Simaksaja: visual novel game with TyranoBuilder software for Islamic moderation in elementary schools

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Article Info

ABSTRACT

The study aims to determine the development, feasibility, and effectiveness of the Simaksaja game. The research was conducted due to the lack of development of digital games based on religious moderation in elementary schools. This research and development refer to the analysis, design, development, implementation, and evaluation (ADDIE) type of Dick, Carey, and Carey model. Data were collected through student and teacher needs analysis, media expert and material expert validation tests, effectiveness tests, structured observation, in-depth interviews, and document study. The research subjects were 46 teachers and 46 students for the needs analysis and effectiveness test in 2 schools in the District and City of Magelang. The research findings stated that the game features character-driven material, the introduction of the characters Ning and Gus, and quizzes. Based on the feasibility test, the game expert scored 72%, the moderation material expert 88%, and the *Aswaja Annahdliyah* material expert 72%, and it was feasible to use. This game is effective based on the effectiveness test in two elementary schools, scoring 80% from the educators' response and 87% from the students' response. The novelty of the research is that the TyranoBuilder game contains religious moderation characters, *Aswaja Annahdliyah*, *Pancasila* student profile, and *Rahmatan Lil Alamin* student profile.

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1. INTRODUCTION

This research and development aim to research and develop a religious moderation game based on *Aswaja Annahdliyah* using TyranoBuilder software, which researchers have never done before. *Aswaja Annahdliyah* material consists of *tawasuth* (fair attitude), *tasamuh* (respectful attitude), *tawazun* (balance), and *tidal* (upright and straight towards the truth). Scholars worldwide have studied visual novel games and religious moderation in education with several software in the past decade. These studies include the development of Ibong Adarna visual novel game with Ren'Py software [1], English conversational visual novel game for Distance Education Program in Electronic Engineering Polytechnic Institute of Surabaya (DEP EEPIS) [2], motivation and achievement of English learners influenced by casual visual novel match

[3], visual novel game for *Pancasila* (view of life and ideology of Indonesia) learning [4], vocabulary learning with comparison of virtual reality (VR) and PC/computer visual novel game effects [5], kids moderations in radicalism prevention [6], and visual novel game for reading speed [7]. Research on visual novel games with TyranoBuilder software includes cultural education with visual novels [8], the development of science processes through student perception [9], the visual novel game "wand" [10], the visual novel game "Kizzugemu" [11], and an integrated review of interactive digital narratives with TyranoBuilder [12]. These studies have yet to explicitly study visual novel games with TyranoBuilder software in Islamic moderation learning for elementary schools, so this research and development is urgent.

In reality, games are currently dominated by radicalism, intolerance, calls for violence, and attractiveness that affect the psychology, character, and attitudes of students in elementary schools [13]–[16]. Radical content is spread through media, digital learning resources, and games without control and offers child-friendly and fun games [17]. The number of elementary school students playing games without assistance is a problem in education [18]. Indonesia's National Counterterrorism Agency (BNPT) said that online games contain elements of violence and radicalism because they invite playing weapons that psychologically ask students to commit violence [19], [20]. These indicators confirm that students still need to be safe from radicalism in terms of events/potential as well as through the onslaught of online games [21]. As a multicultural country, Indonesia needs games that contain religious moderation and *Pancasila* values and have *Rahmatan Lil'Alamin* (mercy for all nature) characters to realize a moderate and nationalist generation [22]. Online games in elementary schools that do not contain religious moderation and other general materials are very vulnerable to producing addictive effects, gaming disorder, xenophobia, emotional disorders, verbal violence, and physical violence through scenes imitating attractive movements in the game, such as the Pokémon GO game [23], [24].

Central Java's Religious Harmony Index (IKUB) is low, with a 74.28 score below Bali's 76.43 and Yogyakarta's 78.90 [25]. The potential incidence of terrorism and violence in the former Kedu *Karesidenan* (Temanggung Regency, Wonosobo Regency, Kebumen Regency, Magelang City, Magelang Regency, and Purworejo Regency) of Central Java, Indonesia, is still high. Indicators, Magelang is a red zone of radicalism [26]; the spread of radicalism in the former Kedu Prefecture is massive through digital media, textbooks, cyber media, and mosques [27]. Developing visual novel games with TyranoBuilder software is urgent to strengthen Islamic moderation in elementary schools and prevent radicalism with a soft approach. The reason is currently, there are a lot of games developing with various platforms but have not strengthened the character of religious moderation [28], and strengthened the *Pancasila* student profile and the *Rahmatan Lil Alamin* student profile (P5-PPRA) in the elementary school environment in Central Java is still minimal.

