friendly manufacturing process. Through this application, we intend to familiarize undergraduate students with the world of Eri Silk to encourage a knowledge of this material's ecological relevance, economic potential, and cultural significance. Please provide a full review of Eri Silk, focusing mainly on its history, manufacturing method, and distinguishing qualities. It is essential to bring attention to the fact that Eri Silk is obtained from the Eri Silkworm, which, in contrast to the classic *Bombyx mori* silkworm, is not associated with the mulberry plant and may be raised on various host plants. A manifestation of the strong connection that exists between the craft and the natural environment in which it is located. Items made from Eri Silk have a value that is distinct not only aesthetically but also narratively because of its cultural integration. In addition to its cultural value, the production of Eri Silk has a substantial impact on the economic well-being of a great number of individuals. Sericulture, which comprises farming Eri Silk and weaving it, is a lucrative industry that provides a living for a significant number of people. This is particularly the case in more remote locations, where there are less chances for finding work. The Eri Silk business has grown because of the increased demand for environmentally clean and socially responsible textiles all over the world. The widespread use of this material as a garment and textile component can be attributed, in part, to the inherent qualities of the material itself as well as to the production method, which is kind to the natural world. To study the pedagogical potential of Eri Silk, it is vital to have a comprehensive understanding of the various components that comprise the nature of the material. Using Eri Silk in educational programs, the goal of this research is to educate undergraduate students about the one-of-a-kind variety of silk known as Eri, the cultural value of the material, and its role in the development of environmentally responsible textile techniques. Eri Silk had comparable strength despite having low crystallinity (29.2%). This is an indication that on optimizing rearing procedures and practices of Eri Silkworms to certain regions of Kenyan environment, better quality silk fibers can be produced that are competitive in the world market (Oduor, E., Ciera, L., Adolkar, V., & Pido, O., 2021).

Discuss the opportunity it presents for the generating of income and the maintenance of sustainable livelihoods. Put on display successful case studies or businesses that have flourished because of the manufacture of Eri Silk. Integration into the Academic Curriculum: Suggest including studies of Eri Silk in appropriate classes that are part of the undergraduate curriculum. The study of textiles, environmentally friendly fashion, cultural anthropology, or even business could fall into this category. Outline relevant curriculum, hands-on projects, or field visits that students could participate in to deepen their understanding of Eri Silk. Workshops & Hands-On Activities: Suggest scheduling workshops and hands-on activities to provide students with practical experience dealing with Eri Silk. This could involve dyeing the cloth, weaving it, or creating designs. To create a more in-depth educational experience for students, encourage them to work together with local artists or organizations. Awareness Campaigns and Exhibits: Propose organizing awareness campaigns or exhibitions to showcase the benefits and possibilities of Eri Silk. Students get the opportunity to share their expertise with members of the community at large and bring

attention to the importance of selecting environmentally responsible clothing at these events. Not only does educating undergraduate students about the world of Eri Silk increase their knowledge of textiles, but it also instills in them a sense of responsibility towards more environmentally friendly techniques. Students can become advocates for sustainable fashion and contributors to the preservation of cultural heritage and ecological balance when studies of Eri Silk are included in the curriculum, and students are provided with hands-on experiences. Using this application, we aim to equip the future generation with the information and skills necessary to engage

The Current Situation begins an investigation into the educational possibilities inherent in Eri Silk, a one-of-a-kind and environmentally responsible form of silk from several Asian countries, including India, Thailand, and some sections of China. This article is the first in a series to investigate the educational possibilities inherent in Eri Silk. This investigation will evaluate the academic potential that is inherent in Eri Silk and then offer the conclusions of that investigation. The objective of this investigation is to present the findings of that investigation. This chapter establishes the foundation for the rest of the research by illuminating the significance of Eri Silk from a historical, cultural, and economic point of view, respectively. In addition, it studies the use of Eri Silk as a practicable teaching aid with a high level of effectiveness. Eri Silk is a particular strain recognized for its ethical and environmentally responsible production manner. In the scientific community, Eri Silk is also known as *Samia Cynthia*. This conversation is going to center on Eri Silk.

