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A Moral Educational Game for Formal Classrooms: Case Study in Indonesia

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Abstract

Moral education is a critical process to teach individuals ethical values and principles to guide them in making morally responsible choices. In the modern era, moral education is essential in nurturing character, aligning with 21st-century skills outlined by the World Economic Forum. While Education 4.0 advocates using technology in learning environments, there is a gap in integrating technology into moral education. This study explores using video games as educational tools for moral education in Indonesia. The research involves designing and developing an educational game using the Digital Educational Game Methodology (GAMED) and Game Development Life Cycle (GDLC). The game presents players with moral dilemmas and offers in-game advantages and disadvantages based on their choices. The game's narrative is structured around chapters focusing on different moral values and facets of Pancasila, Indonesia's diverse culture. Players must navigate complex human rights, political dynamics, and justice situations. The game incorporates a "choose your own adventure" mechanic, allowing players to make choices that shape the narrative and moral development. Beta testing involving 88 students from different high schools showed positive engagement and excitement toward the educational game. Students actively discussed options and their consequences, indicating the potential for the game to facilitate meaningful moral discussions in the classroom. The research demonstrates that video games, with interactive narratives and diverse moral scenarios, can be effective tools for moral education. The game's design and development process can be applied to create more immersive and inclusive character education in formal educational settings, bridging the gap between technology and moral values in Indonesia's education system.

Keywords: *Educational Games, Moral Education, GAMED, GDLC.*

INTRODUCTION

Moral education refers to the process of teaching and nurturing moral values, principles, and ethical behavior in individuals [1]. In the modern era, moral education has become fundamental to nurturing character, as outlined by 21st-century skills by the World Economic Forum [2]. Moral education can be imparted through various means, including formal educational settings such as schools [3], religious institutions [4], and other informal channels such as family, peers, and society at large [5]. It often involves engaging individuals in discussions, debates, and activities that encourage critical thinking, moral reasoning, and empathy toward others.

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The world has witnessed a multitude of changes in the past decade. The Industrial Revolution, making big waves towards societal changes in the past, has reached its 4th iteration. Society has undergone an unprecedented acceleration pace of economic, technological, and cultural upgrades [6]. During that rapid development, the global pandemic strikes and forces us to adapt technology to our livelihood. Education must also adjust to new challenges. Teachers, Instructors, and education institutions are demanded to fill the gap with an upcoming workforce qualified to fulfill dynamic changes and demands of future industry, which resulted in education 4.0 [7]. One of the core tenets of Education 4.0 is adapting technology in learning environments so that technology can document, aid, and enable the education process. However, there is a gap in moral education; limited studies focus on moral skills and digital technology [8].

Learning Media has been used since the beginning of education to assist teachers in conveying their learning concepts, knowledge, and skills. Learning media is also evolving from simple text to multimedia approaches in learning media. One of said media is video games. The video game itself is initially not targeted as learning media. Still, due to the rise of gamification and the serious games developed and implemented in various fields [9]–[13], video games are considered viable media as educational games. Educational games provide a unique experience that differs from other media. Video games, first and foremost, are interactive media and offer a different experience in every iteration. The content of video games is constrained by its limitations, but how we, as a player, perform each content is almost limitless [14].

The second advantage of video games to aid moral education is their capability to conjure various moral dilemmas and conflicts that do not consist of psychopathy, like the trolley problem. Video games can produce all kinds of situations, from supernatural and fa settings to realistic and down-to-earth approaches. There is a game that focuses explicitly on the Kübler-Moss model or five stages of grief [11]. There are also video games that embody the butterfly effect [15]. Moreover, video games have another advantage that is different from other media. Its development is mostly in digital format, either in digital animation or 3D model. Acts of violence, sexual exposure, and language issues in video games can also be varied from cartoonish to realistic. Many past studies have tried to correlate video game violence with acts of violence [16], [17]. However, some studies prove that notion false and point out the advantages and benefits of video games as learning media [18], [19].

Video games, especially ones with strong narrative points, often present their players with moral choices with in-game advantages and disadvantages given to certain choices when chosen by the player as part of game mechanics [20]. Some video games like Bioware's Mass Effect™, Square-Enix's Life is Strange™, Supermassive Games' Until Dawn™ and almost all Quantic Dream and Telltale games are famous, or should we consider infamous, to present gamers with tough moral choices that induce debates. Meaningful moral decisions in video games create a higher gaming experience and appreciation [21]. Studies stated the possibility of designing games as moral learning media by analyzing the video games we just mentioned. They report that game developers should pay attention to how video game narratives are presented and executed to create better moral learning for their players [22], [23]. Another study reports the correlation between prosocial decisions in video games influence real-life behavior [24].

