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RESEARCH ARTICLE

Development of E-Module for Balakka Plants (Phyllanthus emblica L.) Based on Local Potential

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Abstract

This research aims to produce learning media in the form of teaching materials for Class The type of research used is the ADDIE Research and Development model with development stages, namely: (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation. The assessment instrument consists of five instruments, namely the validity of the media expert instrument, the validity of the material expert instrument, the practicality test instrument by the teacher, the practicality test instrument by students, and the learning test. Based on the validation results by two validators, the final media validation value was 98.14% with the very valid category, and the final material validation value was 80.30% with the valid category. The practicality score based on the teacher's response was obtained at 87.50% with a very valid category and the student response obtained a score of 81.30% stating that the learning media in the form of teaching materials is very practical to use in learning. Finally, the effectiveness test was obtained based on the student learning outcomes test, it was found that it had an effectiveness of 60.22% with a fairly effective category which was reviewed using the N-Gain effectiveness interpretation category grouping, which means that the e-Module was effectively used in the learning process.

Keywords
e-Module; Local Potential; Phyllanthus emblica L

INTRODUCTION

At the end of 2019, a pandemic emerged which had a significant impact on various aspects of life, one of which was education. This pandemic has not only attacked our country but has attacked other countries in the world, this pandemic is known as Covid-19 (Corona Virus Disease 2019). This pandemic first appeared in Wuhan, China, and has caused many victims because of its quite violent spread. WHO (World Health Organization) officially declared Covid-19 a pandemic on March 9 2020.

At the beginning of 2020, to be precise at the end of February, the spread of Covid-19 reached Indonesia. In early March, the Indonesian government swiftly declared a Covid-19 state of emergency and issued health and personal protection protocol policies to suppress the spread of the Corona Virus outbreak in Indonesia. This influences the world of education to adjust the learning process. With this situation, the government has determined that the learning process at both schools and universities will be held from home using an online system and in accordance with developments in the 21st century, characterized by advances in technology and information which are experiencing very rapid development, so that the 21st century is called the century of technology and media. (Alwan, 2018) so that it also supports the learning methods implemented by the government.

Learning is an action designed to support the student's learning process, by taking into account extreme events that contribute to the ongoing series of internal events experienced by students (Yuberti, 2012). Online or online learning is basically distance learning (PJJ). The distance learning system is a system that has existed since the 18th century and uses technology to carry out learning, starting from the

simplest technology to the latest. (Taylor, 2000) groups the distance learning generation into five generations, namely; (1) correspondence model, (2) multimedia model, (3) tele-learning model, (4) flexible learning model, and (5) smarter flexible learning model (The Intelligent Flexible Learning Model). In the fourth and fifth PJJ generations, jargons that were very popular in society were born, such as e-learning, online learning, and mobile learning (Tian Belawati, 2019).

Through e-Modules which is a form of communication between educators and students where communication means conveying information, thoughts and values with the intention of inspiring participation so that the things being told are in line with the targets (Rosyada, 2008). One of the subjects in school that functions to convey information, thoughts and values is biology.

Studying biology is built on the basis of three aspects that cannot be separated, namely process, attitude and product aspects. In essence, it is related to how to understand nature systematically, so that it is not limited to mastering knowledge in the form of facts, concepts or principles but rather as a process of discovery. Therefore, biology learning should continue to be improved until it reaches a better quality level. In fact, biology is often considered a difficult subject to understand. So far, students generally only have to memorize Latin names. Biology is meaningless if it is just memorized, but more than that, with understanding, students can better understand the concept of the subject matter itself.

So, in the biology learning process you should use teaching materials to support the delivery of the material being taught, whether in the form of printed or non-printed teaching materials, one of the teaching materials that we usually encounter in printed form is modules (Daryanto, 2013). However, the use of printed teaching materials has now shifted to teaching materials that use technology, for example e-Modules, e-books and so on which use internet access which is widely used in learning. Learning using e-Modules is very important for students because e-Module learning has the influence of the process of transforming conventional education into digital form, both in content and system (Wahono, 2005). Learning with e-Modules can be done via the internet, macromedia flash, Java, or other electronic media (Sari, Saputro, & Saputro, 2014).

