



## Strengthening High School Students' Character through a Hypercontent E-Module Based on the Core Values of Pangudi Luhur

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### ARTICLE INFO

#### Article history:

Received: 15 Jan 2026

Revised: 27 Jan 2026

Accepted: 15 Feb 2026

Published online: 25 Feb 2026

#### Keywords:

Hypercontent E-Module,  
Character Strengthening,  
Pangudi Luhur Core Values,  
High School,  
Self-Regulated Learning

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#### Article Doi:

<https://doi.org/10.31258/jes.10.2.p.3376-3391>

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### ABSTRACT

The increasing character problems in high school students, such as bullying, low empathy, and weakened social awareness, indicate that conventional character education strategies have not been able to internalize values meaningfully. This study aims to develop and test the effectiveness of a hypercontent e-module based on Pangudi Luhur's Core Values as a digital medium to strengthen students' character. The study used a Design-Based Research approach through the stages of needs analysis, design, expert validation, limited trials, field trials, and reflection, involving 30 grade XII students of Pangudi Luhur Santo Yosef Surakarta High School as subjects. Data were collected through questionnaires, observations, reflective journals, self-assessments, peer assessments, and character pretests and posttests. The results showed that the e-module was in the very valid category (91.67%), was considered very practical by students, and was effective in increasing understanding of values, reflective attitudes, social behavior, and character commitment, especially in internalizing the value of pro-poor. It is concluded that the hypercontent e-module designed with the Self-Regulated Learning approach and the ARCS motivation model is an interactive, contextual, and sustainable digital learning solution for strengthening the character of high school students.

## 1. Introduction

In this rapidly evolving digital era with increasingly advanced technological advancements, easy access to information and educational facilities should prepare students not only to master academic competencies, but also to develop strong character, high integrity, and profound social responsibility (Taylor et al., 2022). However, a global phenomenon reveals a striking paradox: along with increasing access to education and information, there is a significant degradation of character, especially among high school students (Albana & Sujarwo, 2021). International

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statistical trends reveal an increase in cases of bullying, violence, moral decadence, and selfish attitudes in school environments, reflecting the gap between intellectual progress and character formation. In Indonesia, in particular, data from the Indonesian Child Protection Commission (KPAI) in West Jakarta shows that bullying is not merely an interpersonal problem, but has become a common method of "problem solving" among school-age children, with some cases resulting in permanent disability or even death (Akbar et al., 2024; Ananda & Fauziah, 2022; Aufa et al., 2021). This phenomenon is exacerbated by the challenges of character education in the digital era, which has not only positive but also negative impacts on the character formation of high school/vocational school students, as identified in a recent study on the urgency of character education in the digital age. Strengthening character values has become an urgency that cannot be postponed any longer, especially considering the psychosocial development of upper secondary school students which still opens up space for internalizing positive values before entering adulthood (Gusvira Annisa et al., 2025; Hadi et al., 2025; Saputri & Syuhada, 2022).

A deep understanding of character as a system of values internalized and expressed through behavior has been put forward by various prominent thinkers. Meutia et al. (2024) provides a highly relevant framework by asserting that character encompasses three integral dimensions: moral knowing, moral feeling, and moral action. Irdawati et al. (2023) theory of moral development provides an understanding of how students gradually develop their moral reasoning, while (Frydenberg & And one (2016) through his social learning theory demonstrates the importance of modeling and the environment in shaping behavior. The Ministry of National Education officially defines character education as a deliberate effort to help individuals understand, care about, and act based on ethical values. Recent research indicates that curriculum-based character education is a strategic approach to developing intellectually and morally superior students, with proven effectiveness at the high school level through leadership development and self-management (Afriyanti et al., 2021). Wijayanti et al. (2024) theory of intrinsic motivation reinforces the argument that individuals will be more motivated to behave in accordance with their values if those values have become an integral part of their identity. Character formation is influenced by various external and internal factors, including the family as the first and primary environment (Handayani et al., 2023), school as a strategic second environment, social environment including peers and social media (Syahrial et al., 2022). Personal experience, as well as accessibility of mass media and digital technology which have the potential to have a double impact (Nurhasanah et al., 2024).