Indonesia has a diverse culture, combined with the considerable influence of the internet, making Indonesia an exciting mix of traditional, adaptive, and progressive mindsets. Moral education in Indonesia has been incorporated into formal education curricula in the form of civic studies, which, though the time and political situation in Indonesia, have changed quite a bit from Pendidikan Moral Pancasila (Pancasila Moral Education) to Pendidikan Pancasila dan Kewarganegaraan (Pancasila and Citizenship Education). The earlier tends to an aspect of the historical and ethical value of Pancasila, while the latter focuses on how to implement Pancasila virtue in daily life [25], [26].

Almost all formal education in Indonesia is still carried out using the classical methodology of a classroom setting, using a seminar approach and cognitive assignment to assess one's capability of understanding the learning activity. The usage of books and, by proxy, videos and slides about Moral education focuses on the cognitive aspect of morals. This practice produces students who know about Pancasila and excel at remembering what it stands for. However, lack of practice and internalization create a corrupt government and more social problems, especially in Indonesia, where diversity might become a downfall due to the disintegration movement, which stems from unjust treatment by those in power [27]. A more holistic, practical, and inclusive character must be introduced to prevent Indonesia's prolonged corruption. For example, the usage of folk songs to teach local wisdom and virtue [28], utilize mutual cooperation (gotong royong) in developing morality [29], and self-development and exemplary activities [30] was such a good practice coming forward. However, limited studies still aim to design a technology-driven moral education [8].

Parents' perspectives on educational games surprisingly show a diverse opinion regarding educational video games, with a majority agreeing and supporting using educational video games in the learning process. However, parents also generate concerns like loss of learning focus, the inability of teachers to integrate video games with learning materials, and lack of discussion as part of the learning process due to video game usage [31]. This study aims to fill the gap by designing and developing educational games specifically for moral education in Indonesia.

METHOD

We designed and developed our moral, educational game using two approaches. For designing the game, we used Digital Educational Game Methodology (GAMED) to design the concept, mechanics, and game design [32], followed by Game Development Life Cycle to carry on the production, testing, and evaluation, and release of the educational game [33]. GAMED consists of 4 phases, and we used the first phase: game design phase, to help us develop the game design for our moral educational game. It begins with the education problem, which we must identify the learning objective we want to tackle using educational games. The educational problem then translates to game ideas on how an educational game should be, its mechanics, aesthetics, and narratives. In the ideation process, we invited expert panels in moral education content and video game developers to help us define and refine our ideas.

The game design is translated to Initiation and Pre-production in GDLC; we then moved to production (see Figure 1). Core processes in the production phase involve asset creation, source code development, and integrating both elements. The output in this phase is a prototype in Formal Details. Formal Detail is a prototype that incorporates all mechanics and assets that focus on balancing the game: adding new features, improving performance, and troubleshooting bugs.

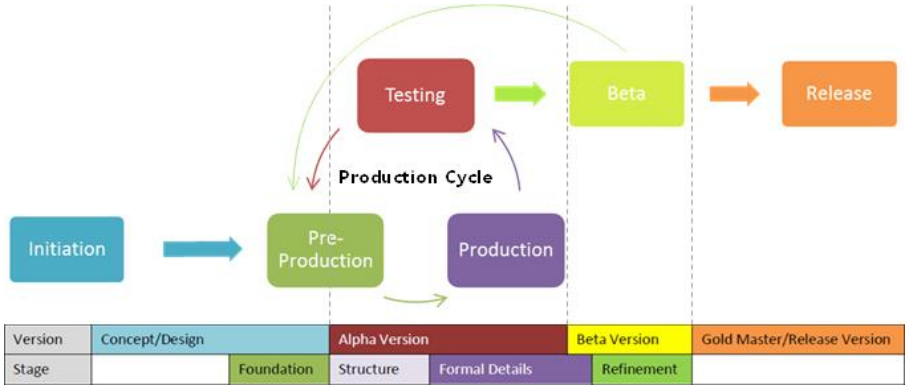

Figure 1 Game Development Life Cycle (GDLC)

In the testing phase, the prototype was tested internally to assess the educational game's functionality. When bugs, loopholes, or other issues are detected, the incident, causes, and scenario must be documented. The beta phase, or beta testing phase, involves external parties serving as testers. In this case, we involved 88 students from 4 different high schools in Batam, Indonesia. Those students were chosen because they are currently studying civic studies, which the educational game is based on. Due to their current circumstances, they can provide accurate responses on how our educational games compare to their study at school. We also choose different schools based on school cuture, location (urban and suburban area), economy (family income) to simulate different school cultures and situations: The output of this phase is also bug reports and user feedback. This phase could lead to the next phase, which is release, when the moral educational game is ready to be released for moral education.

