

Digitizing Lehrwerkanalyse Materials with the Flip PDF Professional Application

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ABSTRACT

The development of digital book using the Flip PDF Professional application for Lehrwerkanalyse course is motivated by the lack of interactive teaching materials for students. The aims of this research are: (1) to develop a digital book for Lehrwerkanalyse course through the Flip PDF Professional application; (2) to determine the feasibility of digital books based on expert judgment and student perceptions. This research is a research and development (R&D) using the ADDIE development model. This research was tested on students of German Language Education Study Program, Universitas Negeri Malang. The stages of this research are: 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation. The data collection method used a questionnaire to obtain assessment data from students on the product. The result of the product is an OFFEN digital book contains 8 materials presented in the form of text, video, audio, supporting images, mini quizzes, and essay assignments for the Lehrwerkanalyse course. The results of the expert assessment using the Gregory validity formula, the feasibility is at a score of 0.96 (very high). The implementation of digital book for students results in that these digital books have an attractive appearance, easier to understand the material, can be used as independent teaching materials, and is easy to access. Based on these two assessments, the OFFEN digital book is suitable to use as independent teaching material.

KEYWORDS

Digital book; flip PDF Professional; Lehrwerkanalyse

INTRODUCTION

The advancement of information technology (ICT) has familiarized the community with mobile learning media including e-learning, film conferences, digital books, etc (Wirasasmita & Uska, 2017). Herliantari (2010) highlighted the important role of digital books as the solution to the limitations of printed books. Digital books are published in computer files which Atmadja et al. (2015) and Saefullah (2017) found as an innovation to which does not require extra care. Digital books are more efficient and practical.

Digital books can make good complementary resource for students to learn independently (Endrayati, 2020). Finita (2015) stated that digital book includes not only text, but also interactive media that can be accessed by readers. Digital books are more interactive as they contain images, audio, video, and quizzes with proper color composition and attractive layout that supports the interaction of lecturers and students (Hwan, 2017; Jeong, 2013).

Rachmah, et al (2018) prove that digital books facilitate a better reading experience with images, audio, film, animation, and navigation that can also stimulate interactive

simulations. In addition, digital teaching materials also offer flexibility as they can be accessed regardless of time and place, are easily stored in various devices, are more environmentally friendly (Sofyan, 2019), and can make learning more time-efficient (Sukamin, 2012). Various learning resources employ digital-based learning, including audio, booklets, e-books, flipbooks, etc (Sella, 2017).

Flip PDF Professional is software that converts printed books and materials into digital ebooks in flipbook format. (Hardiansyah, 2016). Amanullah MA (2020) said that digital flipbook is a breakthrough to the learning activities in the digital era. Watin & Kustijono (2017) also found Flip PDF Professional capable of integrating multimedia content such as audio, animation, reading, movies and Flash. The outputs are HTML5, EXE, Zip, Mac app, FBR, mobile type, mobile, tablet, and CD (Sugianto, et al, 2013). Ghaliyah (2015) mentioned that Flip PDF is more attractive with easy navigation, more realistic flip effect, a direct experience, and a sharper video format. In this study, Flip PDF Professional was used in compiling and editing learning materials (Finita, 2015).

Previous researchers have developed the digitization of learning materials. Wijayati, et al (2021) has digitized the content of Evaluation im Deutschunterricht course using Flip PDF Professional application. Wirasasmita and Uska (2017) developed teaching materials using a reliable electronic digital book publication platform and students (Epub) using Sigil software in basic programming courses. The Epub digital book was found a feasible teaching materials based on the results of the product testing and validation from the material experts, media and students.

In this study, the content of Lehrwerkanalyse course was converted into pdf digital book. Lehrwerkanalyse is a compulsory subject in the German Language Education Study Program which for 5th semester students. This course allows students to understand basic concepts, compare the suitability of the content of teaching materials with the curriculum, become capable in analyzing, assessing and developing German language learning materials for senior high schools and vocational high schools in Indonesia (German Literature Department Catalog, 2020). Teaching materials for Lehrwerkanalyse courses are quite difficult to find and to understand, particularly the theoretical materials. Those problems can be resolved by developing a digital book for the Lehrwerkanalyse course. The use of this digital book is also expected to help students with independent learning when lecturer cannot attend face to face learning.