The specific context of this research focuses on Catholic high schools in Indonesia, specifically Pangudi Luhur Santo Yosef Surakarta High School, which is part of the Pangudi Luhur Foundation, founded by the FIC (Congregatio Fratres Immaculatae Conceptionis Beatae Mariae Virginis) congregation. Schools under the auspices of this foundation have a special commitment to instilling the "Pangudi Luhur Core Values," which are basic virtues designed to be internalized by all members of the school community. The concept of core values proposed by Meutia et al. (2024) positions core values not merely as formal rules, but as life principles that guide

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individuals in making decisions, building relationships, and achieving maximum potential. Previous research by Hamid et al. (2020) in the context of Catholic schools shows that character education enables all members of the school community to understand the important things in every situation and act based on the right reasons, so that they become more independent and reflective in practicing virtue. Irdawati et al. (2023) emphasized that core values serve as a moral compass that guides individual and organizational behavior, fostering strong identity and character. The implementation of character education in the high school curriculum, such as that implemented at SMA Muhammadiyah Mlati through the Merdeka Curriculum and ISMUBA, has demonstrated effectiveness in preventing radicalism through the integration of character values such as discipline, honesty, and caring.

However, the Education Report for SMA Pangudi Luhur Santo Yosef Surakarta over the past four years shows a worrying trend: the character strengthening score recorded 61.64% in 2022, 61.86% in 2023, then experienced a significant decline to 57.38% in 2024, and continued to decline by 0.48% to 56.9% in 2025. This data indicates that conventional character strengthening strategies have not produced optimal results. Initial observations and interviews revealed structural and pedagogical barriers: a lack of comprehensive support modules, limited interactive learning media, limited time in the school schedule, and activities that end with administrative reflection without meaningful internalization. Challenges to character education in Indonesia in general also include a lack of student awareness and variations in understanding of character values, as identified in a recent phenomenological study. These obstacles create a gap between ideal goals and implementation practices, raising the need for innovative technology-based solutions that can overcome time and teaching material constraints through engaging, interactive, and flexible learning media.

Recent research provides a strong theoretical basis for the proposed solutions. Putra & Wulandari (2022) demonstrated the effectiveness of internalizing Pangudi Luhur's Core Values through online public speaking training. Syahril et al. (2022) demonstrated that value-based e-modules efficiently improve the character of elementary school students and help teachers overcome limitations in teaching materials. Maulidiyah et al. (2023) analyzed a holistic approach to curriculum-based character education for high schools that effectively involves leadership development and self-management. Susatya et al. (2021) demonstrated that the implementation of the Independent Curriculum High School successfully integrated character values to prevent radicalism through a phenomenological approach. The advantages of hypercontent e-modules include high interactivity through responsive multimedia, seamless accessibility across space and time, content personalization, and a diversity of media formats. H et al. (2021) multimedia learning theory provides relevant design principles: modality, coherence, redundancy, integration, and spatial-temporal contiguity. Fahmi et al. (2021) emphasizes flexible non-linear logic.

Although recent research has addressed character education and learning technology, specific studies on the development of "Core Values"-based hypercontent e-modules for high schools with the integration of Self-Regulated

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Learning (SRL) and the ARCS motivational model are still limited. Suarningsih (2024) in a comprehensive literature review emphasized that character education in Indonesia requires a conscious and directed approach through a learning environment to develop the potential for good and moral character. This gap presents an opportunity for practical development that enriches the literature on technology-based character education. The Design-Based Research (DBR) approach was chosen because it allows for collaborative, iterative development in a real-world context (Afriyanti et al., 2021; Albana & Sujarwo, 2021), in accordance with the reflective and contextual characteristics of DBR.

This study aims to: (1) describe the process of strengthening character with Pangudi Luhur's Core Values in high school students; (2) describe the process of developing an effective hypercontent e-module for strengthening the character of high school students; and (3) measure the effectiveness of the hypercontent e-module in strengthening the character of high school students. This study is expected to produce an e-module that is not only effective in increasing the understanding and application of character values, but also provides a meaningful, interactive, and sustainable learning experience for high school students in the digital era.

## **2. Methodology**

### ***Research Design***

This study uses a Design-Based Research (DBR) approach that places the development of digital learning solutions as an integral part of the research process. DBR was chosen because it is able to iteratively combine product design, implementation, evaluation, and revision within an authentic learning context (Marande & Diana, 2022). This approach is highly relevant to the research objective of developing hypercontent e-modules that are not only technically feasible but also effective in strengthening student character through the internalization of Pangudi Luhur's Core Values. In the context of educational technology, DBR also allows for the exploration of the relationship between digital design, learning motivation, and student affective change (Afriyanti et al., 2021). The steps of Design Based Research are explained in the following figure 1 below.