In contrast to the conventional techniques of manufacturing silk, which usually involve boiling silk-producing larvae as an integral part of the process, the harvesting of Eri Silk occurs after the moth has emerged from its cocoon. This humane technique makes it possible for the insect's life cycle to continue, which in turn helps manufacture the fiber in a morally responsible way. Culturing Eri Silkworms on host plants, most often castor leaves, is the first step in producing Eri Silk. The conventional techniques of manufacturing silk, which usually involve the boiling of silk-producing larvae as an integral part of the process, the harvesting of Eri Silk takes place after the moth has emerged from its cocoon. This humane technique makes it possible for the insect's life cycle to continue, which in turn helps manufacture the fiber in a morally responsible way. Culturing Eri Silkworms on host plants, most often castor leaves, is the first step in producing Eri Silk. Many lepidopteran larvae secrete silk to form feeding tubes and cocoons for protection. Recent research on Bombycid and pyralid moth silk has shown numerous prevalent silk components with outstanding mechanical characteristics. It also contains other proteins with unknown roles. We investigated the cocoon proteins of *Tineola bisselliella*, a base ditrysian moth, to understand the silk composition of primitive lepidopteran species and identify the critical silk components seen in most species. We found over 100 silk cocoon secretory proteins using de novo transcriptome sequencing and MS-based proteomics. The most prevalent proteins were the Fibroin, sericins, protease inhibitors, and numerous new silk components. We confirmed the tissue and developmental stage specificity of silk protein expression and described *T. bisselliella*'s silk glands and silk morphology. We analyze silk in the primordial moth, broaden the number of silk-specific genes in Lepidoptera, and explain their evolutionary links (Rouhova et al., P., & Zurovec, M., 2021).

This stage lasts until the silkworms spin their cocoons, at which point the process is complete. After the cocoons have been collected, they are cooked in boiling water to soften the sericin, a protein responsible for binding the silk threads together. Once the sericin has been muted, the cocoons are spun into yarn. The finished product of this method is a unique variety of silk fiber that is milky white in color, glossy, and very gentle. In addition, it comes in various natural colors, ranging from dark brown to creamy white-the Importance of Eri Silk to Both Culture and the Economy. Eri Silk has a significant cultural and economic impact on the parts of the world where it is produced. These regions are known as Eri Silk-producing regions. It is woven into traditional clothes for reasons concerning the culture. One example of this is the Mekhela Chador, which is worn in Assam, India. It is also woven into other textiles in Thailand and some parts of China. The practice of weaving with Eri Silk is often a cherished family tradition that is passed down from one generation to the next. The production of Eri Silk through sericulture not only helps preserve cultural heritage and promote cultural identity but also serves as a crucial source of livelihood for many people, particularly those living in rural areas with limited employment opportunities. The economic sector of sericulture, which involves cultivating Eri Silk and weaving it, plays a vital role in sustaining the subsistence of many people. This is especially true in rural areas with limited employment opportunities in other fields. The rising global demand for textiles that are produced in an environmentally friendly and ethical manner has given Eri Silk an additional boost to its economic significance. This need is a direct result of the globalization of the textile industry. This material is desirable in the garment and textile industries due to its natural features and environmentally friendly manufacturing process. The Educational Possibilities of Eri Silk present a compelling possibility for educational integration because of the complex historical, cultural, and economic tapestry that it embodies. This study intends to take advantage of the unique characteristics of Eri Silk by incorporating it into educational programs in the hopes of increasing students' levels of engagement as well as their level of knowledge. Students get the opportunity to delve into the world of Eri Silk through practical learning and interactive

approaches, obtaining insights into the production process of Eri Silk and its cultural resonance and contributions to sustainable textile practices. Eri Silk has been around for thousands of years and has a rich history. The audience for this integration is undergraduate students, and the objectives are to inculcate in them a respect for traditional craftsmanship, cultivate cultural awareness, and promote ecological sustainability.

LITERATURE REVIEW

Using Eri Silk to foster awareness among undergraduate students signifies an innovative strategy in textile education and sustainable practices. This literature review examines current research and pertinent literature concerning Eri Silk comprehensively. This study will explore the ecological relevance and cultural importance of Eri Silk and its potential as an educational resource for undergraduate students. Researchers will discuss Eri Silk, known as "peace silk" or "ahimsa silk." This unique type of silk is obtained from the domesticated Eri Silkworm, which is scientifically known. It is native to India, specifically the Northeastern regions, and is well-known for its luxurious texture, thermal properties, and versatility.