In this study, a flipbook named OFFEN was developed using the Flip PDF Professional application to be used as an alternative media for Lehrwerkanalyse course. This digital book is easy to obtain and provides convenience, practicality and ease of use. This study was conducted at the State University of Malang, involving 5th semester students of German Language Education Study Program who were taking Lehrwerkanalyse lectures as users. The objectives of this study are: (1) To develop digital book learning media using the Flip PDF Professional application in the Lehrwerkanalyse course, (2) To examine the feasibility of digital books based on expert validation and user validation.

RESEARCH METHODS

A research and development method was applied to develop an interactive digital flipbooks using the Flip PDF Professional application. The RnD model used in this study was adapted from the ADDIE model proposed by Robert Maribe Branch (Branch, 2009).

ADDIE stands for Analysis, Design, Development, Implementation and Evaluation. The learning system being developed in the flipbook included the determination of learning resources, learning strategies, tools, and learning assessment (Sri Hayati, 2015). There were 5 stages of development in this study. Stage (1) was the analysis of the needs for the

product. (2) Design stage where the researchers compiled and created the products based on the predetermined criteria. (3) Development which refers to the product testing. (4) Implementation where users tried out the product and (5) Evaluation where the product was assessed to see whether it had met the predetermined specifications.

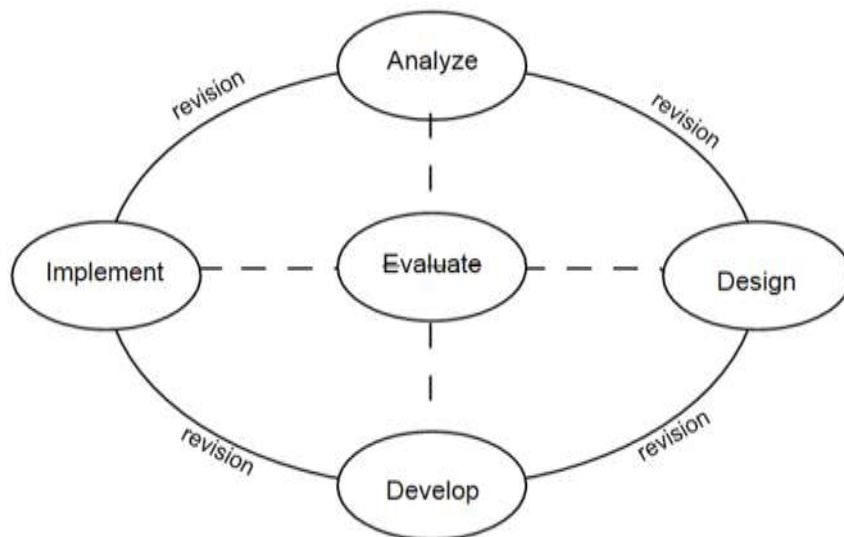


Figure 1. ADDIE Development Model (Branch, 2009)

Data of this study were collected through questionnaires distributed to students using google forms and expert validation carried out by material expert and media experts. The results of the expert validation were analyzed based on the formula proposed by Gregory. Gregory (2015) stated that content validity could show how precise test results met the objectives of the design and visualized task items. Gregory's content validity formula is presented as follows.

$$\text{Validation} = \frac{D}{A+B+C+D}$$

Remarks:

- A: both validators disagree
- B: validator 1 agrees, validator 2 disagrees
- C: validator 1 disagrees, validator 2 agrees
- D: both validators agree

Validity scoring:

- 0.80 – 1,00: very high
- 0.60 – 0.79: high
- 0.40 – 0.59: moderate
- 0.20 – 0.39: low
- 0.00 – 0.19: very low

RESULTS AND DISCUSSION

Analysis. At this stage, the researchers conducted a literature study on the digitization of learning materials to be applied to the *Lehrwerkanalyse* course. Digitization is a useful innovation to fit the learning process in the digital era. Learning materials can be visualized through applications to create more interesting learning activities and to improve students' learning motivation. After that, the researchers determined which materials in the *Lehrwerkanalyse* course to be included in the flipbook based on the Lesson

Plan. Material analysis was performed by selecting the materials that must be mastered by students. The usefulness of the menus available in the flipbook was also assessed.

Initial product design was the stage where the early version of the product was developed, which included the concepts of book cover, chapter covers, layout, design map, color setting, readability-related aspects, and screen resolution.