RESULT

a. Game Design using GAMED

GAMED, especially regarding the game design phase, is a back-and-forth process of 3 main processes: (1) Problem Formulation; (2) Game Idea Generation; and (3) Game Design. It all begins with identifying Education Problem. For this study, the educational problem will be focused on 11th-year Civic Study, which will be our main focus for designing and developing an educational game.

11th Year Civic study, according to the 2013 Indonesian National Curriculum, comprised of 6 chapters: (1) Human Rights in Pancasila's Perspective, (2) Pancasila Democratic System and Dynamics, (3) Law and Justice System in Indonesia, (4) World Peace and Indonesian's Dynamic Role, (5) Threat Watch on Indonesia's Unity, and (6) Upholding Unity in Indonesia. The six chapters are focused on different values and facets of Pancasila and moral values. The first chapter focused on humanity and respect for society while upholding freedom, and the second to fourth chapters focused on political rights and understanding inside Indonesia and as part of the world's society. The final two chapters focused on how unity in Indonesia should be the main moral value that every citizen ought to have. This prototype will be designed from Chapter 1 to Chapter 3 to simulate a semester of class engagement.

Our previous study [20] concludes that 'choose your own adventure' should be the main game mechanics for our moral, educational game. Due to the nature of the formal classroom setting and the game mechanics, and from discussion with our education experts, we agreed and decided on a complete continuity narrative for all three chapters to increase the immersive of the educational game. Game Idea Generation process are being conducted with those parameters as constraints and objectives. Choose your own adventure mechanics can be presented with multiple video game genres. For our prototype, this educational game will showcase the narrative, the player's options, and

their consequences. Our experts also suggest that we used a low-poly game development tools like RPG Maker or Renpy to develop the prototype rather than more complex tools like Unity or Unreal Engine so that we can have a more efficient development time. We decided to use RPG Maker MZ, which allows us to focus on narratives and screenplay.

The following steps decide on the narrative and main moral dilemma presented to the player to answer the educational problem and objective. After consulting with our experts, we decided to use high school setting for the game narrative, which mirrors Indonesia's diverse backgrounds. Characters consist mainly of students and teachers from multiple ethnic and religious backgrounds. Due to the nature of students in the Riau Archipelago, which hosts predominantly Malay, Chinese, and Peranakan, we decided to set our player character as Chinese ethnicity with Islam religion. This decision is taken so the Player Character can react vastly differently to topics and dilemmas presented in the narrative without being unfamiliar to our player. Depending on the player's choice, the main character can also be male or female, and each gender will have different reactions and opinions from almost all narrative standpoints.

Each chapter's main moral dilemmas and issues are also decided to mirror the situation in Indonesia Today. The first chapter about human rights will present the player with left and right political debate, specifically about sexual orientation. LGB is frowned upon and sometimes forbidden in Indonesian culture. However, with the rise of the Internet, Popular Media, and Z-Generation, there is a moral dilemma where new idea and traditional value clashes. The second chapter discussing dynamic politics and the democratic state will reflect on Indonesia’s political situation during the last decade, where identity politics became a significant debate point for almost all major political feuds in Indonesia (e.g., Jokowo v Prabowo; Ahok v Anies, etc.). Furthermore, we also include the feminism issue, reflecting on how rare female politicians are in Indonesia. The third chapter will also highlight one of the significant injustice in law enforencement in Indonesia The second and third chapters will mainly discuss justice and fairness values. The third chapter is also important because it’s the last of the semester and signifies the end of a narrative standpoint. Game Idea Generation process concluded by identifying key Game Ideas: Character Designs and Narrative Summaries.

b. Educational Game Development using GDLC

Educational Game development consists of 3 parts: the first is to flesh out the character design into a 2D Avatar and develop visual assets necessary for game development. The second one is to write the script, screenplay, and all options and consequences based on narrative summaries as constraints. And finally, the third one is assembling all the game assets to develop the educational game. This sub-chapter will discuss each part of educational game development.