Electronic modules (e-Modules) can be defined as a form of presentation of independent learning materials that are systematically arranged into the smallest learning units to achieve certain learning objectives, which are presented in electronic format where each learning activity is connected with links as navigation that makes participants students become interactive with the program, equipped with video and audio presentations to enrich the learning experience (Gunadharma, 2011). Electronic modules are a new innovation from printed modules, so that printed electronic modules can be accessed with the help of a computer that has been integrated with software that supports accessing e-Modules. The advantage of e-Modules compared to printed modules is that they are interactive, make navigation easier, can display or play images, audio, video and animation.

Several previous studies regarding learning media based on Flip PDF Professional by Edi Setiyo, Zulhermanan and Harlin said that learning media using Flash Flip Book was valid and practical for use in the learning process (Setiyo, Zulhermanan and Harlin, 2018). Research conducted by Bagus Putra Hadi Searmadi (2016) stated that there is a difference in the use of learning media in the form of e-Modules and conventional media learning.

Based on this description, in this research the electronic module is packaged with the help of the Flip PDF Professional platform developed by Wonder Idea Technology Limited, the lesson material is designed to be as interesting as possible with the lesson material so that students pay more attention to what is conveyed by the teacher. The advantage of Flip PDF Professional is that it can be published online or offline, even for teachers who are not skilled at operating computers, it will be easy to use this application. Using this application/software can produce more innovative and enjoyable learning media.

METHODS

This research was carried out at the Ja'fariyah Hutaibus Private Madrasah Aliyah, Jl. Lintas Gunung Tua KM 60, Lubuk Barumun District, Padang Lawas Regency, for class X students in odd semester. The treatment was carried out over 2 meetings with a time allocation of 2 x 45 minutes. The learning process is carried out in class and adjusted to the applicable educational calendar and lesson schedule. The subjects

of this research were class M.A. Data collection techniques include teacher and student questionnaires, media and material expert validation instruments and tests given to students.

The type of research used is Research and Development which is used to produce certain products, and test the effectiveness of these products as discovered by Sugiyono (2019). This research and development uses the ADDIE model proposed by Robert Maribe (2009) which consists of five steps. The five steps are (analysis, design, development, implementation and evaluation). The steps for developing an e-Module based on the local potential of the Balakka Phyllanthus emblica L plant can be explained as follows.

1. Analysis stage, is the stage where the researcher collects data related to students' problems in biodiversity material, especially the local potential plant balakka Phyllanthus emblica L, both through previous research, observation, and teachers' needs for learning media.

2. Design stage, is the stage of designing the application that will be created and developed starting from the cover of the e-Module that appears to the content of the teaching material media in the form of the e-Module that will be created

3. Development stage, is the stage where researchers have designed learning sequentially and systematically in order to determine everything that will be implemented in the learning activity process by paying attention to the potential and competencies of students

4. Implementation Stage, is the stage where researchers apply media in the form of e-Module teaching materials to students to determine the response and attractiveness of the e-Module that has been developed.

5. The Evaluation Stage is the assessment stage of the media created and developed by the researcher.

The subjects of this research were students of class X Science 1 MA Private Ja'faiyah Hutaibus consisting of 28 students. The E-Module consists of biodiversity material and the presence of local potential plant material Balakka Phyllanthus emblica L.

This research aims to develop valid, practical and effective digital learning media modules. The instrument used in this research was a validation sheet from 2 validator experts, namely media and material experts, so that the level of validity of this media development was obtained. Meanwhile, to see the practicality based on the biology subject teacher questionnaire and the responses of 28 students. Next, to see the effectiveness of the media, 28 students were given a test in the form of a pretest and posttest to assess the effectiveness of the media used.

RESULTS

The product produced in this research is an electronic learning media in the form of e-Module teaching materials that can be accessed via Android or computer. This product was developed with the help of Flip PDF Professional software, which is software that can be used to create electronic books or modules that are more interesting and make it easier for writers to convey material clearly. The process of developing digital learning media modules on biodiversity material for class X SMA/MA using the ADDIE model is explained in more detail as follows:

1. Analysis Stage

The analysis step consists of two stages, namely, performance analysis and needs analysis. Performance analysis is carried out to find out and classify the problems faced in schools related to learning media or teaching materials used in schools so far, then find solutions by improving or developing teaching materials. Needs analysis is determining the teaching materials needed by students to carry out the learning process.