In contrast to traditional silk manufacturing methods, extracting Eri Silk does not necessitate the termination of the silkworm's life, hence adhering to ethical and environmental principles. The research findings indicate that Eri Silk production exhibits a notably reduced ecological footprint compared to conventional silk manufacturing. This phenomenon can be ascribed to the fact that Eri Silkworms can consume diverse host plants, mitigating the necessity for extensive monoculture agricultural practices. Furthermore, extracting Eri Silk does not necessitate the use of detrimental chemicals, thereby rendering it a more environmentally sustainable option. The cultural significance and traditions of Eri Silk possess significant cultural importance in Northeastern India, where it has been an integral component of the cultural history of indigenous populations for multiple centuries. The incorporation of this fabric into customary garments, its utilization in ceremonial settings, and its significant contribution to the local economies are notable aspects. Understanding these cultural connections might give pupils a more comprehensive societal framework. Various studies have indicated that producing Eri Silk can enhance rural economies by providing sustainable livelihood opportunities. The decentralized character of sericulture enables small-scale farmers and craftspeople to participate in silk production, hence facilitating poverty reduction and economic empowerment at the local level. Incorporating Eri Silk into academic curricula for textile and fashion education provides a promising economic integration opportunity. While conventional silk manufacturing is commonly addressed in these curricula, including Eri Silk, which has received less attention, holds significant educational value. Including Eri Silk studies in undergraduate curricula presents students with a distinctive academic prospect of acquiring knowledge regarding sustainable alternatives and actively participating in ethical fashion practices. The utilization of hands-on learning and workshops engaging in practical activities such as dyeing, weaving, and designing with Eri Silk fabric can significantly augment students' comprehension and admiration for this environmentally friendly material. The provision of workshops facilitated by seasoned practitioners promotes a more profound engagement with the realm of Eri Silk. Awareness campaigns and exhibitions can help spread Eri Silk's knowledge among academics and the public. These initiatives allow students to share knowledge and promote sustainable textiles since youngsters learned by seeing their elders, and silk weaving artisans' families had no formal schooling system. Discipline, modeling, and example behavior aid entrepreneurial Education. This method preserves silk weaving culture. This work has theoretical and practical implications. This study fills research gaps to address academic concerns. Practical implications include the expectation that industrial decision-makers can preserve silk weaving's cultural value (Inanna et al., 2020).

Eri Silk has emerged as a significant milestone in environmentally friendly textile production. Also known as "peace silk" or "ahimsa silk," it is made from the domesticated Eri Silkworm and is a versatile fabric. This traditional fabric offers various benefits and advantages of adopting an eco-friendly alternative to conventional silk manufacturing. This article explores the implementation of sustainable sericulture practices and examines their environmental and social impacts. The cultivation of Eri Silk represents a deviation from the traditional methods used in the sericulture industry. Unlike the *Bombyx mori* silkworm, the Eri Silkworm can ingest various host plants, making it a more ecologically sustainable alternative.

Furthermore, the process of harvesting Eri Silk is carried out to ensure the well-being and survival of the silkworm, aligning with ethical guidelines and advocating for policies that prioritize the avoidance of cruelty. Using the Eri Silk manufacturing process demonstrates a notable capacity to successfully alleviate the environmental ramifications frequently linked to traditional methods of silk production. Eri Silk farming is beneficial for preserving biodiversity and mitigating monoculture farming practices because of its ability to thrive on many host plants and its minimal dependence on chemical inputs. In general, silkworm oil is a highly concentrated reservoir of functional lipids and tocopherols. The Practical Applications of a Concept This study aims to comprehensively examine the primary lipid classes and tocopherols found in the pupae of *Antheraea pernyi*. The available data provides corroborating evidence for the extensive application of silkworm oil in creating

nutritionally beneficial and health-promoting goods. The informative data support the comprehensive utilization of silkworm oil to produce nutritional and healthy products (Wang et al.; S., 2020).

