Integrating Deep Learning Models into Civic Education: Effects on Students' Critical Thinking and Democratic Values

Ali Miftakhu Rosyad
Department of Islamic Education, Universitas Wiralodra, Indramayu, Indonesia

Saefullah Yamin
Departmen of Law, Universitas Wiralodra, Indramayu, Indonesia

Abstract: Civic education is expected to develop critical thinking and democratic values, yet traditional instructional practices often limit these outcomes. This study investigates the effects of deep learning pedagogical models—understood here as instructional approaches emphasizing meaningful engagement, inquiry, and authentic problem-solving, distinct from deep learning in artificial intelligence on students' critical thinking skills and democratic value formation in Indonesian high schools. A mixed-method approach was employed involving 150 students assigned to an experimental group and a control group. The experimental group received instruction through problem-based learning, deliberative discussion, service learning, case analysis, and reflective activities, while the control group followed conventional teaching methods. Quantitative data were collected using the California Critical Thinking Skills Test and the Democratic Values Scale, supported by classroom observations and semi-structured interviews. The results show that students in the experimental group achieved significantly higher critical thinking scores (M = 78.5) than those in the control group (M = 64.8), with a large effect size (d = 1.58). Similar patterns emerged for democratic values, particularly political tolerance, civic engagement, and political efficacy (d = 1.46). Qualitative findings confirm that students became more analytical, open to differing views, and confident in civic participation. These findings contribute to civic education research by providing empirical evidence that integrated deep learning pedagogical models can simultaneously develop both cognitive and democratic competencies, offering a replicable instructional framework for transformative citizenship education in diverse societal contexts.

Keywords: Deep learning pedagogy, civic education, critical thinking, democratic values, citizenship education.

Introduction

Civic education serves as the foundation of democracies, equipping the younger generation with the necessary skills to engage in civic and political activities in an responsible manner (Stokamer & Clayton, 2023). With the rise of political polarization, civic apathy, and the spread of misleading information, and the decline of democracy, the need for effective civic education is more pronounced than ever (Tobin, 2010). Wherein, rudimentary approaches to civic education that center learning through the rote memorization of governmental functions and structures, do not provide the necessary skills for critical thinking, and the pluralistic layers of democracies (Nugraha & Budimansyah, 2022).

Research has consistently documented the importance of active learning pedagogies in civic education. Studies by Hess and McAvoy demonstrated that deliberative discussion of controversial public issues enhances students' political knowledge, civic skills, and democratic dispositions (Fitri Lintang & Ulfatun Najicha, 2022). Kahne and Sporte found that classroom climates encouraging open discussion and diverse perspectives significantly predict civic engagement (Asmaroini & Utami, 2017). However, these studies have rarely examined comprehensive pedagogical models integrating multiple deep learning strategies specifically designed to develop both critical thinking and democratic values simultaneously.

Recent scholarship has explored deep learning approaches in educational contexts. It is important to note that "deep learning" in this study refers to a pedagogical concept, not to the computational technique used in artificial intelligence. Deep learning as a pedagogical approach, as conceptualized by by Fullan and Langworthy and Mehta and Fine, emphasizes mastery of challenging content, development of critical thinking and problem-solving skills, student agency, and formation of positive learning dispositions (Singh et al., 2023). This approach contrasts sharply with surface learning focusing on memorization and reproduction. Darling-Hammond et al. demonstrated that deep learning pedagogies significantly enhance student outcomes across multiple domains, though applications specifically in civic education remain underexplored (Wang et al., 2024).

Despite growing evidence supporting deep learning pedagogical methodologies, three significant research gaps justify the present study. First, empirical evidence on the effectiveness of deep learning pedagogical approaches in civic education specifically remains limited, as existing studies focus primarily on subject areas like mathematics, science, or language arts (Hollins, 2015). Second, while quantitative studies have measured civic knowledge improvements and qualitative studies have explored civic engagement experiences, comprehensive mixed-method investigations integrating both perspectives within civic education remain scarce (Intania, 2020). Third, research examining how deep

learning approaches simultaneously develop critical thinking and democratic values two interrelated but distinct outcomes is virtually nonexistent (Liu et al., 2022). The novelty of this study lies precisely in addressing all three gaps through an integrated, empirically grounded pedagogical framework specifically designed for civic education.