Character avatars are developed using the visual and physical characteristics of each character in mind. Each ethnic background is used to guide the character design. We identified each ethnic background using Facemix AI tools (https://www.playform.io/facemix) to find the typical physical characteristics of the ethnic group presented in the narrative. Technically, character avatar design consists of sketching, line art, coloring, lighting, and shading using Painstorm Studio. Next, we designed the character sprite, which is how a character is depicted in RPG Maker MZ environment, and Tileset, building block of the map. The steps to creating a sprite and tileset are similar to avatar development. Having a character avatar, sprite, and adequate tileset, the visual asset for educational games is ready. The next step is writing scripts for the educational game. We used narrative summaries we already decided on before, built the interaction between characters, and set up the location where the scene took place. The script and scene are important to help make the production phase later easier to develop. We wrote the script collaboratively and aided by high school students to make the nuance and diction suitable for the player.

The main educational game mechanic is ‘choose your own adventure’, where the player chooses the option and shows its consequences. These mechanics allow the narrative to branch drastically. Inspired by Bioware’s Mass Effect narrative, the result in the first chapter could have consequences in later chapters. Options and Consequences like this will make each player’s narrative and game progression differ depending on each player's decision and will emulate moral dilemmas. Not all consequences will be cut and dry, which is a good and bad outcome. Most consequences have vague outcomes and are open for interpretation and discussion. This allows teachers to jump in and elaborate on the moral value intended as a learning objective.

Another mechanic we include in the player choose mechanics is its valuation of certain moral values. In the first chapter, where the value of in/group and loyalty is prominent, we value every option possible with an increase or decrease in that domain. Typically, the player can choose two options to respond to a situation or conversation. If the response is focused on upholding the player’s close friend and inner circle, it will increase the In-Group grade. If the answer is focusing on nationalism and respecting all people, it will improve the Nationalist grade. The first chapter also shows left vs. right political dynamics, so a response that agrees with freedom and equality will increase the Freedom grade. A response that agrees with religion, traditional, equity, and conventional value will increase Traditionalist grade. Some options increase and decrease multiple grades as well. The grading will be shown in the end and can be used as discussion points in class.

Educational game development on RPG Maker MZ environment is the assembly of all the visual assets and scripts into a playable educational game. It begins by setting up the database by importing all visual assets already made: character avatar, sprite, and tile set. After that, we design the map according to the script and put show the script via text command. Each option, consequence, and moral value grade are saved to each variable and will be presented at the end of chapter. This process moves back and forth between script, visual asset, and development to ensure all changes are being developed,. After production, we conduct testing involving six testers to ensure all mechanics, visual art, characters, and sprites are running correctly.

The beta testing phase involved 88 students from 4 different high schools in Batam, Indonesia, where the students were asked to play our moral educational game. The phase’s objective is to test our moral educational game for bugs and errors and see how students can accept and engage with our moral educational game. From observation, we conclude that students generally are excited to play our educational game and actively engage with the game. Students often have discussions among themselves about the options and are eager to see each option's different consequences, especially major option (see Figure 2).

Figure 2 Beta Testing Phase

beta testing, we received comments on bugs presented, minor typos in the script, and suggestions on how the narrative could progress in the following chapters. After dealing with all issues found on beta testing, we can move to the release phase, which distributes the educational game to schools to be used as a learning media during moral education.

DISCUSSION

Educational games can be used in formal education and formal classrooms. Our study here proves that it's possible. However, the fundamental questions of what kind of educational game can be used in formal education, especially in middle and high schools, still need further studies. Educational games are often associated with younger children's education. The diction 'game' implies that the media should be played. Therefore, educational games are more associated with children. The older the student, the more 'formal' media like slides and video are often used. Social media is one of the latest inclusions of educational media. This creates an interesting paradox. One of the latest parameters in Indonesian School Accreditation Standards is the ability of teachers to include technology as learning media, with specifically including social media like Instagram, WhatsApp, and TikTok. Social media and its content are often prejudiced as informal. Instagram and TikTok are often seen as childish and immature, while Facebook and Twitter have a notorious reputation for being too vulgar and unsuitable for students, especially from parents' perspectives. Its inclusion is to follow the trend that is popular among students. So popular are those platforms so that the Ministry of Education (and other ministry in Indonesia) used social media to promote and socialize new regulations like Merdeka Belajar. So, if social media is included simply because of its popularity among students, why are video games and educational games not included in the standards despite being popular among students and introduced much earlier than social media? Both platforms are known to be 'child-like' and unsuitable for adolescent education, but social media is included, but not video games.

