

Learning Application Derivative Algebraic Functions: Ethnomathematical Studies and Digital Creator Books

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Abstract

Learning mathematics has been meaningful if it is associated with real-life problems. Ethnomathematics is an activity in which mathematical concepts are related to the local "Lontong Sayur" culture that students often encounter in real life. Ethnomathematics needs to be applied to students at the high school level. It aims to make it easier for students to understand mathematical concepts, one of which is ethnomathematics based on Digital Book Creator. This study aims to create a product as a Book Creator based on the application of ethnomathematics in learning. Applications derived from algebra help teachers create conducive conditions for students to learn. The development model used in this research is the Borg and Gall development model in the research and data collection stages. Book Creator is a simple tool for creating exciting books. The validation of materials, learning media, and culture received a score of 3.58 using "good" criteria. Book Creator can be developed to understand documents more in context to understand documents from concrete to abstract and provides several menus, namely: a) Presenting user guides and brief descriptions of Book Creator; b) Business plans and concept maps; c) A summary of the material is presented in stages equipped with sample questions and quizzes containing learning videos, audiovisual sections, and aptitude tests; and d) Summarizing, presenting summary/basic learning materials.

Keywords: Book Creator, Ethnomathematics, Learning Applications Derivative Functions Algebra

Abstrak

Pembelajaran matematika bermakna jika dikaitkan dengan permasalahan dalam kehidupan nyata. Etnomatematika merupakan kegiatan yang didalamnya terdapat konsep-konsep matematika yang berkaitan dengan budaya lokal "Lontong Sayur" yang sering dijumpai siswa dalam kehidupan nyata. Etnomatematika perlu diterapkan pada siswa di tingkat SMA, hal ini bertujuan untuk memudahkan siswa dalam memahami konsep matematika, salah satunya adalah Etnomatematika berbasis Digital Book Creator. Penelitian ini bertujuan untuk membuat produk berupa Book Creator berbasis penerapan etnomatematika dalam pembelajaran. Aplikasi yang diturunkan dari aljabar untuk membantu guru menciptakan kondisi yang kondusif bagi siswa untuk belajar. Model pengembangan yang digunakan dalam penelitian ini adalah model pengembangan Borg and Gall pada tahap penelitian dan pengumpulan data. Book Creator adalah "alat" sederhana untuk membuat buku yang menarik. Validasi materi, media pembelajaran, dan budaya memperoleh skor 3,58 dengan kriteria "baik". Book Creator sebenarnya mampu dikembangkan untuk memahami dokumen lebih dalam konteks untuk memahami dokumen dari konkret ke abstrak dan menyediakan beberapa menu, yaitu: a) Menyajikan panduan pengguna dan deskripsi singkat tentang Book Creator; b) Rencana bisnis dan peta konsep; c) Rangkuman materi disajikan secara bertahap dilengkapi dengan contoh soal dan kuis yang berisi video pembelajaran, bagian audiovisual dan tes bakat; dan d) Meringkas, menyajikan rangkuman/materi pembelajaran dasar.

Kata kunci: Book Creator, Etnomatematika Pembelajaran Aplikasi Turunan Fungsi Aljabar

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INTRODUCTION

Some people, consciously or not, have applied the algebra concept to routine problems, especially those pursuing education (Noeruddin & Piyanto, 2021; Sukmawati, 2015). Algebraic perceptions can be taught effectively to senior high school (SMA) students, prioritizing logical principles and systematic and rational thinking (Darmayanti et al., 2022; Wijaya, 2016).

However, in reality, in learning algebraic material, especially in applying algebraic function derivatives, students still experience many difficulties (Astuti & Sari, 2018). Some students encounter difficulties when participating in learning mathematics in class (Lailiyah et al., 2020). When students experience difficulties learning mathematics, it also means difficulties learning specific parts of mathematics (Liu et al., 2013, 2015). Difficulty can be one part. It can also be more than one part of the studied mathematics (Arjudin, 2020). Assessing the mathematics subject diversity whether a discussion involves one or more topics, how difficult a student's difficulty in a debate will affect the difficulty of one or more other issues (Neic et al., 2012; Turidho et al., 2021). So, one of the difficulties students face when studying one part of mathematics can affect the difficulties experienced by students when looking at other aspects of mathematics.