The context of Indonesian civic education provides a particularly relevant setting for this investigation. Indonesia, the world's third-largest democracy with significant ethnic, religious, and cultural diversity, faces challenges in cultivating democratic citizenship among youth (Eriza Zuhry et al., 2024). The national civic education curriculum (Pendidikan Pancasila dan Kewarganegaraan) emphasizes democratic values and national identity, yet pedagogical approaches remain predominantly teacher-centered and focused on knowledge transmission rather than critical competency development (Naval et al., 2022).

This study is grounded in three interconnected theoretical frameworks. First, Deep Learning Theory by Alom et al. (2019) posits that meaningful learning occurs when students engage deeply with challenging content through authentic problems, develop new knowledge through inquiry and collaboration, and apply learning to real-world contexts. This theory guided the design of civic education activities targeting critical thinking and democratic values through problem-solving, deliberation, and civic action. Second, Democratic Education Theory by Dewey (1974) and Sant (2019) emphasizes that democratic citizenship requires not only knowledge about democracy but also experience practicing democratic principles through classroom participation, deliberation, and collaborative decision-making. This framework informed the creation of democratic classroom climates where students actively practice citizenship. Third, Critical Pedagogy by (Freire, 2020) argues that education should develop critical consciousness enabling students to analyze power structures, question dominant narratives, and engage in transformative action. This theory supported the implementation of activities requiring students to critically examine social issues, challenge injustices, and envision democratic alternatives.

This study addresses critical gaps at the intersection of deep learning pedagogy, civic education, and the cultivation of democratic citizenship (Alscher et al., 2022). Although the international literature provides evidence that deep learning pedagogical approaches promote learning across multiple subject areas, no previous studies have examined how such approaches can be integrated into a comprehensive model specifically designed for civic education that simultaneously develops both critical thinking and democratic understanding. This study is distinct in five key respects: (1) For the first time, it brings together a number of deep learning pedagogies (problem-based learning, deliberative discussion, service learning, case analysis, and reflective practice) into a comprehensive civic education model;(2) The paper uses a rigorous mixed-methods approach to research which

gives both quantitative evidence of improvement in children's thinking skills and democratic attitudes as well as rich qualitative data on processes of citizenship learning and behaviour(3) It looks at two results -thinking skills and democratic attitudes- showing how deep learning methods develop both cognitive and affective dimensions of democracy;(4) It proves that democratic ideas can be successfully implemented in the Indonesian context, where life differs from countries like America Europe etcetera (and without railways this has not made communication by rail any more practical than our own endeavour to build hovercraft (5) It presents practical, evidence -based guidelines for implementation in civic education which include specific strategies, stumbling blocks and helpful factors in all parts of the world. Based on identified gaps and theoretical foundations, this study addresses three research questions:

1. To what extent does the integration of deep learning pedagogical models into civic education significantly improve students' critical thinking skills and democratic values compared to conventional teaching methods?
2. How do students in civic education experience deep learning approaches, particularly with respect to their engagement with civic issues, sense of political efficacy, and development of democratic dispositions?
3. What challenges and facilitating factors shape the implementation of deep learning pedagogical models in civic education courses?

Research Method

Research Design

This study utilized a convergent parallel mix design, which connected quantitative quasi-experimental with qualitative phenomenology techniques. The quasi-experimental design was chosen for pragmatic and ethical reasons. If students were randomly assigned to treatments individually this would disrupt established class structures and create a contamination hazard as students interact across conditions; therefore using intact classes maintains ecological validity and advertises more rigorous comparisons (Cresswell, 2003). But while such a design cannot make strong causal inferences compared with true experiments, it does improve external validity in that we are able to examine interventions under naturalistic conditions characteristic of real civic education settings. The quantitative component involves pre- and post-test scores of critical thinking and democratic values; the qualitative component consists in interviews and observations on how people experience their lives outside the classroom as well as what they learn from education about democracy. Both components were carried out simultaneously for a semester (16 weeks). The synthesis of findings took place at the time of interpretation.