In addition to preventing radicalism, game development innovation by educators is necessary to answer the Industrial Revolution 4.0 [29]. Game development aimed at strengthening national and religious character, such as P5-PPRA [30], and containing *Aswaja Annahdliyah* values is also essential to be implemented by the Educational Institution Ma'arif Nahdlatul Ulama of Central Java, Indonesia, which has an *Aswaja Annahdliyah* curriculum whose substance supports Islamic moderation [31]. In addition to entertainment, games facilitate mastery of material and strengthen digital literacy skills so that students are not easily exposed to radical content, hoaxes, and cyberbullying [32]. Based on an initial study in June 2023, the Educational Institution Ma'arif Nahdlatul Ulama of Central Java manages 6,372 elementary schools. In the former Kedu *Karesidenan*, 725 elementary schools have never developed a visual novel game with TyranoBuilder software with *Aswaja Annahdliyah*-based Islamic moderation content.

From the results of the study, game development in elementary schools was carried out through Microsoft Kinect platform/software, Sudoku, Hack and Slash, Quiz, Puzzle, WISE game, TyranoBuilder, and others [33]–[36]. However, these games are merely a medium for conveying material and have yet to mainstream Islamic moderation and national values. There are many software used to develop visual novel games, namely Animaker Inc, Wool Game, Inklewriter (Inkle Studios), Suika2, NVList, NScripter, Ren'Py, KiriKiri Engine, digital novel markup language (DNML), and Narrat [37]–[40]. However, the reality is that the skills of elementary school teachers in Central Java still need to improve in developing visual novel genre games [41]. The most dominant software used in developing visual novel games is TyranoBuilder, Ren'Ry, and Twine. The three software have advantages and disadvantages and can be adjusted to the developer's material, users, and needs [42], [43].

Compared to other platforms, TyranoBuilder has the advantages of stories with more interesting animations, made for long-term projects, more prominent graphic design, and reports that can be serialized according to developer needs [44]. TyranoBuilder is a game engine developed in 2015 in Japan when computers could not visualize two-dimensional graphics and reproduce complex sounds [45]. TyranoBuilder works with the drag-and-drop method. TyranoBuilder's programming language is TyranoScript, referring to JavaScript language, and HTML with visual programming language [46]. TyranoBuilder 2015 was officially

sold through the STEAM platform, and plugins are available on the STRIKEWORKS store. TyranoBuilder software is fast-growing, can be downloaded for free, and paid according to facilities through TyranoBuilder visual novel studio [47]. The meaning of the game in the context of this research is the *Aswaja Annahdliyah*-based religious moderation TyranoBuilder game (Simaksaja) in learning Islamic moderation in elementary schools that strengthens the values of P5-PPRA at the Educational Institution Ma'arif Nahdlatul Ulama of Central Java, Indonesia.