2. Design Stage

At this design stage, we will discuss the problems obtained from the analysis stage and then use them to develop a learning media product. The designer for the development of e-Module learning materials is from designing the format by completing the opening section which consists of the cover design "E-Module Biology Based on Local Potential of the Balakka Phyllanthus emblica L Plant for Class X MA/SMA". In the module there are pictures and videos for each sub-material to explain the material. The e-Module appearance background and e-Module cover use Corel Draw, making this e-Module learning media

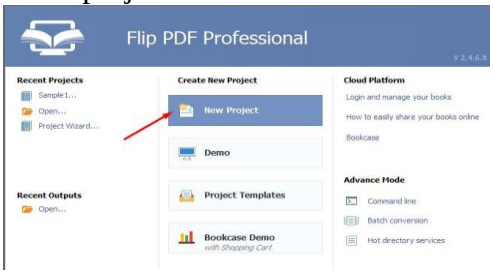
involves the Flip PDF Professional application in the design process. This media is created in the form of electronic media which is stored in files (exe).

3. Development Stage

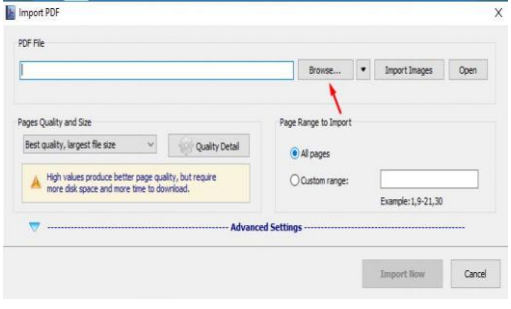
The results of developing learning media are e-Module teaching materials designed using the Flip PDF Professional application and we have previously downloaded the application. The method for developing a Biology e-Module Based on the Local Potential of the Balakka Phyllanthus emblica L Plant with the help of the Flip PDF Professional application is as follows;

a. Open the Flip PDF Professional application

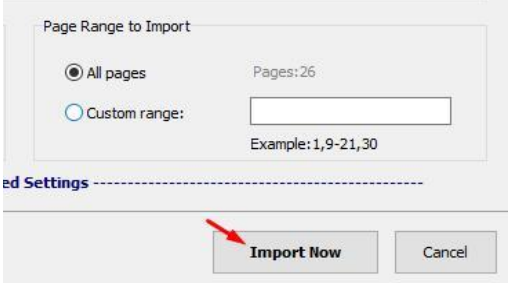
b. Select new project to add new work



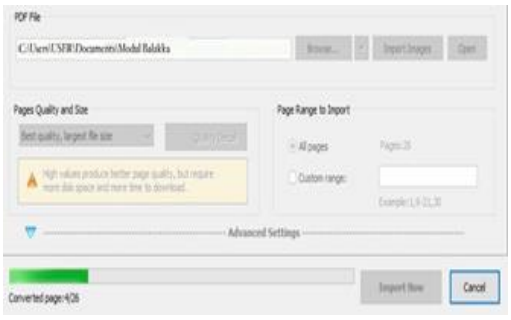
c. Buka browse, pilih file PDF yang akan diedit