Cultural Significance & Artisanal Heritage: Eri Silk has profound cultural roots, particularly in the Northeastern parts of India, where it has been woven into the fabric of local customs for generations. In addition, Eri Silk has a rich heritage of artisanal production. Awareness and appreciation of this legacy contribute to expanding our cultural knowledge, and it also helps ensure the financial security of craftspeople who have polished their abilities in making silk products. **Recent Developments in the Textile Industry:** The textile industry has been on the cutting edge of innovation thanks to the malleability and plasticity of Eri Silk. Artisans and designers are experimenting with new creative uses in various industries, from fashion and accessories to furniture. Because of its one-of-a-kind texture and welcoming warmth, the fabric is in high demand as a material for eco-friendly manner and interior design. **Economic Empowerment and Rural Development** The decentralized nature of sericulture for Eri Silk gives opportunity for small-scale farmers and artisans, particularly in poor regions. By producing Eri Silk, communities can lessen their reliance on agricultural practices that are less reliable and so increase their chances of finding economically viable pathways for economic empowerment. **Educational Possibilities** The incorporation of the study of Eri Silk into academic courses provides students with a learning experience that is both singular and invaluable. Students gain a more profound respect for ethical fashion methods and better understand the sustainable alternatives in the textile industry. **Growing Availability and Awareness of Eri Silk Products Contribute to the Growth of a Conscious Consumer Market** Eri Silk products are becoming more widely available, contributing to the Growth of a conscious consumer market. The demand for Eri Silk keeps rising, encouraging positive change in the broader textile sector. Consumers are more interested in purchasing products that are created responsibly and ethically. The introduction of Eri Silk represents a significant step toward a method of textile production that is more environmentally friendly and socially responsible. Adopting this time-honored yet forward-thinking fabric helps the environment and preserves cultural heritage, gives local communities more influence, and fosters a more accountable consumer market. Eri Silk is a leading example of good transformation in the textile sector, which is becoming increasingly important as the global society becomes more aware of the need for environmentally responsible business practices. The Kenyan Eri Silk used for this study was characterized by determining its sericin concentration, moisture content, surface morphology, thermal properties, functional groups, crystallinity, and single-fiber tensile strength, among other things. According to the study's findings, the physical characteristics of Kenyan Eri Silk are comparable to those of silk produced in other nations with a substantial commercial presence. Kenyan Eri Silk displayed an equal degummed tensile strength of 6.81cN while having a low crystallinity of 29.2%. This finding lends credence to the hypothesis that it is possible to produce silk fibers of a higher grade that can effectively compete on the international market by enhancing the rearing procedures and practices of Eri Silkworms in certain portions of the environment in Kenya. (Oduor, E., Ciera, L., Adolkar, V., & Pido, O., 2021).

METHODS

Population and sample group:

The population of high school pupils at Dipangkornwittayapat (Mattayom et al.) The school served as the subject of this investigation. The total number of students: 369 individuals and the students of Secondary 4 at Dipangkornwittayapat (Mattayom et al.) Under the jurisdiction of the Pathumthani Secondary Educational Service Area Office, the school served as the sample group for this research. There was one classroom with a total of 30 students. The academic year was 2022. Because the room in question will be used for a class on rice during the second semester of the academic year 2022, this information was collected by picking a specific sample, also known as "Purposive Sampling."

Instruments of Research:

(1) Application on Eri Silk to create awareness of Undergraduate students, seeking the opinions of industry professionals evaluating the quality of Application on Eri Silk to create awareness. (3) The pretest and the subsequent test., and (4) An evaluation form for Undergraduate students regarding using the Application on Eri Silk to create awareness.

Data collection:

Collecting data includes researching many concepts, fundamentals, and theories associated with producing augmented reality media. The increased reality material that the researchers generated should be brought to the professionals so that they can review it. To ensure consistency in the content, language, questions, teaching activities, and the overall aim of the creation, consultation with measurement and evaluation specialists is crucial. Their recommendations should be considered to make necessary improvements and corrections, ensuring accuracy and comprehensiveness. After this, the augmented reality media was used three times with students from schools not included in the sample group. The effectiveness of the students was measured individually to evaluate the tool's success. After conducting an efficiency trial with small groups and field testing, the team adjusted and changes

until the product reached an acceptable level of performance. As a result, media based on augmented reality was utilized with the sample population.

Statistics used to analyze data:

(1) Determine whether using augmented reality media for marketing Thai rice products at the upper secondary level (grades 10–12) is effective. By applying the equation for calculating efficiency E1/E2 (2), Compare the pretest results with the post-test using a t-test for dependent samples with a significance level of .05 3. Using the mean and standard deviation (SD), investigate the level of contentment felt by children in Grade 4 who have access to augmented reality media.