### ***Research Procedure***

The DBR design in this study followed four iterative phases: problem analysis, solution design, implementation and evaluation, and reflection and refinement. In the initial phase, classroom observations and semi-structured interviews were conducted with character education teachers at Pangudi Luhur Santo Yosef Senior High School in Surakarta to identify limitations of conventional learning, particularly the lack of digital media, limited face-to-face time, and low student engagement. Based on these findings, a hypercontent e-module prototype was developed that combined text, video, audio, interactive quizzes, and external links using the HTML5 platform. The module was designed based on the ARCS Motivation Model Sultoni et al. (2022) to increase attention, relevance, confidence,

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and learning satisfaction, as well as the Self-Regulated Learning (SRL) approach that encourages reflection and self-regulation (Nurjamin et al., 2025). The prototype was then validated by digital learning design experts and character education experts, revised based on feedback, and piloted in two cycles with students. Each cycle involved data collection, analysis, and design refinement until a stable and usable version of the module was achieved.

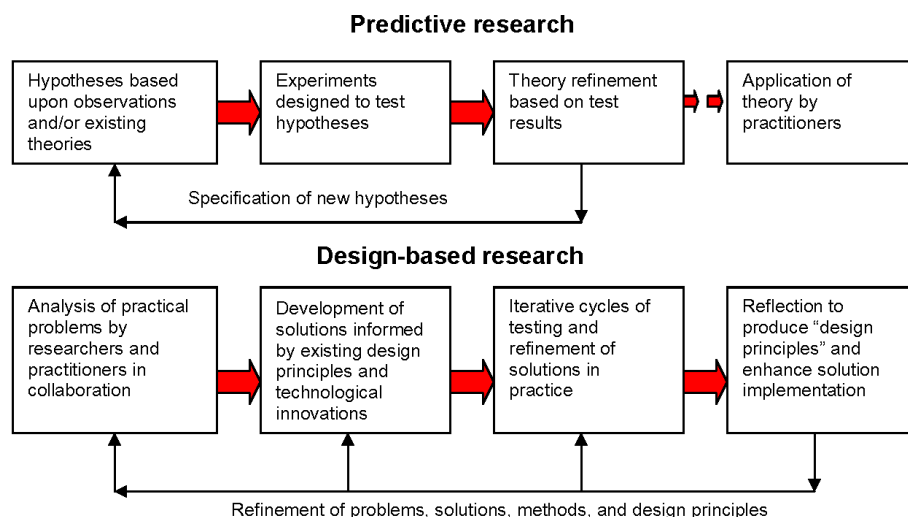


Figure 1. Steps for Design Based Research according to Reeves (2018)

### ***Participants and Research Context***

The research subjects were 30 12th-grade students at Pangudi Luhur Santo Yosef Senior High School, Surakarta, in the 2025/2026 academic year. The selection of 12th-grade students was based on the students' cognitive and affective maturity and their experience participating in the school's character education program. The Catholic Religious Education teacher and homeroom teacher acted as collaborators, while two expert validators assessed the feasibility of the module's content and design.

### ***Data Sources and Instruments***

Data sources included quantitative and qualitative data. Quantitative data were obtained through a Likert-scale student perception questionnaire and a character pretest–posttest. Qualitative data were collected through observations, interviews, digital reflective journals, assignment artifacts, and an expert validation rubric. The instrument was developed based on Pangudi Luhur's Core Values indicators and validated by experts to ensure content validity (Royhanin & Sungkono, 2022)

### ***Data Analysis***

Data analysis was conducted using a mixed methods approach. Quantitative data were analyzed descriptively and used normalized gain (N-gain) to measure student character improvement after the intervention. Qualitative data were analyzed thematically to identify patterns of value internalization and learning experiences. The analysis results were integrated to comprehensively evaluate the effectiveness

of the e-module (Saputri & Syuhada, 2022). Based on the stages established in the Design-Based Research method, several research steps will be designed by the researcher based on the Design-Based Research model. After the field research process is completed, the researcher will conduct an evaluation to obtain results in the form of a hypercontent e-module for strengthening the character of high school students. The research design for the hypercontent e-module is presented in Figure 2 below.