Figure 2. The design of the book cover and concept map

At the design stage, identification of material was carried out based to fit the menu on the flipbook. Eight materials are included in the digital book: (1) *Definition vom Lehrwerk*, (2) *Rolle und Funktion des Lehrwerks*, (3) *Arten des Lehrwerks*, (4) *Open Educational Resources*, (5) *Vorteile und Nachteile eine Lehrwerks*, (6) *Gemeinsamer Europäischer Referenzrahmen (GER)*, (7) *bungstypologie*, (8) *Kriterienliste nach Fraßdorf und Allendorf*. These materials are presented in the form of video, audio, supporting pictures, mini quizzes, and assignments.

In the Open Educational Resources material, a mini quiz is presented using an online quiz platform called *educandy* to assess students' understanding of OER rules. There are five multiple choice questions related to OER material. Videos retrieved from *YouTube* and educational videos made by students for *Arten des Lehrwerks* and *bungstypologie* materials are also included to help students understand the material and do the assignments better.

Development. At this stage, the researchers implemented the product concept by adding more interactive content (reading passages, pictures, exercises, audio, video) using the Flip PDF Professional application. Several activities were carried out by researchers in this development stage.

The first activity was the material preparation to determine the main element in the interactive digital book to be processed in Microsoft Office Word. The source materials were in the forms of E-Learning books, websites and journals that had been selected at the analysis stage.

The second activity was the graphic design where the book covers, chapter covers, concept maps, and layouts (headers and footers) for *Lehrwerkanalyse* digital books were designed. The layout was created using Canva. After that, videos and audio were created to convey the materials in easy-to-listen format. Audio narrations were recoded using an audio recorder and videos retrieved from *YouTube* and student-made videos were also included as references.

The last activity in the development stage was when the researchers compiled and integrated the text, graphics, audio and video elements into a flipbook using the Flip PDF Professional program to produce interactive digital books in HyperText Markup Language

(.html) format. The html format makes it easier for students to access the digital book through any kinds of electronic devices with internet connection.

The prototype of the digital material product was tested in 2019 to students in offering B who attended the *Lehrwerkanalyse* lecture for eight weeks based on the semester lesson plan. After every meeting, students answered a questionnaire distributed by researchers via google forms to examine their perceptions of the digital book used in the class. Furthermore, materials and media used for digitizing were tested for the validity by material experts and media experts.

The feedbacks from the validation were used as the basis for the product revision. After that, the product was tried out to students who attended the *Lehrwerkanalyse* lecture. Feedbacks from students sent via GoogleForm were also the basis for the material revision.

The Results of the Validations

Validations were carried out by two experts in learning materials and learning media using the formula proposed by Gregory (2016). This formula is best used in an analysis that involved multiple variables. The two validators used identical instruments consisting of a) aspects related to the content of the material presented in the digital book; b) the independent learning feature; c) digital book display; and d) programming aspect. The results of the validation are presented in Table 2.

Table 2. The Results of the OFFEN Digital Book Validation

Material Expert Validation		Media Expert Validation	
Relevant	Irrelevant	Relevant	Irrelevant
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27	-	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27	16

Table 2 shows that the material expert considered that all aspects of the developed digital book were relevant. Meanwhile, according to media experts, some items were irrelevant seen from the readability from the font use. The results of the validity test from the two experts were calculated using the content validity formula by Gregory (2016):

$$\begin{aligned}
 \text{Validation} &= \frac{26}{0+1+0+26} \\
 &= 0.96
 \end{aligned}$$

The content validity assessment by two validators resulted in a score of 0.96 (very high) Therefore, the validity of the OFFEN Digital Book developed using the FLIP PDF Professional developed in this study is suitable for use in the *Lehrwerkanalyse* course.

Implementation stage The revised product was tried out to offering C that was not part of the test subject after the flipbook is tested for validation by media experts and material experts in order to examine the feasibility of the flipbook.

Product implementation was carried out for 8 weeks or 8 meetings. In each meeting, one topic presented in the digital book was delivered. At the end of the series, students answered the questionnaire distributed by researchers via google form to see their perceptions of digital books that they used.

Students' Perception of the Digital Book

The digital book implemented for Offering C students consisted of eight *Lehrwerkanalyse* course materials. In general, students' responses to the questionnaire are categorized into four as presented in Figure 3.

