

# Developing Interactive Bible Learning Model Based on Mobile for Children

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## ABSTRACT

Bible stories have been introduced to children at early ages and continuously learned. The learning process is conventionally conducted in classrooms with books as the main media and lately accompanied by video presentations. However, the current life style in the IT era may shift children learning style. For them, smartphones and other digital media are more interesting than books. This paper is intended to create a mobile-based Bible-learning for children and youth. In developing the application, the researchers conduct qualitative approaches combining Borg and Gall's Research and Development Method with Luther's Multimedia Development Life Cycle. It is the utmost hope that the new IT-based learning model could facilitate easier, more fun and more interesting learning for children and youth. This research is still on going and the researchers would like to present a smartphone-based Bible learning games. Collected data is processed using NVivo, a qualitative software data processing. Research findings show that mobile-based learning including games is the most feasible model.

## CCS Concepts

• Applied computing → Education → Computer-assisted instruction

## Keywords

mobile; multimedia; Bible learning; game; interactive

## 1. INTRODUCTION

It is important to teach the Bible to youth, as the Bible would provide the right foundation for their faith and lives. Innately, human tend to seek a Divine Power in one way or another. Teaching the Bible allows one to meet the true God, and see the

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love of God expressed in the compassion of Ruth, the excitement of God in Peter, the gift of God in Jesus, and the examples from Genesis to Revelation.

The church encourages children to learn to respect the Bible as the absolute authority in their lives. To acquire the state of faith, it is not enough that children just listen to Bible lectures. Finding the truth themselves would be a much better way to retain it. [1]

On a global scale, we read in an incredible pace like never before. We spend a great deal of time glued to a screen, reading digital media, social networks and other discussion forums. [2]. Although the internet is considered a crucial part of contemporary life, it also represents the state of emergency in risky behaviour. Many studies show that people can be addicted to internet, resulting harmful effects on social behaviour, habits and abilities. [3]. Young children need to experience a wide range of pedagogical approaches including play in all its forms, to ask their questions, to initiate, to investigate and move beyond the 'religion lesson circle' into, in, through, across and around the environment. There are still many identified and unidentified challenges awaiting. The ongoing research into the theory and practice of early childhood religious education is imperative [4]. The urge of quality improvement of Bible learning and teaching drives institutions and family to transform education. The concept of quality in education is complex and multidimensional and has been defined in a variety of ways in different contexts by different stakeholders. Defining what quality means in higher education is hindered by the complexity of educational theory and practice. Different stakeholders, from practitioners and students to professional bodies and society in general have broad and competing views as to how they perceive quality to be [5]. These provide the impetus for the need to have continued quality improvements in the different educational processes.

The profile of youth changes over time, and the nature of parenting and community involvement deviates as well. However, the teaching methods in schools and universities is just about the same, with little understanding of how big the generation gap is. [6]. How young people learn is arguably linked to their future opportunities and well-being. For this reason, it is critical to identify each generation in how they process the world around them, how they engage with authority, how this impacts the family and the community, and what should be done to maximize the likelihood of them achieving their goals. A number of

concepts have be brought together in an attempt to find teaching opportunities in the diverse and complex influences on the learning processes of the 21st century learner. We shall focus on three generations: Generation X (Gen X, 1965–1985); Generation Y (Gen Y, 1978–2000), also known as the Millennials; and Generation Z (Gen Z, 1995–2012) [7].

### 1.1 Learning

Given this understanding of today’s youth culture and the nature of adolescents in our schools, how can religious education teachers successfully engage with their students? In answering to this question, Ang proposed four essential virtues needed to effectively engage today’s students. They were knowledge, authenticity, relevance, and relationships, which were no hierarchy in the four elements of student engagement, nor was the process linear. Each element of student engagement had its value and the distinct elements did not stand alone, but rather intermingle and support each other to effectively engage today’s secondary school students. [8]

Säljö conducted a qualitative research with adult learners about what learning means to them, and after analyzing the findings, 5 qualitatively different conceptions were produced. These conceptions demonstrate the differences in ‘what’ the adult students think learning is, and ‘how’ learning can be acquired. The conceptions are: (1) Learning as a quantitative increase in knowledge. Learning is acquiring information or knowing ‘a lot’; (2) Learning as memorizing. Learning is storing information that can be reproduced; (3) Learning as acquiring facts, skills and methods that can be retained and used as necessary; (4) Learning as making sense or abstracting meaning. Learning involves relating parts of the subject matter to each other and to the real world; and (5) Learning as interpreting and understanding reality in a different way. Learning involves comprehending the world by reinterpreting knowledge.

Although there are five distinctions, these can actually be categorized into two: “content-centred” which refers to learning as transmission, memorization and reproduction of facts as delivered by the teacher; and “learning-centred” as making meaning, construction and integration with previous knowledge [9]. The boom of information and communication technologies in a wide range of social activities has touched the field of addictology and in several last few years we talk about addiction to internet, which belongs to a category so called non-substance addictions. “Since the developmental period of adolescence there is the need of exploring and experimenting, the adolescents represent just this group of the most potentially at risk on the internet.” [10].