Based on the needs analysis distributed in six districts/cities in Central Java to 46 teachers on October 21, 2023, the results obtained 97.8% of teachers need creative ability to make visual novel platform games with Tyranobuilder, 100% of teachers need creativity in using digital-based learning media, and the benefits of TyranoBuilder games with characters that show the value of P5-PPRA, 100% of teachers need TyranoBuilder games packed with guesses about *Aswaja Annahdliyah* and Islamic moderation, 87% of teachers need training in making TyranoBuilder visual novel games, 95.7% of teachers need games developed in the form of animation and colors that match the original appearance, 97.8% of teachers expect Simaksaja games to be installed on Windows, MacOS, or Android platforms, 100% of teachers need TyranoBuilder games with character names that show the value of P5-PPRA, and 100% of teachers need TyranoBuilder games to contain peaceful guessing about the importance of *Aswaja Annahdliyah* and religious moderation. The results of the needs analysis of students obtained 95.7% of students need teachers who actively prepare educational games as learning media, 93.5% of students need teachers who are creative in utilizing educational games, 95.7% of students need educational games based on religious moderation and *Aswaja An-nahdliyah*, 87% of students need educational games with visual novel platforms, 89.1% of students need TyranoBuilder games based on religious moderation and *Aswaja An-nahdliyah* with P5-PPRA character strengthening, 93.1% of students need the TyranoBuilder game to be animated, 95.7% of students need the TyranoBuilder game to be colored according to the original appearance, 89.1% of students need the TyranoBuilder game to be installed on Windows, Mac, Android, 91.3% of students need the TyranoBuilder game with character names that show the value of P5-PPRA, and 97.8% of students need the TyranoBuilder game to contain quizzes about the importance of *Aswaja Annahdliyah* and religious moderation. Based on the background, the theoretical study above, and the needs analysis of the TyranoBuilder game, the development of the Simaksaja game with TyranoBuilder software with religious moderation was necessitated. Research is fundamental in filling the space of digital application-based religious moderation games by developing games that suit the needs of elementary school students. This research aims to analyze development needs and feasibility and test the effectiveness of the Simaksaja game with TyranoBuilder software. The researcher asked three research questions: i) What are the features of the Simaksaja visual novel game with TyranoBuilder software for Islamic moderation in elementary school? ii) What is the feasibility of the Simaksaja visual novel game for Islamic moderation in elementary school? And iii) How effective is the Simaksaja visual novel game with TyranoBuilder software for Islamic moderation in elementary school?

2. METHOD

The research and development method of analysis, design, development, implementation, and evaluation (ADDIE) with the Dick, Carey, and Carey model was chosen in this research because it is relevant to the media developed, namely digital-based games with TyranoBuilder software [48], [49]. The scope of this research is the development of visual novel game-based learning media with TyranoBuilder software in instilling Islamic moderation through *Aswaja Annahdliyah* and P5-PPRA characters, which the researcher named the Simaksaja game. The needs analysis was conducted in five districts/cities with a sample of 46 teachers and 46 elementary school students managed by the Educational Institution Ma'arif Nahdlatul Ulama of Central Java. Limited-scale product trials were conducted in two elementary schools in Magelang Regency. This area is a red zone of radicalism, so it is necessary to strengthen religious moderation by applying the Simaksaja game. Five stages were implemented in this research concerning the Dick, Carey, and Carey model [50], [51]. At the needs analysis stage, teachers and students are conducted through questionnaires to obtain data on the needs that must be adjusted in the development of the Simaksaja game. Questionnaires were distributed with the categories "need" and "do not need" to obtain definite results between needing and not needing Simaksaja games. At the design stage, researchers designed the content (game material), storyline, characters, characterization, images, colors, and sounds according to the needs of students and teachers. At the development stage, researchers developed the Simaksaja game according to the initial design. The results of this development were feasibility tests carried out on game media experts, religious moderation material experts, and *Aswaja Annahdliyah* material experts. In the implementation stage, a limited-scale trial was conducted in the control and experimental classes to determine the impact of the Simaksaja game. At the evaluation stage, researchers made revisions to the Simaksaja game developed according to suggestions, criticisms, and input from teachers and students during the implementation stage to obtain the final Simaksaja game.

This research was conducted in June-December 2023. Data collection techniques included a needs analysis questionnaire for students and teachers, a validation test questionnaire for media and material experts, an effectiveness test questionnaire, structured observations, in-depth interviews, and document studies. Structured observations were conducted in the classroom during the needs analysis process and effectiveness test. In-depth interviews were conducted with the Educational Institution Ma'arif Nahdlatul Ulama of Central Java administrators, school principals, and teachers to obtain data on the number of schools, *Aswaja Annahdliyah* curriculum, and religious moderation materials. Document study was conducted to review teaching module documents (lesson plans), religious moderation curriculum, *Aswaja Annahdliyah* curriculum (*ke-NU-an*), and P5-PPRA documents. The data findings obtained are then presented in tables and narratives about the features of the Simaksaja game, its feasibility, and its effectiveness. The data was calculated using the IBM SPSS statistic 26 application.

