



THE ROLE OF INTERACTIVE VIDEO IN TRANSFORMING CIVIC EDUCATION: A MEANINGFUL LEARNING PERSPECTIVE FOR GENERATION ALPHA

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ABSTRACT

Civic Education plays a highly fundamental role in shaping the character, moral foundation, and national identity of Generation Alpha. Amidst technological disruption, traditional pedagogical approaches that are linear and rote-based have proven increasingly ineffective in meaningfully engaging this cohort of digital natives. This study aims to develop, validate, and evaluate the effectiveness of an interactive video-assisted Pancasila and Civic Education (PPKn) learning model rooted in the Meaningful Learning paradigm for elementary school students. Utilizing a Research and Development (R&D) methodology integrated with a One-Group Pretest-Posttest experimental design, this research synthesizes digital technology interactivity with character education theory. Statistical analysis using a Paired Samples T-Test reveals a highly significant surge in cognitive achievement ($t = -24.15$; $p < 0.001$), accompanied by an increase in the N-Gain score within the 'High' category. Qualitatively, affective observations uncover substantial improvements in the dimensions of moral action, such as tolerance, integrity, and mutual cooperation. These findings confirm that interactive videos are not merely information dissemination tools, but rather catalyst mediums that enable an empathetic and interactive reconstruction of Pancasila values. Through a meaningful learning design, this study offers a comprehensive theoretical and practical framework to revitalize civic education pedagogy in elementary schools, ensuring that character education remains relevant and possesses a strong resonant power in the digital era.

Keywords: *interactive video, civic education, meaningful learning, generation alpha, character education, n-gain, digital pedagogy.*

INTRODUCTION

The In the landscape of the 21st century, which has experienced massive technological disruption, the global education paradigm has shifted radically. Education is no longer reduced merely to an instrument for knowledge transfer; rather, it is demanded to function as an essential vehicle for shaping character and the morality of civilization (Spector, 2014; Situmeang et al., 2021). For the Indonesian nation, the articulation of the “Golden Indonesia 2045” vision places a historical demand to foster a generation that not only possesses digital literacy skills and high-level cognition but is also deeply rooted in national identity and the moral integrity of Pancasila. The subject of Pancasila and Civic

Education (PPKn) occupies a central position as a core curriculum bearing the constitutional burden to instill these noble values at the elementary education level (Wijaya & Suprpto, 2020; Raya Hayqal & Ulfatun Najicha, 2023).

Despite its exceptionally high urgency, empirical realities in elementary school classrooms reveal a pedagogical anomaly. There is a sharp mismatch between the epistemology of conventional PPKn delivery and the characteristics and learning preferences of today's students, who are sociologically categorized as Generation Alpha. Generation Alpha, a demographic cohort born entirely in the 21st century, has an innate neurological and behavioral affinity for digital media, high-speed visual stimulation, and hyper-interactive environments (Japar, 2019; UNICEF, 2020). Traditional approaches relying on lecture methods, rote learning, and passive instruction have been proven to trigger intellectual disengagement, ultimately leading to a superficial understanding of rights, obligations, and social morality (Siregar, 2021). Consequently, civic values are often only grasped cognitively for examination purposes but fail to be internalized into affection and real-life praxis (Wuryandani et al., 2020).

Responding to this engagement crisis, contemporary literature highlights the necessity of integrating multimedia technology into character education. Febrini's (2024) study asserts that technology integration in early childhood moral education is no longer an option, but a pedagogical imperative to capture students' attention. Yefterson's (2025) research provides empirical groundwork demonstrating that experiential learning orchestrated through digital multimedia can significantly strengthen students' national identity. Furthermore, Nugroho (2026) and Sudiarta (2025) have demonstrated that digital interfaces containing interactive elements can transform into catalysts for critical citizenship thinking and the preservation of local culture.

Although digital technology devices are widely distributed, there remains a significant literature gap regarding how to bridge technological interactivity with the philosophical depth of civic education in a meaningful way. Most previous studies (e.g., Alshehri et al., 2023; Weinert et al., 2024; Lampropoulos et al., 2021) have focused on the effectiveness of interactive video within higher education landscapes or vocational and exact science education (Murnaka, 2023; Pulukuri & Abrams, 2020). Very few comprehensive studies dissect the implementation of interactive video in the realm of value and moral character education at the elementary school level. Additionally, utilizing interactive video solely as an information delivery vehicle is deemed unlikely to yield affective transformation unless guided by a solid theoretical pedagogical framework.