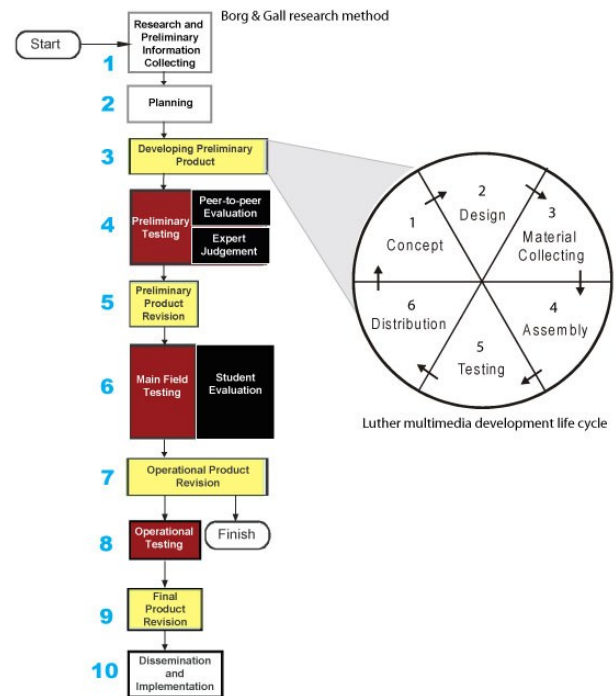
An estimated 62.9 percent of the population worldwide already owned a mobile phone in 2016. The number of mobile phone users in the world is expected to pass the five billion people by 2019. The mobile phone penetration is forecasted to continue to grow, rounding up to 67 percent by 2019 [11].

## 2. METHOD

This study uses Research and Development (R & D) phases according to Borg and Gall, that divide the R&D process into 10 phases and MDLC (Multimedia Development Life Cycle). On the third phase of R & D researchers use MDLC. [12]

Research and Development method covers only seven phases, in accordance with the needs of the lecture material in Bible youth learning, include: (1) Research and Preliminary Information Collecting. In this stage, the estimation of identification, learning and research literature on a small scale; (2) Planning. After

obtaining the necessary information, the next step is to plan assembling a product; (3) Developing Preliminary Product. After the initiation of the comprehensive plan, the main step in the stage of R&D is to make an early form of learning product that can be tested. At this stage the necessary feedback and suggestions from colleagues in related fields, namely Bible education, theology, multimedia and information technology; (4) Preliminary Testing. Initial testing of the expert evaluations, conducted after initial product completely developed, are related to Bible education, theology, multimedia and information technology; (5) Preliminary Product Revision. After the initial testing, the next stage is revising the product in accordance with data obtained from the initial testing; (6) Main Field Testing. After the initial product is revised, conducted field testing for evaluation of the product. The questionnaire are used to obtain feedback from youth, parents and teachers. Interviews are conducted on several youth, parents and teachers during the testing stage; and (7) Operational Product Revision. After having conducted main field testing, the next stage is product revision as an improvement of multimedia interactive learning for using in the next phase.



**Figure 1. Research design using Borg & Gall’s Research and Development and Luther’s MDLC [12].**

This developing preliminary product presents the method of Bible learning application that is used in this research. This research uses Multimedia Development Life Cycle (MDLC) [9]. Authoring is somewhat like making a feature film, a movie, and there are many steps to the process. Multimedia Development Life Cycle, a typical multimedia systems development, may involve the following six major steps, as follows: (1) Concept. The objective for the project is defined, and the type of the application is specified. In the movies, this is the stage at which the producer decides the kind of movie to take and the subject to be; (2) Design. This is the process of deciding in detail what will be in the project and how it will be presented. This stage includes script writing, storyboarding, making navigation structure and some design steps; (3) Obtaining of content material. During this stage

all the data, audio, video and images for the project are collected in appropriate digital formats; (4) Assembly. In this step, the overall of the project is built, Bible learning application is assembled, and any interactive features are built; (5) Testing. During testing, the application is run and checked to confirm that it does exactly what the author has intended. In the application, this is similar to screening, where the application or parts of it are viewed and approved by stakeholders; (6) Distribution. In this step, the application is reproduced and delivered to end users for their use. In this application, this would be the release phase. Developing Bible learning application uses the combination of Borg & Gall research and development and multimedia development life cycle according to Luther as can be seen in Figure 1.

## 2.1 Location

The object of the research are Bible learning application, and the research locations are conducted in Jakarta and two cities of the Middle of Java, Indonesia. Respondents consist of youth, parents and teachers who are studying who are studying Bible and Subject Matter Expert (SME) Bible education, theology, multimedia and information technology.