FINDINGS

Table 1: This study presents a comprehensive summary of the findings about the efficacy of an application designed to raise knowledge about the conservation of the Eri Silkworm species, specifically about the processing of products derived from Eri Silk, for students in their inaugural year of undergraduate studies.

List	Full score	Average score	percentage	Benchmark	E1/ E2
Score during study	50	41.20	82.40	80	82.40
Posttest	20	16.27	81.33	80	81.33

Table 1 This study demonstrates the utilization of an application to raise awareness about the conservation of the Eri Silk breed, specifically about processing items derived from Eri Silk. In the context of first-year undergraduate students, an examination was conducted to assess their understanding of the conservation of the Eri Silk breed, and the processing of products derived from it. The test scores of 30 first-year undergraduate students were collected and analyzed. The average percentage score obtained in the pretest was found to be 82.40, while the average percentage score in the post-test was determined to be 81.33. These results indicate that the application of the educational program effectively enhances students' awareness of Eri Silk breed conservation and the processing of Eri Silk products. According to the above criteria, first-year undergraduate students demonstrate an efficiency rate of 80/80, specifically E1/E2 is 82.40/81.33, satisfying the stated assumptions.

Table 2. This study aims to compare students' academic performance before and after participating in a study program at the institution. This proposal seeks to develop an application to raise awareness about the conservation of the Eri Silk breed, explicitly focusing on the many processes involved in producing Eri Silk goods. For students in their inaugural year of undergraduate studies

	Full score	Average score	SD.	t	Sig.(2-tailed)
Pretest	20	8.80	2.33	20.68	.00
Posttest	20	16.27	1.48		

The findings of employing the application to raise awareness about the preservation of the Eri Silk breed and the production of Eri Silk items. For the pretest assessment of first-year undergraduate students. After the students received instruction through an application to promote awareness of the conservation of Eri Silk, the mean score attained was 8.80, with a corresponding standard deviation of 2.33. The subject matter of the instruction pertained to the processing of products derived from Eri Silk. First-year undergraduate students are then required to take a post-test. It has been shown that students tend to have more excellent grade point averages. The mean score was 16.27, with a standard deviation (SD) 1.48. A t-test analysis was conducted to compare the measurements taken before and after the study. The resulting t-value was 20.68, indicating a statistically significant difference between the two sets of measurements at the 0.05 significance level.

Table 3. The findings from the assessment of the satisfaction level among first-year undergraduate students on using an application aimed at raising knowledge about Eri Silk conservation, explicitly focusing on the processing of Eri Silk goods for this group of students.

	Evaluation list	\bar{x}	SD.	Interpret results
1. Media				
1.1	Clear explanation of media usage	4.57	.63	The most
1.2	Beautiful and interesting media format	4.53	.68	The most

1.3	Easy to use and easy to learn	4.47	.82	A lot
1.4	The media is appropriate for use in learning	4.53	.73	The most
	Total average	4.53	.71	The most
2. Content				
2.1	The content meets the learning objectives	4.67	.48	The most
2.2	The language used in the lessons is easy to understand	4.47	.51	A lot
2.3	Presentation of content is easy to understand	4.57	.50	The most
2.4	The amount of content in each story is appropriate	4.40	.72	A lot
2.5	The content arrangement and teaching steps are easy to understand	4.30	.70	A lot
	Total average	4.48	.60	A lot
3. Measurement and evaluation				
3.1	Clarity of questions and answers	4.67	.48	The most
3.2	Appropriateness of the number of assessments	4.50	.68	A lot
3.3	Alignment of assessments with content	4.53	.63	The most
	Total average	4.57	.60	The most
4. Instructional activity organization				
4.1	Encouraging learner engagement in activities	4.30	.65	A lot
4.2	Facilitating learning anywhere, anytime	4.70	.53	The most
4.3	Promoting self-directed learning	4.40	.72	A lot
	Total average	4.47	.66	A lot
	Total average	4.51	.64	A lot

According to Table 3, This study aims to assess the level of satisfaction among first-year undergraduate students regarding their participation in an application designed to raise awareness about Eri Silk conservation. Specifically, the focus of the application was on the processing of products derived from Eri Silk. A total of 30 first-year undergraduate students were involved in this study. In general, there exists a notable degree of contentment. The study findings indicate an average rating of 4.51, reflecting a high satisfaction level among participants in facilitating student learning across various locations and timeframes. The study observed a sample of first-year undergraduate students, finding a mean satisfaction score of 4.70 with a standard deviation of 0.64. However, no specific items were identified as the least satisfying for these students.