3.   RESULTS AND DISCUSSION
3.1. Features of Simaksaja game with TyranoBuilder software

Simaksaja game is an educational game with the TyranoBuilder platform that contains religious moderation material, *Aswaja Annahdliyah*, P5, and PPRA, which is intended for elementary schools under the auspices of the Educational Institution Ma'arif Nahdlatul Ulama of Central Java. This Simaksaja game is used for grade 4 SD because it is the material of religious moderation and the development of students. The word "Simaksaja" is taken from Indonesian, meaning that game players are asked to listen or listen carefully so that this game is really played seriously even though it is a game. Simaksaja contains four games, namely religious (Islamic) moderation, *Aswaja Annahdliyah*, *Pancasila* student profile, and *Rahmatan Lil Alamin* student profile. The initial display of the game cover reads "Simaksaja visual novel game, religious moderation based on *Aswaja Annahdliyah*" and the menu "Click Here to Start" at a later stage. In the initial menu is a backing song of Mars Ma'arif and pictures of female teachers, female students, and male teachers and male students. The next menu is clicked "new game". Before going to the game, the game explains material about religious moderation, *Aswaja Annahdliyah*, *Pancasila* student profile, *Rahmatan Lil Alamin* student profile, and the characters.

In the characterization of the Simaksaja game, the main characters are "Gus" and "Ning". Gus and Ning are typical of the *Nahdlatul Ulama*, *Aswaja*, and *pesantren* traditions. Gus is the son, and Ning is the daughter of a kiai (cleric). In Simaksaja, the character Ning Bangsa represents the character/value of the spirit of nationalism and nationalism. Ning Ransi is a character who represents the character of tolerance. Ning Ciya is a character who represents the character of love and accommodation towards local culture in Indonesia. Ning Antik is a character who represents the anti-violence character. Gus Tawasuth is a character who represents a fair attitude in society. Gus Tasamuh is a character who represents mutual respect and tolerance. Gus Tawazun is a figure who represents the character of balance, which is not extreme right (conservative/radical) and extreme left (liberal/secular). Gus I'tidal is a character who represents a character who is upright to the truth. After completing the introduction of the characters, the player is invited to play the Simaksaja Game with Mrs. Rifa (female teacher) and Mr. Ma'a (male teacher) and their friends and family.

Figure 1 contains the initial display, the Simaksaja game menu, the name of the game and its abbreviations, the creator, and two pictures on the left side of a female student and a female teacher (Mrs. Rifa) and a male student and a male teacher (Mr. Ma'a). Meanwhile, Figure 2 contains examples of character names such as Gus Tawasuth, Gus Tasamuh, Gus Tawazun, and Gus I'tidal. The next features in Figures 3 to 6 contain conversations, materials, and games about each character. The religious moderation materials and games strengthen the character of tolerance, the spirit of nationality, accommodating and loving local culture, and the spirit of non-violence. The *Aswaja Annahdliyah* materials and games reinforce the feelings of *tawasuth* (fair attitude), *tasamuh* (respectful nature), *tawazun* (balance), and *i'tidal* (upright and straight towards the truth). In the *Pancasila* student profile, materials and games strengthen the character of faith and fear of God Almighty, independence, cooperation, global diversity, critical reasoning, and creativity. At the same time, the *Rahmatan Lil Alamin* student profile materials and games contain strengthening the characters of *ta'addub* (civilized), *qudwah* (exemplary), *muwaṭanah* (citizenship and nationality), *tawassuṭ* (taking the middle path), *tawazun* (balanced), *i'tidal* (straight and firm), *musawah* (equality), *shura* (deliberation), *tasamuh* (tolerance), and *taṭawwur wa ibtikar* (dynamic and innovative). Here are some examples of Simaksaja game visualization.