Research Participants

A total of 150 high school students from three public schools in Indonesia participated in this study, conducted during the 2024 academic year. Schools were selected through purposive sampling based on factors such as students' economic background, academic performance, and geographic location to ensure diversity of context. Within each school, intact classes were used as the unit of assignment: one class per school was designated as the experimental group and one as the control group, resulting in 75 students per condition (n = 75 experimental; n = 75 control). This class-level assignment was chosen to minimize contamination risk between conditions and to preserve ecological validity of the intervention. Pre-test equivalence checks confirmed that both groups were statistically comparable at baseline on all outcome measures. For the qualitative surveys, maximum variation sampling was used to ensure that 20 students from the experimental group were included in key statistics and findings. The resulting student body comprised subjects with multiple genders, socio-economic status levels (SESL), achievements in society-wide tests and in school-based assessments. To give the study an additional qualitative dimension, teachers all of whom worked on the deep learning project were interviewed. Table 1: Participant Demographics.

Table 1 Participant Demographics

Characteristic	Experimental Group (n=75)	Control Group (n=75)	Total (N=150)
Gender			
Male	36 (48.0%)	38 (50.7%)	74 (49.3%)
Female	39 (52.0%)	37 (49.3%)	76 (50.7%)
School			
School A	25 (33.3%)	25 (33.3%)	50 (33.3%)
School B	25 (33.3%)	25 (33.3%)	50 (33.3%)
School C	25 (33.3%)	25 (33.3%)	50 (33.3%)
Age (years)			
Mean (SD)	16.4 (0.6)	16.5 (0.6)	16.5 (0.6)
Range	16-17	16-18	16-18
Prior GPA			
Mean (SD)	3.22 (0.45)	3.19 (0.43)	3.21 (0.44)
Socioeconomic Status			
Low	18 (24.0%)	20 (26.7%)	38 (25.3%)
Middle	38 (50.7%)	37 (49.3%)	75 (50.0%)
High	19 (25.3%)	18 (24.0%)	37 (24.7%)

Deep Learning Model Implementation

The deep learning pedagogical model for civic education was implemented over 16 weeks (second semester of 2024) through six integrated instructional strategies. Each strategy was

specifically designed to activate higher-order thinking, encourage democratic participation, and connect academic content with authentic civic contexts. Teachers received 40 hours of professional development prior to implementation, covering facilitation techniques, deliberative discussion protocols, and formative assessment practices. The six strategies were introduced gradually: weeks 1–2 focused on orientation and building a safe classroom climate, while more complex and controversial activities were introduced progressively from week 3 onward. The following describes each strategy and its specific classroom implementation:

1. PBL (problem-based learning): Student groups studied authentic public issues (corruption, environmental deterioration, inequality and religious intolerance) through our civic lenses. Teams worked together in depth to each issue, researched its background, identified stakeholders on both sides and its root causes, then proposed specific solutions supported by evidence. Presenting their findings only before classmates then engaging in critical dialogue would follow.

2. Deliberative Discussion: Following protocols developed by Ismanto et al. (2022), structured debates are held over controversial public issues eg. Free expression vs. regulation of hate speech, or development economics vs. protection of the environment). Students prepare position papers, engage in dialogue that crosses different viewpoints with respect, find common ground and reflect on their negotiating processes.

3. Service-Learning Project: Students design and implement community service projects that address identified civic problems. Examples of projects in this program include voter education drives, environmental cleanups, education for underprivileged children and campaigns on behalf of marginalized groups. Meantime activity reflection ties service practice back in with democratic values and citizens who bear responsibility for them. Our fifth strategy, based on Cases That Teaching Citizenship, requires students to analyze historical and contemporary cases of democratic challenges and citizenship. For instance: the Indonesian independence movement; democratization transitions; and social movements. Being able to appraise the relevance of a particular decision, identify the democratic principles at stake and compare cross-culturally is essential in evaluating results.

4. Socratic Seminars: Facilitated querying sessions enabled students to question prevailing assumptions about democracy, citizenship, and topics of civic concern. Teachers guided direct questioning in depth.

Reflective Practices: Students kept journals recording their civic learning thoughts. Writing reflections prompted students to connect cognified learning with their personnal civic identity, and future civic action.

Data Collection

The method summary, instruments, and data collection procedures are listed in Table 2. The California Critical Thinking Skills Test (CCTST) and Democratic Values Scale (DVS) were selected because both have been validated for Indonesian contexts, encompass multiple dimensions consistent with this study's focus, and provide standardized scores that allow rigorous comparison. The 16-week intervention period corresponds to one full academic semester, providing sufficient time for instructional approaches to influence learning outcomes while remaining feasible within Indonesian school schedules.