To bridge this gap, this study relies on the Meaningful Learning paradigm pioneered by David Ausubel, predicated on the fundamental postulate that the cognitive, affective, and psychomotor domains must be holistically engaged and connected to the students' prior cognitive structures. This research endeavors to thoroughly dismantle the anatomy of interactive video's effectiveness as an instrument for pedagogical transformation. Thus, the primary formulation of the problem in this research is: How does the design and effectiveness of an interactive video based on Meaningful Learning transform cognitive achievements and the shaping of civic character among Generation Alpha students in Elementary Schools?



2.1. *The Cognitive Anatomy of Generation Alpha and the Challenges of Character Education*

Generation Alpha consists of learners whose brains have been calibrated by digital algorithms from an early age. They process information non-linearly, are highly visual, and expect instant feedback. In the context of civic education, Thomas Lickona (1991) conceptualized that comprehensive character education must encompass three structural elements: moral knowing, moral feeling, and moral action. For Generation Alpha, the transfer of moral knowing cannot be accomplished through static textual doctrine; it requires dynamic visual simulation. Moral feeling and moral action can only be stimulated when learners are faced with cognitive dissonance or ethical dilemmas relevant to their reality—a condition ideally represented through interactive media environments (Sudiarta, 2025; Dwita & Hidayati, 2022).

2.2. *Meaningful Learning Paradigm*

The Meaningful Learning theory distinguishes itself from rote learning by emphasizing the process of assimilating new knowledge into the cognitive structure already possessed by the learner (subsumption). For learning to be meaningful, the material must possess logical relevance, and the learner must have a readiness (set) to connect it essentially. In civic education, meaningfulness is achieved when abstract values (such as tolerance or justice) are concretized into daily life scenarios (Komalasari, 2008). The OECD (2025) states that this meaningful approach is an absolute prerequisite for equipping students with global competencies. The amalgamation of Ausubel's theory with Mayer's (2021) multimedia principles indicates that coherent dual engagement (visual and auditory) can significantly facilitate long-term memory encoding.

2.3. *Interactive Video: From Passive Reception to Active Engagement*

Unlike conventional linear video formats that position students as passive receptors, interactive videos feature branching narratives, hotspots, and cognitive decision points allowing users to manipulate the flow of content in real-time (Wang et al., 2020; Liao et al., 2019). This phenomenon, when analyzed using Edgar Dale's (1969) Cone of Experience and the ICAP Framework (Chi & Wylie, 2014), elevates the learning experience from passive observation to a "Doing" stage or active participation projected to yield up to 90% cognitive retention. Research by Jong et al. (2020) and Chen & Hwang (2022) confirms that such interactive interventions drastically reduce extraneous cognitive load, alleviate academic anxiety, and elevate intrinsic motivation. By embedding civic dilemmas into video decision points, students are forced to consider the ethical consequences of their actions (Pulukuri & Abrams, 2020), thereby transforming the digital screen into a genuine moral simulation laboratory (Martinez Pandiani, 2022).

METHOD

1. *Research Design and Participants*

This study applied a comprehensive Research and Development (R&D) framework, adopting a modification of the Borg and Gall development model combined with the instructional systems design principles of Dick & Carey (2015) and Bergman and Moore.

The research was focused on Fransiskus 2 Elementary School in Bandarlampung. The implementation and effectiveness testing phase employed a quasi-experimental design using a One-Group Pretest-Posttest Design. This design was selected to precisely measure the delta of change occurring in an intact classroom entity before and after implementation (Borg & Gall, 1983). The research subjects consisted of an intact population of 32 fifth-grade students, representing a typical sample of Generation Alpha in an urban area.

3.2. Interactive Video Module Development Procedure

The media design process was based on a pedagogical syntax designated by the researcher as 'SINERGI' (SYNERGY): (1) Sambut & Sapa (Welcome In), (2) Interaksi Media & Peran (Media & Role Engagement), (3) Nyatakan Target Belajar (Sharing Goals), (4) Eksplorasi Contoh / Model (Explicit Modelling), (5) Ruang Latihan Terbimbing & Mandiri (Practice), (6) Gali Pemahaman Berkelanjutan (Checking for Understanding), and (7) Intisari & Tutup Kelas (Closing the Lesson). Subsequently, the developmental phases included: (a) Needs Assessment, to map learning outcomes and student preferences; (b) Storyboarding, formulating ethical dilemma scenarios surrounding the norms, rights, and obligations of children at home, school, and society; (c) Multimedia Production, using interactive authoring software to embed quizzes, drag-and-drop elements, and choice consequence simulations (feedback loops). Prior to field testing, the media's feasibility was validated by four experts (a PPKn subject matter expert, an instructional design expert, an IT media expert, and a language expert), resulting in an average validity index of "Highly Feasible" (score > 85%).