We found that the Simaksaja Game was needed to meet the availability of learning media in explaining religious moderation material, *Aswaja Annahdliyah*, *Pancasila* student profile and *Rahmatan Lil Alamin* student profile. Apart from containing religious moderation character content, the Simaksaja game also chooses figures, names and characters from the four primary materials. This aims to maximize the

content of religious moderation as material and content in the digital-based Simaksaja game. This finding correlates with research that states that the success of digital/educational game-based learning is being able to integrate tools, materials, and pedagogical content into a medium developed using the principles of technological pedagogical content knowledge (TPACK) [52], [53]. However, the Simaksaja game is more than just an integration of TPACK in general. Still, this game offers a new perspective by mainstreaming the values of religious moderation, *Pancasila* values, *Aswaja Annahdliyah* values through technology in the form of the TyranoBuilder application. To assist teachers and learners in using the Simaksaja game, a video tutorial on downloading, installing, and using the Simaksaja game has been provided [54], as a guidebook for using the Simaksaja game [55]. Simaksaja game is available online and can be downloaded online [56]. Simaksaja game has obtained Copyright with the recording number 000551045, which can be seen in the Copyright Certificate of the Ministry of Law and Human Rights of the Republic of Indonesia [57].

Figure 1. The initial view of the Simaksaja game

Figure 2. One of the character and character introduction views
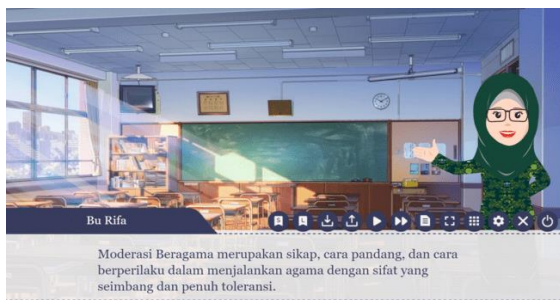
Figure 3. Game in the religious moderation scene

Figure 4. Game in the *Aswaja Annahdliyah* scene
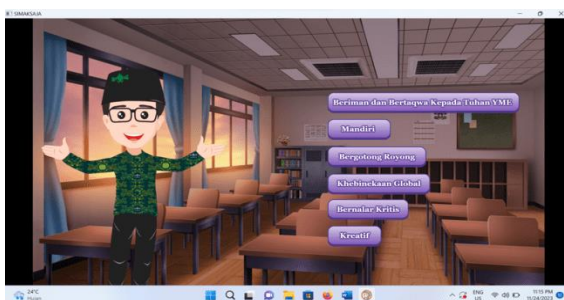
Figure 5. Visualization of *Pancasila* student profile game scene

Figure 6. Visualization of PPRA game

3.2. Feasibility of Simaksaja visual novel game for Islamic moderation in elementary school

Based on the feasibility test of Simaksaja game, the test results by media and material experts who are competent in their fields show that the game is suitable for use in elementary schools. The feasibility test by media experts was carried out using the ADDIE stages of the Dick, Carey, and Carey model so that the

game that the researchers developed was suitable for testing after going through revisions. Simaksaja game was validated by three experts: game media experts, learning multimedia developers, and ICT consultants proficient in digital learning media. The assessment results from the game expert rated it feasible with a score of 72%. The feasibility test by the religious moderation material expert is a professor of Islamic Education Science at UIN Walisongo Semarang who gave a score of 88% and assessed the feasibility of Simaksaja Game. The third expert is the *Aswaja Annahdliyah* material expert, the chairman of the Educational Institution Ma'arif Nahdlatul Ulama of Central Java, who gave a score of 72% and assessed the feasibility of Simaksaja game. Based on the validation results by the three experts, the Simaksaja game is feasible in terms of game media, religious moderation material, and *Aswaja Annahdliyah* material so that it can be applied on a limited or wide scale in elementary schools.