Mathematical activities using technology as a learning medium are needed to optimize the learning process. According to Nurdyansyah (2019), using learning media can increase students' motivation, activeness and new interests, and activity stimulation in the learning process. Nurdyansyah (2019) stated that visual-assisted learning activities in the form of teaching aids or learning media could provide visual experiences to students, encourage learning motivation, clarify, and facilitate complex abstract concepts to be simpler, specific, and easy to understand as well as more exciting and complete. In terms of explanation. It needs to be done so that students can study at home, and it will be easier to learn the material from these teaching materials. Various learning media types use technology, including educational media, electronic books, or e-books in the book creator application.

Book Creator is an electronic book that contains information in text and images and can also insert audio or video. Book Creator is the definition of a book that is compiled or converted into a digital format for viewing on a computer screen or mobile device (Atherton, 2022; Ezeh, 2020). Aprillianti & Wiratsiwi (2021), *book creators* are textbooks that are converted to digital format, where the book creator acts as a learning environment with an application that contains a multimedia database with documents. Various educational resources organize multimedia presentations on topics covered in the book. The advantages of the book creator are its compact size making it easier for users to store it easily, easy to carry anywhere, the quality remains the same, and can be consulted anytime, anywhere, anyone (Asyrofi et al., 2018; Klaehn, 2015). Book Creator was developed in 2011, which aims to support reading development, and can help learners who are learning foreign languages. In addition, digital book creators can be used to develop students' productive skills, and teachers can easily create and share them. Furthermore, the book creator application can increase interaction between teachers and students, the learning process is attractive, not tiresome, and students with different characteristics will be easier to understand in the mathematics learning process (Anjarwati, 2021; Darmayanti et al., 2022).

The results from various international studies describe the conditions of mathematics learning in Indonesia that do not guide students in the reasoning process, communication, problem-solving and mathematical literacy (OECD, 2019). This condition is in line with the daily test results of class XI students on the application material for the algebraic functions derivative at the Assyifa Learning Center

Foundation (ALC Pasuruan which shows a low average value. This value is obtained from the results of each student attending school in a different place, State, Private, and Tsanawiyah. This problem is undoubtedly a blow to learning in the classroom and requires constructive evaluation. Furthermore, in the Minister of Education and Culture (2016) attachment standard of learning mathematics allows for recognizing individual differences and students' cultural backgrounds. The study of cultural relevances is becoming a trend in the study of mathematics, known as ethnomathematics (Ardhi et al., 2021; Hardiarti, 2017; Yudianto et al., 2021 (Utami et al., 2020).

Various ethnomathematics research is applied in the classroom through cultural resources and equipment in crafts, arts, fairy tales, values, ethics, morals, and theories firmly embedded in belief systems. In Sundanese society, mathematics is applied through a number system, measurement, geometry, and structured patterns (Abdullah, 2017). Meanwhile, exploring the mathematical concepts contained in Mlaten ceramics can be applied through the circles' concept, geometric transformations, flat shapes, curved side spaces, and the functions concept, as well as the rotating object volume concept (Pertiwi & Budiarto, 2020). Tulungagung people practice mathematics by conducting explorations and interviews to explore the flat shape of the Ratu Boko temple to get an overview of its objective forms (Jayanti & Puspasari, 2020). Furthermore, the Dayak people practice mathematics by carving, making patterns, determining dates, and numbering systems (Hartoyo, 2012). In the context of Bugis Makassar culture, learning mathematics can improve attitudes toward the ways and habits of universal society (Akib, 2016). Mathematics is practiced by Balinese people in traditional rituals and tower construction (Darmayasa, 2016). Papuans also have mathematical concepts such as Honai, Centipedes, Parapara Beads, and batik patterns of various geometric shapes (Mumu, 2018). Meanwhile, the people of Maluku apply mathematics to buying and selling, weaving patterns, textile patterns, and geometric shapes on local food products (Laurens, Ngilawayan, & Pattiasina, 2019). While the mathematics learning that will be applied in this research is by linking real-life problems in which mathematical concepts related to the local "Lontong Sayur" culture that students often encounter in real life in the Syawalan tradition.