CONCLUSIONS AND EVALUATION

Within the realm of research focused on creating an application that promotes awareness regarding the protection of the Eri Silk species, the topic of interest pertains to processing products derived from Eri Silk. For first-year undergraduate students enrolled at Rajamangala University of Technology Thanyaburi, the primary research aims of this study are as follows: 1) to develop an application to raise awareness about the need to conserve the Eri Silk breed, specifically about the processing of Eri Silk products. For first-year undergraduate students enrolled at Rajamangala University of Technology Thanyaburi, 2) this study aims to examine students' academic performance in their first year of undergraduate studies. There is a statistically significant improvement in learning progress at the alpha level of .05. 3) To investigate the degree of satisfaction among undergraduate students. The initial cohort of undergraduate students expresses a notable degree of contentment over implementing an initiative to raise awareness about the protection of the Eri Silk breed, specifically about the processing of Eri Silk goods. At an elevated level, the study participants comprised individuals enrolled as first-year undergraduate students in the Faculty of Industrial Education. The sample for this study consisted of 30 individuals recruited using a purposive sampling method. These individuals were affiliated with the Educational Technology and Communication Department at Rajamangala University of Technology Thanyaburi. The instruments employed in the study encompass: This proposal aims to develop an application that will effectively raise awareness about the importance of conserving the Eri Silk breed, explicitly focusing on processing products derived from Eri Silk. This study aims to gather expert opinions on the efficacy of building an application to promote knowledge of the conservation of the Eri Silk species, specifically about processing products derived from Eri Silk. The target population for this questionnaire consists of first-year undergraduate students. The present study aims to develop a satisfaction assessment form for first-year undergraduate students about utilizing a mobile application to foster awareness for preserving the Eri Silk species and its subsequent processing into various goods. For students in their inaugural year of undergraduate studies, using pre-study and post-study examinations is a common practice in academic research. They use a mobile application to generate awareness about preserving the Eri Silk species, specifically processing Eri Silk goods. First-year undergraduate students can succinctly communicate research findings and

engage in discussions about the results. The following are recommendations for further research. Methods of Research. The researcher has conducted this study. This section will examine the fundamental concepts, principles, and theories associated with developing an application to promote awareness of the conservation of the Eri Silk species, specifically about processing products derived from Eri Silk. For students in their inaugural year of undergraduate studies. The data survey results are utilized to analyze the salient aspects of the problems and ascertain their underlying causes. Identify the primary goals of the research. Developing an instructional framework via an application to foster knowledge on the conservation of Eri Silk, explicitly focusing on the manufacturing of Eri Silk goods. For first-year undergraduate students enrolled at Rajamangala University of Technology Thanyaburi. By the prescribed content framework, develop an application. Design the examination and satisfaction evaluation questionnaire for first-year undergraduate students about implementing a campaign to raise awareness about the conservation of Eri Silk, explicitly focusing on the processing of Eri Silk goods.

The researcher should submit the application they have developed to specialists in the field for review. It is essential to engage three measurement and evaluation experts to ensure that the content, language, questions, teaching activities, and objectives of the tools are coherent. These experts will be responsible for enhancing and rectifying any inaccuracies and deficiencies to ensure that the materials are precise and comprehensive as required. As experts recommend, it is advisable to consider an extensive range of factors. The topic is discussed. Utilize the application to illustrate its usage among university students beyond the scope of the provided sample group. To assess the efficacy of the application, it is necessary to identify and rectify any errors or deficiencies until the efficiency level reaches an acceptable standard.