3.3. Effectiveness of Simaksaja visual novel game for Islamic moderation in elementary schools

Based on the effectiveness test of the Simaksaja game, which was tested on a limited scale in two elementary schools, Madrasah Ibtidayah Ma'arif Tejosari and Madrasah Ibtidaiyah Al Iman Mranggen in Magelang District, the game is effective in elementary schools with a score of 80% educator response and 87% student response. The research findings show that the average score of teacher and student responses is very good. The results of interviews and questionnaires show that students feel facilitated in knowing more about religious moderation, *Aswaja Annahdliyah*, P5-PPRA. Educators think the existence of this TyranoBuilder Simaksaja game helped it. The conclusion is that this media can be effectively implemented in learning. Then, the effectiveness of the media was tested on a limited scale, showing that the average results in the two classes were different. In the experimental class of 7 students, the average reached 73.3, while the control class of 14 only amounted to 63.5. The score confirms that the Simaksaja game is effective and can be implemented widely. From the three findings above, this research answers the core problem that the Simaksaja game is needed in order to fulfill the availability of learning media in vocalizing religious moderation material, *Aswaja Annahdliyah*, *Pancasila* student profile, and *Rahmatan Lil Alamin* student profile. Simaksaja Game is feasible based on the assessment of game experts with a score of 72%, diverse moderation material experts with 88%, and *Aswaja Annahdliyah* material experts with 72%. Simaksaja Game is effectively applied in schools based on the 80% educator response score and 87% student response. This confirms that Simaksaja game answers the problems studied in this research so that this game fills the void of educational games with TyranoBuilder, which still needs to be revised in education. The consequence of this research finding is offering games based on religious moderation for elementary schools that use digital applications and a contribution to the world so that all applications of national characters can be integrated with the latest game applications.

4. CONCLUSION

The development of the Simaksaja game is an innovation for teachers in developing digital learning media. The Simaksaja game feature begins with material about religious moderation, *Aswaja Annahdliyah*, *Pancasila* student profile, and *Rahmatan Lil Alamin* student profile. The next section introduces the characters Ning Ransi (tolerance), Ning Bangsa (national spirit), Ning Ciya (love of local culture), Ning Antik (non-violent nature), Gus Tawasuth (fairness), Gus Tasamuh (respect), Gus Tawazun (balance), Gus I'tidal (righteousness). It is guided by Mrs. Rifa (female teacher) and Mr. Ma'a (male teacher), as well as Gus and Ning's friends and family. Furthermore, each material and game in the Religious Moderation, *Aswaja Annahdliyah*, *Pancasila* student profile, and *Rahmatan Lil Alamin* student profile sections has material, games, conversations, and character strengthening according to their indicators. Simaksaja game, based on the feasibility test of game media experts, scored 72%, religious moderation material experts scored 88%, and *Aswaja Annahdliyah* material experts scored 88%, so this game is feasible to use. Based on the effectiveness test on a limited scale in two elementary schools in Magelang Regency, the score of 80% of the educators' responses and 87% of the students' responses is effective. The novelty of this research is the provision of games that contain strengthening national and religious characters through religious moderation materials, *Aswaja Annahdliyah*, *Pancasila* student profiles, and *Rahmatan Lil Alamin* student profiles that have never existed before through the TyranoBuilder application. This research fills the spaces of religious moderation-based games that have been minimal and empty. The development of this game is very necessary, especially in terms of ease of access, affordability, and learning effectiveness—some advantages of Simaksaja game. First, the game can be developed easily through Tyranobuilder. Second, the game can be accessed openly according to the developer's needs. Third, game development is by the material, goals, and objectives of the game in elementary school. Fourth, Simaksaja game software can be accessed online. Fifth, the game can be downloaded for free for self-learning via *https://bit.ly/SIMAKSAJAGAME*. The game can be exported to Windows, MacOS, and Linux. This research has limitations. Namely, Simaksaja game can only

be installed on Windows because the application is portable, not in the form of APK, can only be exported to *.exe*, and cannot be uploaded on Google Playstore. The choice of exe format and installation on Windows because if installed on MacOS and Linux, there is a lack of features in the form of images, videos, and sounds that are not maximized in appearance. Future research needs to explore more deeply the development of educational games with religious moderation through the latest software that can complement the shortcomings of the Simaksaja game.

This research explores the Simaksaja game, which contains strengthening national and religious character through religious moderation material, *Aswaja Annahdliyah*, *Pancasila* student profile, and *Rahmatan Lil Alamin* student profile through the TyranoBuilder application. However, further and in-depth studies may be needed to confirm the integration of digital games into religious moderation learning, especially considering the issue of games containing radicalism, which must be prevented by offering games that have the values of tolerance, compassion and peace. Our research shows that the Simaksaja game can instill the values of religious moderation, *Pancasila*, and the value of mercy for all nature more powerfully than existing games. Recent observations show that not all games reinforce national and spiritual values. Our findings prove that the Simaksaja game answers the lack of sacred moderation games in elementary schools, not just because of increased educational games to strengthen religious moderation with TyranoBuilder software.

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