## 2.2 Data Analysis

The data is analyzed using the analytical descriptive method and interpreted in a narrative way based on the research findings. Analyzing and data processing carry out with six stages including data gathering, preparing data for analysis, careful reading, developing the code, presenting the data and analyzing the data [13]. The data is collected from interviews and questionnaires with details: (1) Questionnaires with open-ended questions are used to find useful information that supports the theory, the information is needed for model development, information on whether a student can perform the command to play the mobile mathematics game, as well as assessing the quality of the learning model that is developed, (2) Interviews with open-ended questions are used, hence respondents can give information that is not limited from different perspective. Depth interviews are necessary to obtain data about the product and the learning process to play the game. All interview transcripts are stored in text documents; (3) Observations are conducted to obtain data about the learning process while playing the game.

## 3. DISCUSSION

### 3.1 Research and Preliminary Information Collecting

The first phase of Research and Development data collection was conducted using open-ended questionnaire and interview in three cities. The respondents were mostly young people with smartphones gave answers to these questions in Table 1.

**Table 1. Questionnaires used in the first phase**

1. If you compare digital learning resources with book learning resources, could you explain which one is interesting and easy to use?
2. How do you learn Bible? There are many methods as in a class room, in a group, explained by parents, or self learning?
3. People need interactive media using smartphones, playing augmented reality, and games, but some people still like board games. How about you?
4. According to your opinion, which parts of the Bible are hard to be understood?

5. According to your opinion, which parts of the Bible are hard to be understood?
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Data was collected from 77 children and young people in Sunday Schools, universities, and churches and 4 teachers or instructors. After processing the data using NVivo qualitative data processing software, the learning model may be designed. In answering the questions in Table 1, majority of the respondents stated the following statements in Table 2.

**Table 2. Research findings after data processing**

1. Most of the respondents prefer internet and social media over book and printed media.
2. Most respondents prefer learning in a group, many respondents favor to learn at home with families. Respondents who were very busy with travelling and job wish to learn by themselves.
3. Most of respondents always use smartphone for everyday activities, getting information and enhancing their knowledge including Bible learning.
4. Almost all respondents agreed that the Book of Numbers in the Bible would be the most difficult to understand.
5. Many respondents are fond of the stories of Jesus, Moses, David and other Heroes.

### 3.2 Planning

The second phase Planning would be to decide the concept of applications developed and storyboard design.

#### 3.2.1 Concept

Based on the research findings and discussion of the researchers and clients, the Bible learning model would be formed as described in Table 3.



**Table 3. The concept of Bible learning application**

Object	Description
User	Children, Youth, Parents, Teachers
Topics	Life of Jesus: <ul style="list-style-type: none"> <li>- Birth of Jesus</li> <li>- Jesus baptized</li> <li>- The calling of the first disciples</li> <li>- Parable of the lost sheep</li> <li>- The crucifixion and resurrection</li> </ul>
Application	Mobile game and <ul style="list-style-type: none"> <li>- Mobile game will be able to be download from Play Store</li> <li>- Type of games: hidden object, visual game, adventure, puzzle</li> <li>- Website contain application that is synchronized with the game</li> </ul>
Content	- 5 level games <ul style="list-style-type: none"> <li>- After passing a game, user can play the next one</li> <li>- Providing with quiz that user must read Bible first</li> </ul>
Multimedia object	image, animation, text, sound
Interactivity	Games, using button, touch screen
Character style	Created based on a children book published by Indonesian Bible Society

#### 3.2.2 Storyboards

Storyboards was used to present the whole stories of the application. An example of storyboard can be seen in Table 4.

**Table 4. A part of storyboards**

Scene	Description
	<p><b>Birth of Jesus:</b> Joseph and Maria were going to Bethlehem, They did not find a room to stay and, after Jesus had been born, Joseph and Mary put Jesus in a manger.</p> <p><b>Game:</b> Type : Hidden object</p> <p><b>Description:</b> Player should search materials that was used for the birth of Jesus</p>
	<p><b>The Shepherds and the Angels:</b> There were shepherds living in the field near the Jesus birth, The come to Jesus.</p> <p><b>Game:</b> Type : Adventure</p> <p><b>Description:</b> There were many location that the shepherd stop while they were travelling to the location where Jesus was born.</p>

#### 4. LIMITATIONS OF RESEARCH

Limitations of research in model development: (1) The research and development that consists of 10 stages is still in progress, and only the first step was conducted: and (2) The second phase Planning is ongoing with character building for animation.

#### 5. CONCLUSION

Based on the objectives and the results obtained in this initial study, it can be concluded as follows:

- (1) The information derived from the initial research is used as a guideline for developing mobile learning;
- (2) The Development of multimedia based Bible learning is carried using the combination of Borg & Gall Research and Development and Multimedia Development Life Cycle of Luther.
- (3) The first phase Research and Preliminary Information Collecting finds that the learning model should be an interactive learning that runs on smartphone, and the learning content, type of application, interactivity and character style are required. Conceptual design including story line, storyboard and type of game have been created in the second phase Planning.

For future work, the Bible learning model needs to be developed in the next phases.

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