Research related to book creators in learning has been carried out by (Asyrofi et al., 2018; Muslimin et al., 2021; Puspitasari & Walujo, 2020; Widyasmi et al., 2021; Anjarwati, 2021; Siti Rodi'ah, 2021). Research conducted by Asyrofi et al. (2018) and Puspitasari & Walujo (2020) is by developing a book creator application based on conservation education in biology learning. Muslimin et al. (2021) made a book creator in writing poetry and descriptive text articles in Indonesian language learning. Widyasmi et al. (2021) developed a book creator application to evaluate edu-candy on temperature and heat materials. Then Anjarwat (2021) created a book creator in preparing e-modules based on natural potential in science learning. Furthermore, Siti Rodi'ah (2021) developed a book creator to improve gross motor skills in physical education. Apart from not being in mathematics learning, the research conducted by the six was used in the Covid-19 pandemic situation. In addition, the subjects used are also more dominant in elementary (SD) and junior high school (SMP) students.

However, research on building materials at the elementary school level has been carried out by Aprillianti & Wiratsiwi (2021) on book creators in learning mathematics.

Research related to ethnomathematics applied in helping to overcome algebra learning difficulties has been carried out by Jabali et al. (2020); Oktafiani (2020); Richardo (2020); Yulianto & Arumsari (2016). Learning algebra concepts in the Bulus area, Central Java is to understand the variables definitions, constants, and coefficients and to distinguish similar and dissimilar tribes narrated through storylines with Mahabharata wayang characters in the form of visual novel games (Jabali et al., 2020). Ethnomathematics studies were developed in LKS teaching materials with Tegal, Central Java cultural characteristics in improving students' mathematical connections to algebraic material (Oktafiani, 2020). Furthermore, in understanding algebraic ideas that are difficult for students to understand, reminding the subtraction operation and addition of algebra by presenting algebraic material designed with learning outside the classroom to produce real experiences that are the cultural character of Dayeuhluhur value. the "Connection" community in Cilacap, Central Java (Yulianto & Arumsari, 2016). In overcoming learning difficulties in algebraic material, it can be overcome through character building for students internalizing Islamic culture and religion in the mathematics learning process (Richardo, 2020). Many results have been obtained in ethnomathematics that require a deeper insight into its application and classroom problems.

The application of book creators and ethnomathematics in learning mathematics on algebraic material has not been studied. The media developed in this study highlight the cultural elements in the scenario. The flow in the e-book media with the book creator application is about acculturation, material interpretation, and conducting interactive questions and answers with users. The acculturation used in the e-book with the book creator application is a Syawalan tradition to introduce students to local culture. The *Shawwalan* tradition is carried out on the 8th day after Eid al-Fitr, especially in Pasuruan city, by keeping in touch with each other for halal bi halal or forgiving each other for elders or parents and family tree, in turns. While using a *bi-halal* traveler in the media is the right thing to do. The Syawalan tradition also has the characteristic of serving "vegetable rice cake". The essence of "lontong" in "lontong sayur" cuisine is soft and chewy, so it aims to strengthen kinship ties by forgiving each other that can be imitated. It is hoped that apart from learning about culture, students can also imitate the taste of the Syawalan tradition by serving "lontong Sayur".

It supports ethnomathematics-based e-books created with an easy-to-use, student-friendly bookmaker application with instructions that students can easily use in the teaching and learning process as an intermediary method for interpreting the material. The material used is the application of derivatives of algebraic functions. Materials related to everyday life are used to make "lontong Sayur" to introduce variables using illustrative examples. The concept of interpreting the material deductively, especially by explaining things related to everyday life, is then presented as mathematical sentences to stimulate conceptual understanding. This media introduces ingredients that apply algebraic derivatives by mixing ingredients such as lontong, tofu, and eggs, to create a delicious and savory "Lontong Sayur".