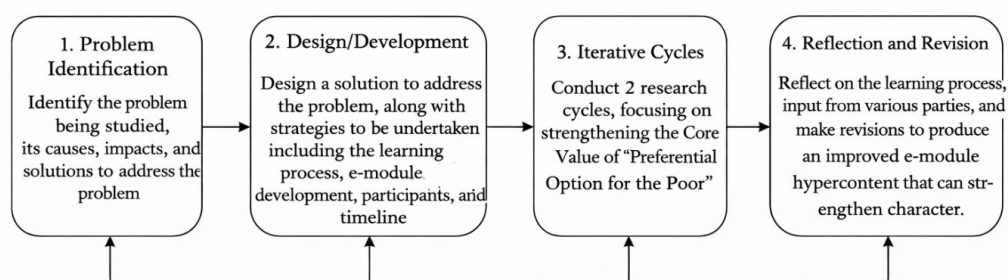


Figure 2 Hypercontent e-module research design

### 3. Results and Discussion

#### *Results*

This study aims to develop and test the effectiveness of Hyper Content E-Modules based on Pangudi Luhur's Core Values in strengthening the character of high school students. The approach used is Design-Based Research (DBR), so that the research results are not only the final product in the form of an e-module, but also processual findings related to how the design, implementation, and revision of the e-module contribute to strengthening students' character.

#### *Results of the Needs Analysis Stage*

The needs analysis phase was conducted through interviews with teachers in charge of Pangudi Luhur's Core Values, observations of the learning process, and analysis of the school's character education report cards. The analysis results indicate that character strengthening at Pangudi Luhur Santo Yosef Senior High School in Surakarta has become a routine and scheduled program, but its implementation still faces several obstacles. The main obstacles identified include limited systematic teaching materials, the use of learning media that tend to be conventional, and limited face-to-face time that causes the process of internalizing values to stop at the cognitive and written reflection stages.



Students demonstrated a conceptual understanding of Pangudi Luhur's Core Values, particularly the value of supporting the poor, but were unable to fully translate these values into everyday behavior. This indicates a gap between moral knowing and moral action. These findings reinforce the need for flexible, contextual learning media that enable ongoing learning beyond the classroom.

## Hyper Content E-Module Product Development Results

Based on the needs analysis, a Hyper Content E-Module was developed containing Pangudi Luhur's Core Values material with a focus on the value of pro-poor. The e-module was designed using the ARCS (Attention, Relevance, Confidence, Satisfaction) and Self-Regulated Learning (SRL) approaches. Structurally, the e-module consists of: (1) an introduction to values and character learning objectives, (2) narrative and multimedia-based material presentation, (3) hypercontent in the form of video links, reflective audio, and contextual stories, (4) value experience activities, (5) personal reflection based on a digital journal, and (6) formative and reflective assessments.

Structurally, the e-module consists of: (1) an introduction to the values and objectives of character learning, (2) a presentation of narrative and multimedia-based material, (3) hypercontent in the form of video links, reflective audio, and contextual stories, (4) value experience activities, (5) personal reflection based on a digital journal, and (6) formative and reflective assessments. The stages of the E-Module can be seen in table 1 below.

Table 1. E-Module Stages

<p>(1) introduction to character learning values and objectives</p> 
<p>(2) narrative and multimedia-based material presentation</p> 
<p>(3) hypercontent in the form of video links, reflective audio, and contextual stories</p>





The validation results from media and material experts indicate that the e-module is highly suitable for use. The content suitability aspect was deemed strong due to the material's alignment with Pangudi Luhur's character indicators, while the media suitability aspect stood out for its interactivity, clear navigation, and hypercontent integration that supports nonlinear learning. Table 2 below presents the expert validator's results.

Table 2. Results of E-module Validity from the Material Aspect

No	Rated aspect	Validator
1	Systematic presentation	5
2	Sequence of presentation	5
3	Introduction	4
4	Contents Section	4
5	Closing Section	4
6	E-Module Size Compliance	5
7	The composition and size of the layout elements	5
8	Font selection	5
9	Reflection of the contents of the E-Module	5
10	Message readability	4
11	Accuracy of language rules	5
12	Coherence and cohesion between paragraphs	4
	Amount	55
	Average	91.67%
	Criteria	Very Valid

### Limited and Field Trial Results

A limited pilot test was conducted with a small group of students to obtain initial feedback. The pilot test results showed that students responded positively to the use of the e-module, particularly to the contextual video and digital reflection features. Students stated that the material was easier to understand and felt relevant to their life experiences. In the field trial involving one class of 12th grade students, there was an increase in student learning engagement and reflective awareness. Indicators of character strengthening were seen in the way students interpreted the value of siding with the poor, not merely as a charitable act, but also as an attitude of empathy, concern, and respect for the dignity of others, including peers with disabilities. Table 3 below presents the Student Character Pretest and Posttest Scores.