d. Pilih all pages, lalu klik import now

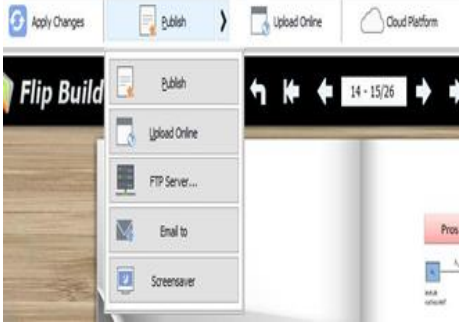


e. Proses import, diharapkan untuk tidak menekan tombol cancel

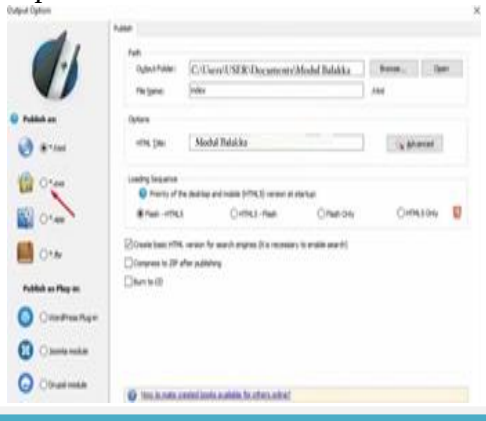


f. Selanjutnya akan tampil seperti di bawah ini

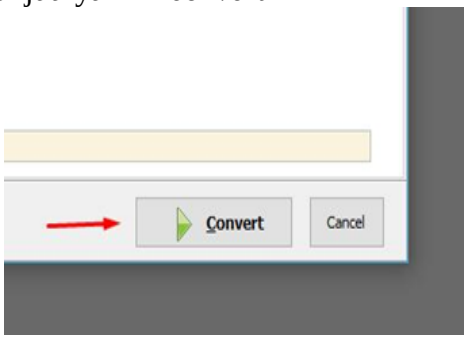
g. Selanjutnya simpan file dengan mengklik publish



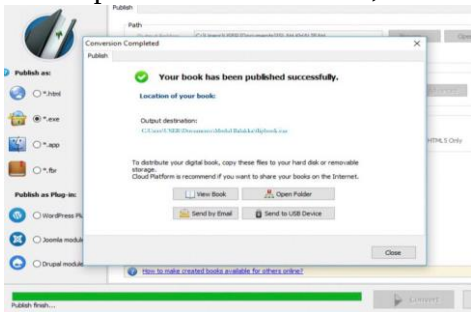
h. Selanjutnya pilih tempat penyimpanan file, dengan cara klik browse. Pilih jenis file penyimpanannya seperti html, exe, zip, dan lainnya. Disarankan agar menggunakan jenis exe, hal ini dikarenakan jenis file exe dapat dibuka dimana saja di semua jenis laptop ataupun *handphone*.



i. Selanjutnya klik *convert*

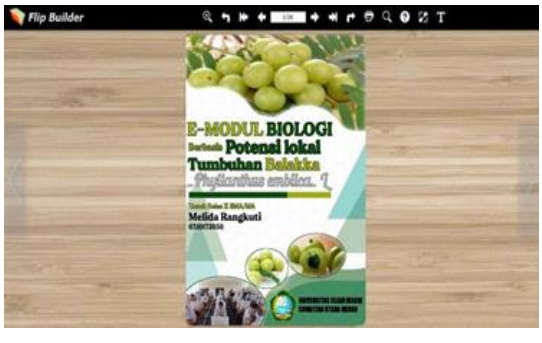


j. Setelah proses *convert* sukses, akan muncul tampilan seperti dibawah ini.



k. Selanjutnya periksa di file penyimpanan untuk dapat melihat file *e-Modul* sederhana yang telah buat

l. Tampilan dari file penyimpanan. Lihat pada gambar, *e-Modul* yang penulis buat.



After the product has been successfully developed, the next step is to carry out a media feasibility test by validating the product. Media or product validation is carried out after initial product creation. Validation is carried out in two ways, namely media validation by media experts and material content validation by teaching material experts.

4. Implementation Stage

After the product is developed, validation or assessment of the development design is carried out by two validators. Each validator provides an assessment of the product being developed. The final media validator assessment results are as follows:

Table 1. Final media validator assessment results

Aspek	Jumlah Jawaban Validator	Skor Maksimal	Persentase	Kriteria
Aspek Kelayakan Keagrafikan	106	108	98,14 %	Sangat Layak/ Sangat Valid
Total	**106**			
Skor Maksimal	**108**			
Persentase	**98,14 %**			
Kriteria	**Sangat Valid**			

Looking at the results of media expert tabulation tests in the table above, the total number of graphic or design assessments of e-Modules that researchers have developed after going through the revision stage from the validator is 106 with a maximum score of 108 and a percentage of 98.14% e-Modules Biology based on the local potential of the Phyllanthus emblica L balakka plant is included in the category which is very feasible to be tested in the field.