Then can also incorporate this into the concept when we do "Lontong Sayur" for x people and estimate how much Lontong will be produced. Continue to mix the ingredients such as Lontong, tofu, and eggs until it forms "Lontong Sayur".

METHOD

The form of research carried out is development research which is intended to produce teaching materials in the form of electronic books (e-books) and learning materials for ethnomathematics-based derivative applications of algebraic functions in book creator applications. The development model used in this study is the Gall & Borg model (1989), which consists of ten stages, namely: (a) research and data collection, (b) planning, (c) product design development, (d) initial field trial, (f) main field trial, (g) revision of operational product, (h) field implementation testing, (i) final product revision, and (j) deployment and implementation. This study is limited to the process of designing an application for making textbooks for derivative applications of algebraic functions. The design includes making the display design of the ethnomathematics-based learning book creator application according to the needs and managing the features embedded in the ethnomathematics-based book creator application material for the algebraic function of the book creator application.

The initial stage of this study is data collection consisting of analysis of teaching material needs, material analysis, and analysis of student characteristics. Teaching materials were analyzed to obtain information on the quality of teaching materials used by mathematics teachers in class XI SMA/MA YALC Pasuruan. The planning stage is carried out by designing ethnomathematics-based learning for book creator application derivative algebraic functions materials based on the analysis results and data collection, as well as compiling validation instruments, product test instruments, and effective instruments in the form of learning outcomes test questions.

RESULTS AND DISCUSSION

Analysis of Teaching Material Needs

Based on interviews about the teaching quality materials used by teachers, researchers obtained information that confirmed and involved conventional teachers in class and scheduled lessons. When they dared to learn, did the teacher teach the material on the blackboard while directing a laptop or smartphone—others to video conferencing applications, particularly the zoom meeting application that connects students to other learning places. Students listen to teacher-taught material from printed books from several publishers in their schools via video conferencing applications.

In the current new normal conditions, the calculation of Pasuruan's YALC hours which was initially 90 minutes, is reduced to 60 minutes for one hour lesson. To overcome this problem and achieve learning objectives, teachers use videos made and uploaded via YouTube as teaching materials for students outside class time. Other teachers prepare modules to deliver certain materials. So, for other supports that do not apply modules, teachers only use essential support in the form of printed and digital

books. According to the PMPTK General Manager (Syahrir & Susilawati, 2015) a module is said to be good if it has the characteristics of independent learning, autonomy, adaptation, and user-friendliness.

According (Astutiningtyas, 2017; Blumenfeld et al., 2020; Ginosyan & Tuzlukova, 2015; Wulandari et al., 2016; Müller & Wulf, 2021; Patri & Heswari, 2021; Prihatin & Oktaviana, 2021) a module is said to be good if it has characteristics of independent, adaptive, and user-friendly learning. The module designed by the teacher has deficiencies in items a, e, g, h, i, j, and k, where one of these shortcomings does not exist because there is no learning goal to be achieved by linking problems to the real world. This module not only contains a lengthy article on the material, then some examples, then real reproduced without explanation. Media is also not just distributed as video. It will be easier to reach if the material is not only presented in writing but is equipped with exciting sounds, videos, and animations. With teaching materials, it is hoped that learning activities will be more meaningful for students and achieve the desired learning objectives.

Material Analysis

The material analysis begins with the material selection to the derivative algebraic functions in this study because this material is one of the most complex materials. The basic skills (KD) for applying derivative algebraic functions are KD 3.9 and 4.9. The description of each KD 3.9 and 4.9 is "Analysis of the relationship of the first derivative of a function with maximum and minimum values as the function monotony and the tangent line slope". And "Using the first a function derivative to determine the maximum, minimum, and interval between the function monotony and the slope of the curve tangent. The equation of the tangent line and the curve's normal line to the problem's context".

Research by Dwiwandira & Tsurayya (2021) shows that the material factor is the main reason that hinders students in solving problems by applying algebraic functions because students do not master the concept of derivatives to determine the interval function. Asih et al. (2018) showed students had difficulty connecting the problem with other related ideas, and students had trouble making mathematical models of story problems. Most students study mathematics separately, and few understand the interrelationships between material concepts.