Table 3. Results of Small Class Tests on E-Modules

Aspect	Average Score	Category
Visual Display	Tall	Very good
Clarity of Material	Tall	Very good
Interactivity	Medium-High	Good
Ease of Access	Tall	Very good

Table 3 shows that the e-module was deemed practical and easy to use, indicating the product's readiness for implementation on a broader classroom scale. Figure 3 below shows the cover of the final, tested module.



Figure 3. E-Module Results

### ***Results of the Effectiveness of E-Modules in Strengthening Character***

The effectiveness of the e-module was measured through data triangulation in the form of behavioral observations, student reflections, and teacher and parent assessments. The results showed that the hypercontent e-module was able to strengthen the three dimensions of character according to Lickona: moral knowing, moral feeling, and moral action. Students not only understood the concept of values, but also demonstrated greater empathy and a willingness to engage in concrete actions, such as sharing activities, social service, and inclusive attitudes in daily interactions. On the class test sheet, students responded to ease of use, clarity of material, and media appeal. The results showed that the majority of students gave good to excellent ratings. Table 4 shows that all dimensions of character improved after using the hypercontent e-module. These findings indicate that multimedia-based learning and value reflection can improve students' internalization of character.

Table 4. Pretest and Posttest Scores of Student Character

Assessment Aspects	Pretest Average	Posttest Average	Improvement Category
Understanding Values	Low–Medium	Tall	Increase
Reflective Attitude	Currently	Tall	Increase
Social Behavior	Currently	Tall	Increase
Value Commitment	Low	Medium–High	Increase

## ***Discussion***

### ***Hyper Content E-Module as a Character Strengthening Solution***

The research results indicate that the development of hypercontent e-modules is a relevant solution to address the challenges of character building in the digital age. This finding aligns with the view that character education requires a continuous, reflective, and contextual learning approach. The flexibility of e-modules allows students to access materials anytime and anywhere, enabling the process of internalizing values beyond classroom time and space. The nonlinear hypercontent design gives students the freedom to explore the material according to their individual needs and learning pace. This supports the principle of self-regulated learning, where students become active participants in the character-building process.

### ***Integration of the ARCS Model and Character Learning Motivation***

The ARCS model has proven effective in increasing student motivation. Attention is achieved through the use of multimedia and contextual case studies, while relevance is strengthened by linking Pangudi Luhur's values to the realities of adolescent life. Confidence is fostered through gradual assignments and self-reflection, while satisfaction is gained from recognition of changes in attitudes and parental involvement in assessments. Students' intrinsic motivation increases when character values are understood as personal needs, not simply school requirements. This finding reinforces the theory of intrinsic motivation, which states that internalized values will foster sustainable moral behavior.

### ***Strengthening the Value of Pro-Poor in the Context of High School***

The value of siding with the poor in this study has expanded its meaning. Students no longer interpret poverty solely in material terms, but also as a social, emotional, and psychological limitation. The e-module helps students reflect on everyday practices such as attitudes toward marginalized peers, victims of bullying, or individuals with special needs. This discussion demonstrates that hypercontent e-modules act as a reflective medium that bridges spiritual values and social practices. Thus, character education does not stop at the normative level but develops into an ethical practice that lives in the daily lives of students.

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### ***Theoretical and Practical Implications***

Theoretically, this research reinforces the concept that character education is effective when designed with an integrative learning design approach that integrates values, technology, and self-reflection. Practically, the hypercontent e-module can serve as a model for developing character education materials in other schools, particularly those with institutional core values. The research findings also show that teacher and parent involvement through reflective assessments strengthens the consistency of value internalization. Thus, character building is a shared responsibility between schools, families, and students.