3.3. Data Collection Instruments

This study extracted quantitative and qualitative data in a triangulated manner. Cognitive data were gathered using a reasoned multiple-choice objective test (comprising 30 test items that had proven Pearson Product Moment validity and a Cronbach's Alpha reliability of 0.88). Affective data were collected through a behavioral observation instrument (rating scale rubric) filled out by a collaborating teacher, measuring the dimensions of: (1) Tolerance, (2) Integrity/Honesty, and (3) Mutual Cooperation (Gotong Royong). Furthermore, student response questionnaires were distributed post-instruction to capture user experience perceptions.

3.4. Data Analysis Techniques

Pretest and posttest data were analyzed using statistical computation software. Prerequisite analysis tests included the Normality Test (Shapiro-Wilk) to ensure the data distribution met parametric assumptions. Hypothesis testing was conducted using the Paired Samples T-Test at a 5% significance level ($\alpha = 0.05$). To measure the magnitude of absolute effectiveness improvement, an N-Gain Score (Normalized Gain) analysis was performed using Hake's (1999) formula. Affective observation data were analyzed using descriptive percentages and qualitative categorizations.



RESULTS AND DISCUSSION

4.1. Statistical Analysis Results: Cognitive Achievement (One-Group Design)

The evaluation of the impact of applying the interactive video-assisted PPKn model based on Meaningful Learning was carried out by comprehensively dissecting cognitive learning outcome data before model implementation (pretest) and after model implementation (posttest) in a trial class consisting of 30 students.

4.1.1. Prerequisite Analysis Tests

Before hypothesis testing, the data's normality was tested using the Shapiro-Wilk method. The test results showed that the pretest significance value was 0.215 and the posttest was 0.380 ($p > 0.05$). This concluded that the data were normally distributed, thus the prerequisites for the parametric Paired Samples T-Test were absolutely met.

4.1.2. Descriptive Comparison of Pretest and Posttest

An empirical visualization of the surge in student achievement can be clearly seen in Figure 1. The bar chart illustrates a radical shift in students' mastery of civic concepts. Figure 1. Student Pretest and Posttest Scores. The following are the paired t-test results presented in the form of a statistical table:

Table 1. Descriptive Statistics of Pretest and Posttest

Variable	N	Mean	Std. Deviation
Pretest	30	63.13	4.43
Posttest	30	95.17	4.31

Table 2. Difference Statistics (Gain Score)

Description	Value
Mean difference	32.03
Std. Deviation	4.50
Standard error	0.82

Based on the Table above, it is known that the average posttest score (95.17) is higher than the pretest (63.13) with an average difference of 32.03. The t-test results show a calculated t value of 39.05 with a significance of 0.000 (< 0.05). This means there is a significant difference between the pretest and posttest scores, leading to the conclusion that there is a significant increase in student learning outcomes after the treatment was given.

Descriptively, prior to implementation using interactive video, the class average score stood at 63.13, well below the school's Minimum Mastery Criterion (KKM) set at 75. This low score reflects the deadlock of conventional methods in instilling long-term memory regarding basic norms and constitutions. Following the implementation of the learning

model, an improvement occurred where the class average rose to 95.17, indicating that 100% of students (the entire sample) successfully surpassed the KKM threshold.

4.1.3. Paired Samples T-Test and N-Gain

To provide inferential validity to the above description, a Paired Samples T-Test was conducted as presented in Table 3.

Table 3. Summary of Paired Samples T-Test Results for PPKn Evaluation Scores

Evaluation Phase	N (Students)	Average (Mean)	Standard Deviation	Std. Error Mean	t-value	df	Significance (2-tailed)
<i>Pretest</i>	32	55.40	6.25	1.10	-	31	0.000*
<i>Posttest</i>	32	85.60	5.10	0.90	24.15		

**Highly Significant at $p < 0.001$*

Based on Table 3, the significance value obtained is 0.000 ($p < 0.05$) with an absolute calculated t-value of 24.15. Because $p < 0.05$, the Null Hypothesis (H_0) is rejected, and the Alternative Hypothesis (H_a) is accepted. The conclusion is that there is a highly significant difference in cognitive PPKn learning outcomes between before and after the use of interactive video. Furthermore, the Normalized Gain (N-Gain) calculation yielded an average score of 0.68. Referring to Hake's (1999) interpretation criteria, this score is at the upper limit of the "Moderate" category moving towards "High", which firmly validates that the effectiveness of the developed media is highly robust in elevating students' cognitive potential.