In addition, the difficulty in learning algebraic function derivative material can be seen in students' errors in interpreting function graphs. Algebra is not only about variables and algebraic forms but often also involves graphs. Many types of algebra are presented graphically; For example, a straight line is a description of a diagram of a linear equation. In general, graph creation consists of two aspects, namely, making and interpreting graphs, regarding students' difficulties with charts (Czimmermann, 2007; Godsil C., 2001; Knuth, 2020). Students at the ALC Foundation also feel the types of problems above. To be able to achieve learning objectives on algebraic material, especially the application of derivatives of algebraic functions, it is necessary to choose practical and effective learning methods that students can understand. One may include ethnomathematics in learning (Jabali et al., 2020; Oktafiani, 2020; Richardo, 2020; Yulianto & Arumsari, 2016).

Student Characteristics

Student characteristics are analyzed to know the features of students who will use the developed product if the product is an application to make ethnomathematics textbooks. This is done so that the application of making this ethnomathematics-based learning book is appropriate and appropriate to facilitate learning for students. The characteristics of the students analyzed included background knowledge, learning experiences, and cognitive development obtained through field observations. Class XI SMA/MA students at YALC Pasuruan found that the age of class XI students was between 15 and 17 years old. Class XI students generally can access the internet using a computer, laptop, or smartphone and have been trusted by their parents to access information independently through these devices. They are seeing the class XI SMA/MA students at YALC Pasuruan who already have devices in laptops, computers, or smartphones and the ability to use these devices to access the internet, learning resources for application derivative algebraic functions materials in the form of ethnomathematics-based book creator applications as teaching materials.

Electronic Book Design Book Creator Application Ethnomathematics-Based Learning

E-book Applications for ethnomathematics-based learning book creators are presented in several menus, which are explained as follows:



Figure 1. E-Book Cover Design

The book creator application contains a cover that includes the title of the contents of the entire book clearly, namely "Ethnomathematical Learning: Application of Algebraic Function Derivatives in the Pasuruan Lontong Sayur Syawalan Tradition". The purpose of writing this title is so that: (a) it can attract the attention of readers, (b) can describe the book contents, (c) can trigger reading the book, and (d) is the very beginning of a book, (e) can summarize the contents of the book, and (f) can describe the topic of the book (Hawa & Yosef, 2019; Sari, 2017; Setyawan et al., 2021)

Developing this book can help students make it easier to learn the application of derivative algebraic functions that are applied in the real world, namely the "Lontong Vegetable" culture during the Syawalan tradition on the 8th Eid Al-Fitr. All are packaged with attractive designs by paying attention to the content and concepts in the learning content. The front cover is more engaging and can

also be seen in color. The following menu in this ethnomathematics-based book creator application is the title page and background, as shown in Figure 2.



Figure 2. Page Title and Background

Writing the title page in this learning e-book aims to report additional information about writing, namely ethnomathematics-based learning. Besides, the background is written in the introduction to attract the reader's attention while providing background information relevant to current research. On the title page, the author inserts an opening video on learning as a characteristic of YALC learning. Another important thing that this e-book is said to be a suitable medium is to write a table of contents and instructions for use, as shown in Figure 3 below.



Figure 3. Table of Contents and Instructions for Use

The display in Figure 3 contains a table of contents and instructions for use. Writing a table of contents is to help readers find the title of the material quickly without having to search through them one by one. In addition, writing instructions for this learning e-book has a vital role. Instructions for use help make it easier for readers to use this e-book media properly so that they are not mistaken in using it when learning. In addition, in his study, writing containing user guides for e-book media on book creator applications in the media is also carried out (Ahsana, 2021), where they post instructions for using the developed teaching materials at the top of the page and on the main menu page. This must be done so that users are not confused in accessing/using this ethnomathematics-based learning e-book. The following menu introduced in the ethnomathematics-based learning e-book is the KD menu, indicators, learning objectives, and concept maps, as shown in Figures 4 and 5.