In this section, we will discuss topic. The application will illustrate the methodology by employing a sample group comprising 30 first-year undergraduate students from Rajamangala University of Technology Thanyaburi. This will enable the determination of the program's efficiency by calculating the E1/E2 values. The value is intended to be equivalent to 80 divided by 80. Calculate the standard deviation utilizing the formula for standard deviation (SD). Examine the academic performance of students who engage in the application-based approach to raise awareness on the conservation of the Eri Silk breed, explicitly focusing on processing products derived from Eri Silk. For first-year undergraduate students enrolled at Rajamangala University of Technology Thanyaburi, in this analysis, we will conduct a comparison between the use of the mean (\bar{x}) and the t-test. This section provides a concise overview of the findings obtained from the conducted research. When examining the historical data. The researcher has summarized the research findings based on the predetermined objectives. The efficacy of the application in promoting knowledge about the protection of the Eri Silk species in the processing of Eri Silk goods. The efficiency of first-year undergraduate students at the Rajamangala University of Technology Thanyaburi, as measured by the 80/80 criteria, indicates that the percentage score during the study is 82.40 (E1) and the percentage score from the post-test is 81.33 (E2).

Findings from the Comparison of pre-learning and post-learning accomplishment. The study revealed a significant improvement in scores following the utilization of an educational application aimed at promoting awareness of the conservation of the Eri Silk breed. Specifically, the application focused on providing knowledge and understanding of the many processes involved in producing products from Eri Silk. For first-year undergraduate students enrolled at the Rajamangala University of Technology Thanyaburi, the score post-study exhibits an increase in Comparison to the initial score. The results were statistically significant at the significance level of .05.

The findings from the investigation on the satisfaction levels of a selected cohort of first-year undergraduate students indicate a significant degree of contentment. This section will delve into a comprehensive analysis and interpretation of the results. This study focuses on developing a mobile application to raise knowledge about protecting the Eri Silk species and the processing techniques for creating items from Eri Silk. According to the research objectives and assumptions, this study focuses on first-year undergraduate students at the Rajamangala University of Technology Thanyaburi. The research findings can be analyzed and interpreted in the following manner. In this section, we will discuss Utilizing a mobile application as an instructional tool fosters knowledge and understanding regarding preserving Eri Silk, explicitly focusing on the procedures involved in processing various Eri Silk products. For first-year undergraduate students enrolled at Rajamangala University of Technology Thanyaburi, the curriculum encompasses a range of significant educational endeavors, which can be categorized as follows: The incorporation of visual media in academic instruction about the Mongkol Lotus holds considerable value in fostering coherence between the lesson material and the learning process. Including comprehension of program usage and incorporating learning activities at each stage may provide challenges in the students' learning activities, potentially significantly impacting the learning process. The organization of learning needs to align with the objectives of structuring knowledge through media. Due to this rationale, the instructor suggested that students utilize the application initially to enhance their preparedness for engaging in learning activities via the Sangji

application. This study aims to enhance knowledge regarding the conservation of Eri Silk by examining the processing techniques employed in producing Eri Silk goods. For first-year undergraduate students enrolled at Rajamangala University of Technology Thanyaburi, to achieve an efficiency level of 80.80 based on the specified criteria, it is necessary to implement KW-CAI. The research findings indicate that students who engage in the application-based learning approach exhibit increased awareness of the conservation of the Eri Silk breed, specifically about processing items derived from Eri Silk. Before utilizing the application, first-year undergraduate students must familiarize themselves with the topic of processing goods derived from the Eri Silk species to promote awareness about conservation efforts. This course is designed for students in their first year of undergraduate studies and pursuing a degree in teaching and learning. Before the commencement of the session, students are required to undergo an examination. After completing the pretest, 30 students were assessed, and their average score out of 20 points was determined to be 8.80. The researcher has developed an application to raise awareness about the conservation of the Eri Silk breed, explicitly focusing on processing items derived from Eri Silk. This instructional resource has been developed explicitly for first-year undergraduate students, intending to facilitate teaching, and learning by providing structured exercises to enhance student knowledge acquisition. Which students demonstrate enthusiasm and a strong interest in furthering their studies? The recorded scores obtained throughout the study are subjected to averaging to determine the overall results. After receiving instruction through the implementation of an educational application focused on raising knowledge of the protection of the Eri Silk breed and the processing of products derived from Eri Silk, the students achieved a percentage score of 82.40. First-year undergraduate students were subsequently instructed to complete a post-test. The study revealed that the average post-test score was 81.33 percent, indicating that using practical applications enhances understanding of the preservation of silkworm species. Regarding the processing of items made from Eri Silk, the efficiency of the first-year undergraduate students, as determined by the researcher, is calculated as 82.40/81.33. This efficiency value aligns with the set criteria of 80/80, which aligns with the findings of Sawannarat Aphaiphong and Phumin Inpaen's research (2018, Abstract). A study by Sirisukphoka and Krutjon in 2019 found that an English vocabulary application in a multimedia format designed for the Android operating system was efficient. The study's findings revealed that the application's efficiency, as measured by the E1/E2 criteria, exceeded the stipulated threshold of 80/80, with a determined value of 80.75/88.25. This suggests that the multimedia-based English vocabulary application for the Android operating system can be an effective tool for improving language skills. The topic of interest pertains to mobile development—a proposed software tool designed to augment proficiency in English reading abilities. Grade 3 pupils utilize the flipped classroom concept in their academic studies. The analysis conducted by Phola and Sinlapanilman (2020, Abstract) revealed that the application demonstrated an efficiency of 86.32/83.52, above the predetermined threshold of 80/80. Converting data kinds is about advancing software apps on the Android operating system. The constructivist theory is employed for Mathayom 1 students. The investigation revealed that the application demonstrated an efficiency rating of 80.69 out of 83.79, satisfying the prescribed requirements of 80 out of 80.