Then the results of the material expert's final validator are:

Table 2. Material Expert Final Validator Results

Aspek	Jumlah Jawaban Validator	Skor Maksimal	Persentase	Kriteria
Aspek Kelayakan Isi	41	52	78,84 %	Layak/ Valid
Aspek Kelayakan Penyajian	35	44	79,54 %	Layak/ Valid
Aspek Kelayakan Bahasa	30	36	83,33 5	Layak/ Valid
Total	**106**			
Skor Maksimal	**132**			
Persentase	**80,30 %**			
Kriteria	**Layak/ Valid**			

Judging from the results of the material expert tabulation test in the table above, the total number of assessments obtained from the e-Modules that researchers have developed after going through the revision stage from the validators is 106 with a maximum score of 132 and the percentage is 80.30%. Biological e-Modules based on local potential The Phyllanthus emblica L balakka plant is included in the category suitable for field trials. After product validation is complete, it is carried out by each validator and suggestions are obtained from both. Then improve the learning media in the form of Biology e-Module teaching materials based on the local potential of the Balakka Phyllanthus emblica L plant in accordance with suggestions and input from media expert validator lecturers and material expert validator lecturers so that there is a comparison of the initial media and the media after revision. The tabulation of validators from media experts and material experts on the Biology e-Module Based on the Local Potential of the Balakka Phyllanthus emblica L Plant will be presented in the graph in Figure 1 below:

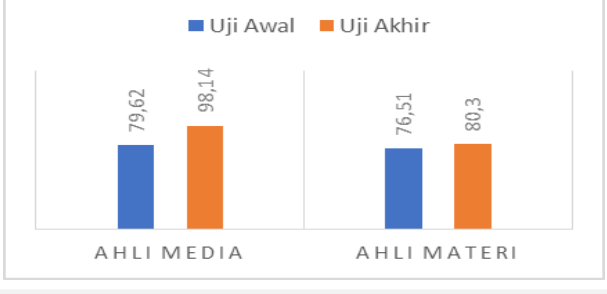


Figure 1. Initial and final product assessment graph for media experts and material experts

The next step is to implement learning media in the form of e-Module teaching materials in the learning process at school. By conducting trials with 28 class Apart from that, biology subject teachers will also assess the response to the e-Module developed by researchers.

a. Biology Subject Teacher Response

The e-Module that has been developed by the author will then be tested on students who previously the teaching staff also assessed the Biology e-Module Based on the Local Potential of the Balakka Phyllanthus emblica L Plant, in order to obtain practical value from the development of media in the form of e-Module teaching materials . The validation results from the biology subject teacher response sheet at Ja'fariyah Hutaibus Private Madrasah Aliyah, Lubuk Barumun District, Padang Lawas Regency are as follows;

Table 3. Validation Results from Teacher Response Sheets

Aspek	Jumlah Jawaban Guru	Skor Maksimal	Persentase	Kriteria
Kesesuaian Materi	12	12	100 %	Sangat Layak
Kualitas	10	12	83,33 %	Sangat Layak
Efektifitas	7	8	87,5 %	Sangat Layak
Penyajian	6	8	75 %	Layak
Total	**35**			
Skor Maksimal	**40**			
Persentase	**87,50 %**			
Kriteria	**Sangat Layak/ Valid**			

Looking at the results of the tabulation test of biology teacher responses in the table above, it is found that the total number of assessments for the e-Module that researchers have developed after going through the revision stage from media expert validation lecturers and material expert lecturers is 35 with a maximum score of 40 and a percentage of 87.50 % e-This biological module based on the local potential of the Phyllanthus emblica L balakka plant is included in the very suitable category for field trials.

b. Student Response

The total score from the trials that have been carried out in class

Table 4. Total Scores from Trials

Aspek	Jumlah Jawaban Peserta Didik	Skor Maksimal	Persentase	Kriteria
Kelayakan Isi	357	448	79,68 %	Menarik
Penyajian	726	896	81,02 %	Sangat Menarik
Bahasa	283	336	83,92 %	Sangat Menarik
Total	**1366**			
Skor Maksimal	**1680**			
Persentase	**81,30 %**			
Kriteria	**Sangat Menarik**			

With a total of 28 students, this is 81.30%, 1366 of the maximum score of 1680, which means that the biology e-module based on the local potential of the Phyllanthus emblica L balakka plant has very good criteria or is very interesting for students to use in biology learning.