Figure 4. Display of Basic Competencies and Indicators

The initial section of the KD & indicator menu presents a description of the essential competencies (KD) & indicators that students must master for the material for applying derived algebraic functions, namely KD 3.9 and 4.9. The contents elaboration of KD 3.7 and 4.7 contained in Permendikbud Number 37 of 2018 concerning Amendments to Permendikbud Number 24 of 2016 concerning Core Competencies and Basic Competencies of Learning in the 2013 Curriculum in Primary and Secondary Education is "Analyzing the relationship of the first derivative of a function with a value maximum, minimum value, and monotony of the function interval and the slope of the tangent." and "4.9 Using the first function derivative to determine the maximum, minimum, and interval between the function monotony and the slope of the tangent curve, the equation of the tangent and the normal of the curve related to contextual issues".

Experts in learning media and mathematics materials, as well as cultural experts, created and validated the prototype. This study used two validators for each aspect of learning media, two for the material presented, and one for the cultural expert aspect. Questionnaires are organized into categories based on aspects of assessing the validity of teaching materials. Each aspect consists of several statements. The average is then computed to determine the criteria for each aspect evaluated on a Likert scale. The criteria are evaluated using the following scale.

Table 1. Guidelines for validator assessment indicators

Scale	Criteria
$1.0 \leq N \leq 1.79$	Not very good
$1.80 \leq N \leq 2.59$	Not good
$2.60 \leq N \leq 3.39$	Currently
$3.40 \leq N \leq 4.19$	Good
$4.20 \leq N \leq 5.00$	Very Good

Table 2 shows the outcomes of the assessment of the feasibility of teaching materials.

Table 2. Shows An Evaluation of The Feasibility of Teaching Materials

	Aspect	Score	Criteria
Material Expert Validation	Content eligibility	3.71	Good
	Serving eligibility	3.57	Good
	heuristic character	3.81	Good

Learning Media Expert Validation	Content eligibility	3.67	Good
	Language Eligibility	3.73	Good
	Serving	3.81	Good
	Graphics	3.53	Good
Cultural Expert Validity	History	3.57	Good
	Meaning	3.73	Good
	Ingredient	3.67	Good

The validation results also include several validator suggestions for researchers to consider when improving the content of teaching materials. In terms of comments and suggestions, as well as improvements, the learning media expert suggested uniforming the formula format so that teaching materials look consistent in terms of writing, as well as adding discussion of questions related to the application of algebraic derivatives before entering the competency test questions for student practice. Based on the results in table 2, it is clear that the scores of the compiled teaching materials meet the "good" criteria (Score 3.68), implying that researchers can move forward with their research by using teaching materials that have been assessed and revised in response to the validator's comments and suggestions. However, due to time constraints, this research, as previously described, only progressed to the design stage.

In contrast to the e-book-based product, the application developed by Aprillianti & Wiratsiwi (2021) shows that the media produced in the indicators section has not been presented in detail, and there is no display menu in inserting the purpose of the e-book media in learning. The product developed this time is packaged by displaying indicators in detail, and there are learning objectives and a Concept Map on the following display. There are three goals to be achieved in learning using this developed e-book, namely (1) Students are expected to be able to show the derivative relationship in determining the stationary point and concavity of a function, and (2) Students can determine problems related to the application of stationary points in daily life, (3) students can solve problems related to the application of stationary points in everyday life. In addition, a concept map is also presented to show the relationship between concepts in the material for applying derivatives of algebraic functions so that learning becomes more meaningful (Yuniati, 2013). The researcher divides into three concepts that will be studied in this algebraic function limit material, namely: (1) the concept of a stationary point at the maximum point of application of the derivative of an algebraic function, (2) the concept of a stationary point at the inflection point of the application of the derivative of an algebraic function, and (3) the concept of a stationary point at the maximum point of application of the derivative of an algebraic function.