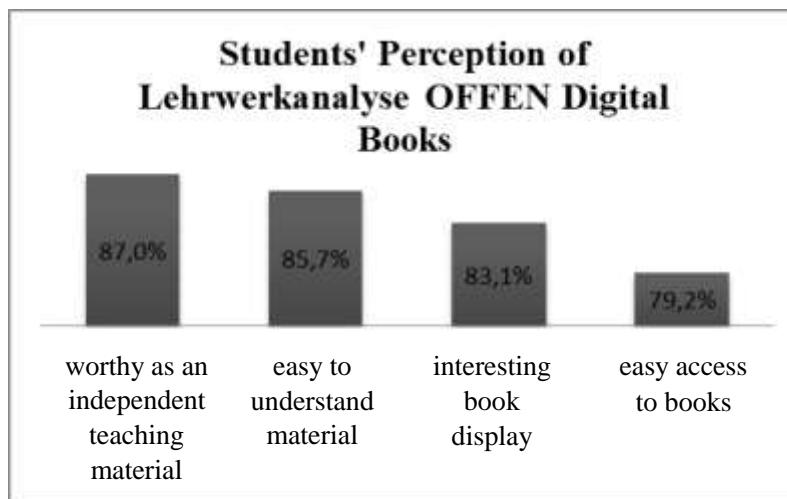


Figure 3. Students' Perception of the *Lehrwerkanalyse* Digital Book

There are 87.00% of students consider this digital book a feasible media that facilitates independent learning. This digital book contains eight *Lehrwerkanalyse* course materials that has been adjusted to the Semester Lesson Plan (RPS).

As many as 85.70% of students found it the book easy to understand as the material are presented in a concise, clear, and comprehensive manner. The materials were adapted from articles and journals. In addition, this digital book also provides audio with explanations. Regarding the appearance of the book, 83.10% of students agree that this digital book has an attractive appearance. This book is designed using the right color composition with images that fit the materials.

Seen from the ease of access, 79.20% of students did not experience problems in accessing the digital book. This digital book is easily accessible from computers, laptops, or cellphones. However, 20.80% of the students had internet connection issue which prevented them from accessing the book easily.

The results of the questionnaire showed the shortcomings mentioned by the students regarding the *Lehrwerkanalyse* digital book. The shortcomings relate to the limitation that the book cannot be accessed offline, cannot be downloaded, and there are also some images that need improvement.

Product evaluation. In this step, the final product was evaluated to measure its quality as a teaching materials to support *Lehrwerkanalyse* course. The product evaluation was based on the results of the questionnaire distributed to students to determine students' perceptions of the final product of the OFFEN digital book at the implementation stage.

During the Covid-19 pandemic and the 4.0 Industrial Revolution, teachers are required to be creative and competent in using technology as media to conduct face to face and online teaching and learning activities. The development of digital teaching materials such as flipbooks as a media to support students in carrying out independent learning or learning from home is important.

The OFFEN digital book is an independent teaching material used in the *Lehrwerkanalyse* course. This book contains eight presentations of material adjusted to the Semester Lesson Plan (RPS). This flipbook-based digital book can be used to facilitate

independent learning processes and can be applied in online class. The researchers found that through the OFFEN digital book capable of facilitating independent learning because the materials in the OFFEN digital book were designed to be easy to understand. Researchers also include material sources in the bibliography section to allow students to access the sources for more comprehensive understanding. As stated by Jain (2017), flipbooks are very effective in helping a person or student to gain knowledge and make the learning process easier. Similarly, Makdis (2020) also stated that the main purpose of developing a digital book is to create a book that is easier to access in gaining knowledge and information. The use of digital teaching materials is interesting and it supports the independent learning (Alperi, 2020; Arisandi, 2020).

Seen from the content, the materials presented in the books are easier to understand because the book integrates multimedia items such as images, audio explanations, learning videos, and quizzes that can be accessed online. Kurniawati and Nita (2018) also found that interactive multimedia can improve students' understanding. Flipbooks make reading activities become more interesting. (Haryanti, 2016).

The first and second materials in the OFFEN digital book are *Definition vom Lehrwerk* and *Rolle und Funktion des Lehrwerks*. These materials contain explanations related to the definition, role and function of a teaching material that is presented in audio format. Audio format allows students to easily read the book. Students are instructed to read a thesis or an article/journal related to the analysis of teaching materials to familiarize them academic articles/journals that will help them with their final project or thesis. This assignment also utilizes the Learning Management System (LMS) facility at the State University of Malang, namely *Sipejar*. *Sipejar* is used to upload tasks that have been completed. The content of the first material was adapted from the results of students' research that have been published. For the first and second materials, students demanded for more supporting images.