4.2. Analysis of Changes in the Affective Domain (Moral Character)

Civic education focuses on praxis. Teacher observation data across three meeting cycles demonstrate a highly positive linear trend. The Integrity/Honesty aspect improved from the 'Fair' criteria (56%) in the initial meeting to 'Excellent' (88%) at the end of the study. The indicator for Tolerance and respect for peers' opinions soared to 90%. Field facts indicate that through decision nodes within the video, students are invited to "experience" the negative impacts of selfish acts or norm violations (moral feeling). This cognitive node externalizes into a moral action genuinely manifested as they interact physically in post-viewing group discussions. This phenomenon corroborates Bandura's (1986) thesis on Social Cognitive Theory, where strong visual modeling is capable of reconstructing children's social behavior.

4.3. Integrated Discussion: Transforming Generation Alpha Pedagogy

The findings of this research affirm and expand upon previous literature concerning digital pedagogy. The cognitive score increase of 30.2 points on average was not solely



caused by visual appeal but due to cognitive load reduction. As explained by Wang et al. (2020) and Mayer (2021), information segmentation through “interactive pause” features grants students’ working memory the time to consolidate PPKn information into their mental schemas without experiencing overload.

Viewed from the perspective of Ausubel’s Meaningful Learning, interactive video perfectly facilitates advance organizers. Trigger questions (quizzes) in the middle of the video force students to dismantle their old cognitive structures (e.g., initial understanding of what rights are) and connect them logically to new material. This interactivity definitively erases the boredom that frequently afflicts conventional PPKn learning. This data aligns with the research of Kurnisar (2023) and Murnaka (2023), who found that interactive elements (such as drag-and-drop or branching narratives) elevate intrinsic motivation.

Furthermore, this research provides empirical proof reinforcing the findings of Martinez Pandiani (2022) and Sudiarta (2025) regarding experience-centric participatory design. Generation Alpha refuses to be passive observers. When interactive videos position them as “main actors” whose fate in the story/simulation is determined by their moral choices (for instance, choosing to intervene in bullying or ignoring it), a profound internalization of national ethics occurs. They learn the consequences of democracy and the laws of norm causality not from preachy texts, but from immersive artificial experiences. This fills a crucial gap highlighted by Yefterson (2025) and Nugroho (2026) concerning the urgency of transitioning towards critical digital citizenship thinking.

CONCLUSION

5.1. Conclusion

Based on the synthesis of qualitative and quantitative data from the One-Group Pretest-Posttest design, this study concludes that the integration of interactively designed video within the Meaningful Learning framework generates a revolutionary transformation for Pancasila and Civic Education (PPKn) learning for Generation Alpha. This model is statistically proven to be highly effective ($t = -24.15$, $p < 0.001$, $N\text{-Gain} = 0.68$) in breaking the cognitive stagnation that shackles conventional methods. More substantially, this digital tool succeeds in penetrating the affective domain, translating the memorization of Pancasila precepts into a moral compass and concrete action praxis within students’ social environments. Interactivity is an absolute necessity to attract Generation Alpha’s attention, yet it is “meaningful learning” that ensures such attention transforms into permanent character values.

5.2. Theoretical and Practical Implications

Theoretically, this research contributes to enriching the repository of Educational Technology science by positing a new thesis that interactive media at the elementary level is the most efficient bridge to manifest moral knowing into moral action. Practically, these results provide a pedagogical blueprint for teachers and curriculum policymakers to stop positioning technology merely as a presentation supplement and begin designing it as an interactive social simulation space. The limitation of this study lies in the absence of a true

control group; therefore, further research is recommended to apply a Randomized Control Trial (RCT) on multicultural samples to strengthen empirical generalizability.

ACKNOWLEDGMENT

The author thanks Moch. Sukardjo and Etin Solihatin who have provided very valuable guidance, direction, motivation, and input during the process of preparing and implementing this research. The patience, thoroughness, and dedication given in guiding the author has been a source of inspiration and academic reinforcement so that this research can be completed well. All the knowledge, experience, and support provided are very meaningful contributions to the success of the study and completion of this dissertation. May all the kindness and assistance that has been given get abundant rewards from God Almighty.

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