The following display in the learning e-book is part of the application that aims to remind students of the previous material. The menu display on the media containing the application designed by the researcher can be seen in Figures 6 and 7. This menu is the most important in the learning material e-book for derivative applications of algebraic functions because it is the basic concept used. Learning the main topics to be studied are presented in this menu. This menu displays text, audio, and video

lessons, as well as applications for assessing student learning outcomes which can be accessed by clicking the button below the image that displays educational materials, in contrast to the e-book-based product in the application developed by Aprillianti & Wiratsiwi (2021). The material is packaged in the form of a PDF, PowerPoint, or Word document. This study presents the material for applying algebraic functions as an e-book that offers learning in PDF text, audio, video, and quizzes. The e-book is designed using a book creator application with an attractive and attractive format that teachers and students can use. Product development in this study maximizes the use of information and communication technology relevant to the development of the current digital era.



Figure 5. Display of the Five E-Books

In this developed e-book, learning materials are presented in text form, which students and teachers can download in word form, which aims to make it easier for students to learn without having to open this e-book again. Students can study offline and online for repetition and emphasis on practice questions and materials. In addition, learning is presented through learning videos for four learning activities, each giving material and practice questions.

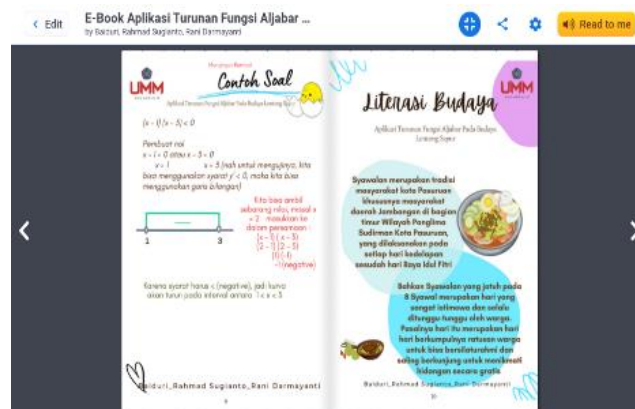


Figure 6. Ethnomathematical Cultural Literacy

The following menu embedded in the learning material e-book for this algebra feature is a summary of the material, which then includes the application of questions and answers directly on the next page. Giving material that is then directly applied to the questions in learning (Ismail, 2011) is a strategy that can help students achieve optimal learning outcomes. By providing a summary of the material presented, students can be allowed to understand the main points of the lesson content, be it

concepts, processes, or principles. Furthermore (Ismail, 2011) suggests that this stage is critical to remember the main idea of the material presented to avoid forgetting and reduce students' difficulties in retaining all the lesson content. Thus, students can review what they have learned to strengthen their memory and deepen what they have learned.

The material in this e-book also has a unique presentation because scholars incorporate cultural elements into the fabric and problems as one of the objectives of learning mathematics: to engage students and solve real-world problems. The materials discussed in this e-book are (1) stationary points, (2) maximum function values, (3) minimum function values, and (4) application of derivative functions of algebraic functions based on ethnomathematics.

The last menu presented in the learning application eBook of algebraic functions is the design group and the reference menu. The photo, name, and email of the e-book design team for learning application materials derived from algebraic functions are displayed on the design team's menu only to show the character behind the creation of this learning e-book that comes from algebraic functions. References are also provided to help the design team writing articles or writers get comparisons or sources to create a piece of writing that is appropriate and not too casual or subjective.

The design of this menu screen can be seen in Figures 11 and 12. This research leads to a strategy carried out at the draft product development stage so that experts can review it, assess, and test it in Class XI SMA. This e-book learning material for applying derivative algebraic functions is designed to attract students' interest and attention and make the student's learning process enjoyable by utilizing technology to the fullest. It is hoped can be explored further so the designs that have been made can be refined to the final stage of development.

CONCLUSION

This learning e-book was developed with the title "Ethnomathematics Learning: Application of Algebraic Function Derivatives. This learning e-book was designed using a book creator application. It was developed based on the results of the analysis of teaching material needs, material analysis, and analysis of the characteristics of class XI SMA/MA students for the application of material derived from algebraic functions. The development research in this article is limited to the e-book design process. This research is expected to be continued in further research so that the designs that have been made can be developed to the final stage of development so that they can be used directly by students to improve student's abilities and understanding of algebraic function application materials by connecting them with world problems real. The validation of materials, learning media, and culture received a score of 3.58 using "good" criteria.

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