In the third material, *Arten des Lehrwerks*, in addition to text and audio, there are two videos presented. The first video was retrieved from *YouTube* which explains the types of teaching materials. The second video is listed in the *Aufgabe/task* section containing explanations related to the principles of teaching materials. Students appreciated the improvement in the quality of the OFFEN digital book because it contains more supporting images and videos that help them understand the materials better.

The fourth material in the OFFEN digital book is Open Educational Resources (OER) which contains mini quiz using the online quiz platform *educandy* to test students' understanding of user access licenses. Students like the mini quiz in the fourth material because besides of its usefulness in improving their knowledge, the mini quiz presented has been found entertaining. In the fifth material, *Vorteile und Nachteile des Lehrwerks*, information on the advantages and disadvantages of each teaching material in the form of tables are presented.

In the sixth to eighth material, the presentation of the material is more complex. These materials are directly related to the *Lehrwerkanalyse* course, namely analyzing teaching materials. The materials are *Gemeinsamer Europäischer Referenzrahmen (GER)*, *Bungstypologie*, and *Kriterienliste nach Fraßdorf und Allendorf*. In the *Bungstypologie* material, a video is presented to increase students' understanding of the material. Students in groups will analyze the content of teaching materials based on the three materials that have been mentioned. In the final assignment, each student will make an independent teaching material, namely the Independent Learning Activity Unit (UKBM) which is compiled based on the Basic Competences in the German Language Subject Syllabus.

In general, the eight materials in the OFFEN digital book stimulate the higher order thinking skills (HOTS) as students are required to think critically. Assignments in the book require students to conduct in-depth examination of the materials. HOTS ability enables students to understand complex situations (Husna, 2018).

The use of audio also improves students' level of understanding. Delani (2017) also found audio tools capable of improving learning experiences verbally. The user interface of the digital book developed in this study is more interesting as they contain pictures, right color composition and font size. The researcher also added a shortcut in the table of contents to make it easier for readers to jump to certain materials in the book. Aji & Widjanarko (2016) also stated that digital books are more interesting and can improve students' learning motivation and understanding.

However, the digital book also suffers from several limitations. Digital books require users to have a stable internet connection and can only be accessed using an internet connection. Without an internet connection, the audio, video and online quizzes cannot be accessed. Prawiyogi (2020) mentioned that distance learning requires strong and stable internet connection. Problems related to the network will make it difficult for students to catch up with the teaching and learning activities. This technical constraint reduces the convenience of accessing digital books (Ruddamayanti, 2019).

CONCLUSION

This study was conducted using the ADDIE Research and Development model to develop a digital book for German Language Education students taking the Lehrwerkanalyse course. The OFFEN digital book developed in this study has 77 pages for eight topics that can be used as an independent learning media. The eight topics are (1) Definition vom Lehrwerk, (2) Rolle und Funktion des Lehrwerks, (3) Arten des Lehrwerks, (4) Open Educational Resources, (5) Vorteile und Nachteile eine Lehrwerks, (6) Gemeinsamer Europäischer Referenzrahmen (GER), (7) bungstypologie, (8) Kriterienliste nach Fraßdorf und Allendorf. These materials are presented in the form of text, video, audio, supporting images, mini quizzes, and essay assignments. The first to fourth material have text, audio, and videos from YouTube and videos made by students. The video adds more information to the explanation and guides the students with their assignments. The mini quiz in the fourth material contains questions related to the license of educational resources (OER) using the online quiz platform, educandy. An essay assignment is provided in the end of each section to train students' critical thinking skills or high order thinking skills (HOTS) where students are required to examine the materials in-depth. For example, in the sixth to eighth material, students must analyze whether the content of a teaching material have met the GER, bungstypologie, and Kriterienliste nach Fraßdorf und Allendorf. OFFEN digital book can be accessed on various devices and it contains audio, video, interactive quizzes, and visual and sound effects such as flipping through an original printed book. However, OFFEN digital book has a limitation related the need for stable internet connection to access it. This digital book also cannot be downloaded offline and audio, video, and quiz features cannot be accessed without internet connection.

OFFEN digital book is suitable for use based on the expert validation and student assessments. The final expert validation score was 0.96 (very high). Thus, the OFFEN digital book is suitable for use in the Lehrwerkanalyse course. Students' responses toward the OFFEN digital book vary. Students find the appearance of this digital book is interesting because it contains a lot of images, audio, and video. The composition and color contrast are also regarded appropriate. They also find the materials easy to understand.

Furthermore, the interactive features in the form of quizzes make their learning more effective and efficient.

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