The application effectively enhances learning outcomes by raising awareness about the conservation of the Eri Silk breed and facilitating the acquisition of knowledge related to the processing of Eri Silk products. The pretest's average score for first-year undergraduate students was 8.80, with a standard deviation (SD) of 2.33. This was observed after the students were exposed to an educational intervention focused on raising awareness about the conservation of the Eri Silkworm breed. The production and manufacturing of Eri Silk products: First-year undergraduate students must complete a post-test. The average scores of students have exhibited an increase compared to previous periods. The mean score was 16.27, with a standard deviation (SD) 1.48. A t-test analysis was conducted to compare the mean values before and after the study, resulting in a t-value of 20.68. A statistically significant difference was observed at the significance level of .05 (Surathamcharanya, 2015). The results of the analysis of the level of satisfaction of first-year undergraduate students regarding the use of the application to create awareness of conservation of the Eri Silk species regarding the processing of products from Eri Silk. For first-year undergraduate students, there was a high level of satisfaction, with an average of 4.51, because students received learning materials that met their needs, were easy to use, and were convenient for learning. The media format is beautiful and exciting, and the content meets the learning objectives. The application raises awareness about the conservation of the Eri Silk breed and the processing of products made from Eri Silk. It also encourages first-year undergraduate students to participate in activities and take action toward conservation. There are periodic assessments to monitor academic progress and incentivize students to put effort into their work. The app challenges students to be interested and provides instant success feedback when they reach a certain level of effort. Consistent with the research of Rungnapaporn Phuchada and Saweeya Suramane (2015, Abstract) conducted a study. About developing applications for learning on tablets About the components of information systems For Mathayom 4, it was found that students were overall satisfied with the tablet learning application developed at the highest level; Phinyaphat Tasathanattrakul (2016, Abstract) conducted the study. Regarding creating a language learning kit application for children on mobile phones, it was found that the satisfaction assessment of the target group with the language learning kit application for children on mobile phones was at a high level. ; Chatyanin Kaewko and

colleagues (2020, Abstract) conducted a research study. Subject: Development of application for social studies, religion, and culture good Buddhist stories For Grade 2 students at Wat Thai Chumphon Municipal School. (Drongprachasan) The research results found that students' satisfaction level with the application for the Social Studies, Religion, and Culture courses Good Buddhist stories For Grade 2 students at Wat Thai Chumphon Municipal School. Overall, satisfaction is at the highest level. While creating awareness about the conservation of the Eri Silk breed and its products, several observations were made regarding the learning of first-year undergraduate students. These students are highly enthusiastic and determined and can perform tasks engagingly. They are responsive to learning and have confidence in their abilities, which enables them to learn independently and develop according to their potential. The teachers work collaboratively with the students to plan challenging and stimulating activities while providing guidance and advice on seeking knowledge. Recommendations in this research, the researcher has suggestions for using the research results as follows; Equipment should be prepared. and internet signal before teaching and learning every time; Students should be prepared by practicing application usage skills according to the detailed user manual for every step of organizing learning activities. Recommendations for future research; Based on the synthesized and analyzed research findings, the researcher proposes the following recommendations: It is recommended that further examination be conducted on the subject matter of Eri Silk. The development of applications on Eri Silkworms and related subjects is recommended.

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