In research on the development of a biological e-Module based on the local potential of the Phyllanthus emblica L balakka plant, the effectiveness test was also carried out using tests, namely pretest and posttest using the N-Gain formula in order to find out how successful this e-Module was in students' understanding. 60.22% with the achievement of the effectiveness interpretation category 'Quite Effective'

from the e-Module which the researchers had developed after giving a test in the form of multiple choice questions to 28 students with 20 pretest questions and 20 posttest questions as well.

5. Evaluation Stage

Based on the implementation stages, the e-Module needs to be evaluated. At the evaluation stage, final revisions are made to the products that have been developed based on student suggestions and input provided during the implementation stage.

Based on the results of students' responses, suggestions were obtained for learning media in the form of e-Module teaching materials, namely that e-Modules can be applied using the internet network so that they can be accessed easily and it is hoped that learning media in the form of e-Module teaching materials will be available in schools. Then the researcher was able to find out that the learning media in the form of e-Module teaching materials that were developed were very suitable for use in the learning process and the results of product validation tests and in terms of student responses were obtained that the media developed were very suitable for use.

CONCLUSION

Based on the description of the results and discussion above, it can be concluded that the Biology learning module based on the local potential of the Balakka Phyllanthus emblica L plant on the subject of biodiversity at MAS Ja'fariyah Hutaibus is instructionally and technically valid, capable of improving students' cognitive learning outcomes with normality. The average gain was 60.22%, getting a positive response from material expert validators was 80.30%, media expert validators were 98.18% and the practicality value of teacher responses was 87.50%. Thus, the e-module developed has very practical criteria and is suitable for use as teaching material on biodiversity material. Based on the results of development research on local potential-based Biology learning modules that have been carried out, suggestions that can be given are as follows, the study of e-modules needs to be emphasized on ethnoscience, and further research, namely the dissemination stage, needs to be carried out to determine the level of effectiveness of the product being developed.

REFERENCES

Alwan, M. (2018). Pengembangan Multi Media E-Book 3D Berbasis Mobile Learning untuk Mata Pelajaran Geografi SMA Guna Mendukung Pembelajaran Jarak Jauh. Jurnal At-Tadbir STAI Darul Kamal NW Kembang, 1 (2), 26-40.

Belawati, Tian. (2019). Pembelajaran Online Edisi 2. Tangerang Selatan: Universitas Terbuka.

Daryanto, D. (2013). Menyusun Modul. Yogyakarta: Penerbit Gava Media.

Gunadharma. (2011). Pengembangan Modul Elektronik sebagai Sumber Belajar untuk Mata Kuliah Multimedia Design. Jurusan Teknologi Pendidikan, Fakultas Ilmu Pendidikan, Universitas Negeri Jakarta.

Rosyada, D. (2008). Media Pembelajaran. Jakarta: Gaung Persada (GP) Press.

Sari, R. A., Saputro, S., & Saputro, A. N. C. (2014). Pengembangan Modul Pembelajaran Kimia Berbasis Blog untuk Materi Struktur Atom dan Sistem Periodik Unsur SMA Kelas XI. Jurnal Pendidikan Kimia, 3(2), 7– 15.

Setiyo, E., Zulhermana, Z., & Harlin, H. (2018). Pengembangan Media Pembelajaran Berbasis Flash Flip Book pada Mata Kuliah Elemen Mesin 1 DI Program Studi Pendidikan Teknik Mesin Universitas Sriwijaya. INVOTEK: Jurnal Inovasi Vokasional dan Teknologi, 18 (1), 1-6.

Taylor, J. (2000). New millennium distance education. Dalam V.Reddy & S.Manjulika (Eds). The World of Open and Distance Learning. New Delhi: Viva. Diunduh dari www.usq.edu.au/user/taylor/publication_presentations/2000IGNOU.doc

Wahono, R. S. (2005). Pengantar e-Learning dan Pengembangannya. 1–10. Retrieved from http://ilmu komputer.com

Wahyuni, Sri., Zakaria Sandi Pamungkas, Trapsilo Prihandono. (2017). Kelayakan Modul Pembelajaran Ipa Berbasis Potensi Lokal Pada Pokok Bahasan Perubahan Benda Di Smpn 1 Semboro Kabupaten Jember. Jember: Program Studi Pendidikan Fisika FKIP Universitas Jember.

Yuberti, dkk. (2012). Teori Belajar dan Pembelajaran. Bandar Lampung: Anugrah Utama Raharja