To answer that paradox, we need to understand how teachers and parents view video games. Video games were introduced during the era of the 4th generation, which marked the popularity of Super Famicom in the early 1990s. However, the popularity of video games boomed on the heights of MMO games during the late 1990s to early 2000s. The popularity of MMO among students and with low control by parents and teachers make most students spend their time mostly playing MMO, and there was a time when Internet café banned its patron from using school uniforms when playing because of the staggering number of students playing MMO during school hours. This condition led to a

massive decrease in academic performances nationally that persisted to today. With the high accessibility of the internet, smartphone adoption, and more platforms that students can access to play video games. The conditions persist, and some even say they worsen. [34]–[36]. Many parents and teachers blame MMOs and video games for this negative development.

Another contributor to why educational games are rarely used in Indonesia are the lacking of educational games developed for educational purposes. Designing and developing educational games are a technical and artistic challenge that specific skillsets and expertise can undertake. These skillsets and expertise are typically not part of being teacher's capability. Those with such expertise, video game developers, would instead develop games for hedonic and entertainment purposes. The popularity of video games makes people enjoy video games for their entertainment value. One of the internationally popular video games developed by Indonesian' developers is Dreadout, developed by Digital Happiness based in Bandung. Other titles developed by Indonesian developers like Coral Island, Coffee Talk, and Kitaria Fables, to name a few, are proof that video game development in Indonesia is quite advanced and accepted internationally. Some developers aim to develop educational games in Indonesia, but their numbers are still very limited and focused on children's education. These situations make educational games adoption in the formal classroom rarely discussed. Teachers can't design and develop educational games, those who can't don't want to develop them,

Collaboration between teachers and video game developers becomes critical in how educational games can be designed, developed, and adopted in formal classrooms. For educational games that teachers can use, educational games must aim to educate a specific course objective. Every course objective can be introduced, educated, and promoted using educational games, including moral education. In this study, we have attempted to include teachers' needs and developers' experiences while designing and developing our educational games. Which results in proper and viable tools to be included in moral education. From our beta test, students are eager to continue using the educational game and excited to explore its possibilities in other subjects, such as science and math. Some major video games have tried to include educational content into their video game (Assassin's Creed III with a historically accurate American Civil War history; Minecraft with strong algorithm mechanics to teach computer programming; and Eloh with strong trigonometry content). However, the gaming sessions of those video games can take long hours and are not suitable for school sessions, typically 80 minutes per subject. To be used effectively, educational games should be able to deliver the learning content in an interesting way, by using all advantages of video games as interactive media, all within a short period so that teachers still have time to direct the class to the learning objective. Our moral educational games are divided into subchapters. Each session takes about 20-30 minutes to complete and thus enables teachers to follow it up with discussion sessions or other learning activities. Nevertheless, more educational games should be designed with collaboration with teachers with how its implementation in formal classrooms in mind. To fulfill that objective, further studies should be conducted to study educational games' acceptance among students and teachers, their effect on learning experiences, and how to implement educational games in a formal classroom session. Moreover, our study is focused on moral education in Indonesia. Further study can also be pursued to design, develop, and test educational games for moral education in other countries

CONCLUSION

This study highlights the significance of moral education and the potential of educational games in fostering moral values and ethical behavior in individuals. Moral education plays a vital role in helping individuals distinguish between right and wrong, guiding

them to make morally responsible choices. Adapting moral education to meet new challenges is essential in the rapidly changing world of the 21st century, characterized by technological advancements and cultural shifts. The research emphasizes the need for a holistic and practical approach to moral education, incorporating digital technology and interactive learning methods. While traditional classroom settings and textual materials have been utilized for moral education, incorporating video games as educational media shows promising results. Educational games offer unique experiences, presenting moral dilemmas and conflicts that encourage critical thinking and moral reasoning.

The developed moral educational game in this study demonstrates how interactive media like video games can be used to engage students and encourage discussions on moral values. The "choose your own adventure" mechanic and the inclusion of real-life moral dilemmas create immersive and thought-provoking experiences for the players. The game also incorporates a grading system for moral values, allowing teachers to guide discussions based on the players' choices.The study highlights the potential of educational games as a valuable addition to formal education, but it also acknowledges the challenges of integrating such technology into classrooms. Collaborative efforts between educators and video game developers are crucial to designing educational games that align with specific course objectives and meet the needs of formal education settings.Embracing the potential of educational games in moral education can pave the way for a more dynamic and impactful approach to nurturing character and ethical values in future generations. Through continued collaboration and innovation, we can bridge the gap between digital technology and moral education, creating a more inclusive and effective learning environment for students.

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