### ***Synthesis of Results and Discussion***

Overall, the research results and discussion indicate that the Hyper Content E-Module based on Pangudi Luhur's Core Values is effective in strengthening the character of high school students. This success is determined by the alignment between the learning design, student needs, and values that are internalized reflectively and contextually. These findings reinforce the view that hypercontent-based technology can facilitate meaningful, reflective learning. The integration of multimedia and Pangudi Luhur's core values encourages students' emotional and cognitive engagement, so that character is not only understood conceptually but also internalized in attitudes and behavior. These results align with research by Annisa et al. (2025) which states that interactive digital media enhances motivation and value formation. The e-module functions not only as a learning medium but also as a means of continuously developing students' moral awareness and character identity.

The expert validation results indicating that the e-module achieved a very valid category (91.67%) confirm that the integration of Pangudi Luhur's core values into the digital learning design met the essential alignment between objectives, content, and instructional media. This finding is consistent with Royhanin & Sungkono, (2022) who reported that hypercontent-based learning with nonlinear navigation enhances both cognitive and affective engagement by allowing learners to explore content according to their individual needs. Moreover, the systematic structure, coherent content sequencing, and high language readability strengthen the argument of Vassiliou & Rowley (2008) that the success of Design-Based Research is highly dependent on the clarity of pedagogical structure and the consistency between instructional design and contextual implementation. The interactivity and digital reflection features embedded in the module further support the findings who demonstrated that learning environments designed using the ARCS model significantly increase students' attention and perceived relevance, particularly when moral values are connected to real-life experiences (Hamid et al., 2020; Putra & Wulandari, 2022; Syahrial et al., 2022).

The results of the limited and field trials, which revealed strong student responses toward visual design, material clarity, and ease of access, indicate that the e-module is not only technically feasible but also pedagogically practical. The observed growth in students' reflective awareness and learning engagement is in line with

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Astalini et al. (2021) who emphasized that reflective digital environments foster self-regulated learning and deeper moral reasoning. Furthermore, the finding that students interpreted the value of siding with the poor not merely as an act of charity but as empathy, social responsibility, and respect for human dignity reinforces Afa et al. (2021) three-dimensional character framework of moral knowing, moral feeling, and moral action. The consistent improvement across all character dimensions from pretest to posttest also supports Selano et al. (2024) who stated that self-regulated learning strategies accelerate value internalization through active reflection and behavioral self-monitoring.

Therefore, the hypercontent e-module functions not only as a digital instructional medium but also as a reflective space that bridges spiritual values with everyday social practices. These findings extend previous research on technology-based character education by demonstrating that institution-based core values, when delivered through contextualized and reflective digital media, can be internalized more meaningfully. Theoretically, this study strengthens the view that character education becomes more effective when designed through an integrative learning framework that combines values, technology, and self-reflection (Anjelina Putri et al., 2018; Saputri & Syuhada, 2022; Soepudin et al., 2025). Practically, the developed e-module provides a replicable model for other schools seeking to implement sustainable, value-based digital character education.

#### **4. Conclusion**

This research effectively answers the three formulated objectives. First, the process of strengthening character with Pangudi Luhur Core Values in high school students was identified through the stages of moral knowing, moral feeling, and moral action integrated in weekly learning, but constrained by media and time limitations. Second, the development of the hypercontent e-module was successful through a Design-Based Research approach with three iterations that produced a valid product (expert score >3.5) and was effective for internalizing character values. Third, the hypercontent e-module was proven effective in increasing the understanding and application of Core Values through a significant increase in students' character scores, with high gain scores indicating sustainable internalization of values. The main findings confirm that the hypercontent e-module based on Pangudi Luhur Core Values with a Self-Regulated Learning approach and interactive multimedia is an innovative solution to overcome the conventional limitations of character strengthening in Catholic high schools. The implications of the research include strengthening the DBR literature in developing character media and practical models for value-based schools. Suggestions include: (1) sustainable implementation of the e-module by Pangudi Luhur High School with annual monitoring; (2) replication of the research in other Catholic high schools with adjustments to local core values; (3) development of adaptive AI features for personalized character learning; and (4) further research on the long-term impact on students' prosocial behavior post-implementation.

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How to cite this article:

Tyas, N. W. S., Efendi, A., & Muchtarom, M. (2026). Strengthening High School Students' Character through a Hypercontent E-Module Based on the Core Values of Pangudi Luhur. *Journal of Educational Sciences*, 10(2), 3376-3391.