Table 2 Data Collection Methods

Method	Instrument	Participants	Timing	Purpose
Quantitative				
Pre-test	California Critical Thinking Skills Test (CCTST)	All students (N=150)	Week 1	Baseline critical thinking measurement
Pre-test	Democratic Values Scale (DVS)	All students (N=150)	Week 1	Baseline democratic values measurement
Post-test	CCTST	All students (N=150)	Week 16	Final critical thinking measurement
Post-test	DVS	All students (N=150)	Week 16	Final democratic values measurement
Qualitative				
Semi-structured interviews	Student interview protocol (15 questions)	20 experimental students	Week 17	Explore civic learning experiences and democratic development
Teacher interviews	Teacher interview protocol (12 questions)	6 civic education teachers	Week 17	Understand implementation experiences and challenges
Classroom observations	Observation protocol	All experimental classes	Weeks 2-15 (14 sessions)	Document teaching strategies, student engagement, and democratic practices
Document analysis	Student civic journals and project reports	20 experimental students	Throughout semester	Access civic development processes and reflections

California Critical Thinking Skills Test (CCTST): Measures core critical thinking skills including analysis, evaluation, inference, deductive reasoning, and inductive reasoning, with established reliability (Cronbach's α = 0.78-0.82) in Indonesian contexts (Johnson, 2002). Democratic Values Scale (DVS): A 30-item instrument measuring five dimensions of democratic values: (1) political tolerance (acceptance of diverse viewpoints), (2) civic engagement (participation willingness), (3) political efficacy (belief in ability to influence), (4) commitment to rights and freedoms, and (5) support for democratic processes. Developed by Creswell & Poth (2018) and validated in Indonesian contexts by Kumalasari et

al. (2020), with reliability α = 0.84-0.88. Semi-structured interviews lasted 60-75 minutes for students and 90 minutes for teachers, exploring learning experiences, perceptions of strategies, civic development, challenges, and impacts on democratic values. Classroom observations used structured protocols documenting teaching strategies, student engagement patterns, deliberative quality, civic practices, and classroom climate dynamics.

Data Analysis

Table 3 presents data analysis procedures for both quantitative and qualitative data.

Table 3 Data Analysis Procedures

Data Type	Analysis Method	Software	Procedures
Quantitative			
Descriptive statistics	Mean, SD, frequency distributions	SPSS 27	Characterize sample demographics and score distributions
Independent t-test	Compare groups	SPSS 27	Compare post-test scores between experimental and control groups
Paired t-test	Within-group comparison	SPSS 27	Examine pre-post changes within each group
MANOVA	Multivariate analysis	SPSS 27	Analyze combined effects on critical thinking and democratic values
Effect size	Cohen's d	SPSS 27	Determine practical significance
Assumption testing	Shapiro-Wilk, Levene's test, Box's M	SPSS 27	Assess normality, homogeneity of variance, and covariance matrices
Qualitative			
Thematic analysis	Braun & Clarke's (2006) six-phase approach	NVivo 14	Identify patterns and themes across dataset
Coding	Inductive and deductive coding	NVivo 14	Generate codes from data and theoretical frameworks
Theme development	Organizing codes into themes	NVivo 14	Search for, review, and define themes
Inter-rater reliability	Cohen's kappa	NVivo 14	Two researchers independently coded subset ($\kappa = 0.86$)
Integration			
Mixed-method integration	Joint display analysis	Manual	Connect quantitative results with qualitative themes during interpretation

Rigorous statistical procedures followed the quantitative analysis. MANOVA (Multivariate Analysis of Variance) was employed in order to examine critical thinking and democratic values in tandem, since both outcomes were theoretically related and measured from the very same subjects. Assumption testing ensured the data met the parametric test requirements. Cohen's d-effect sizes were carried out to determine practical significance beyond statistical significance. The qualitative analysis followed Braun and Clarke's (2006) thematic analysis model. The process was divided into six phases: (1) familiarizing oneself with the data through repeated reading of transcripts and observation notes; (2) generating initial codes inductively from data and deductively from theoretical frameworks; (3) searching for patterns that might constitute themes; (4) reviewing themes for internal

coherence and external distinctiveness; (5) defining and naming themes in a way that captures the essence of each pattern; and (6) producing a final report with representative exemplar quotes. Trustworthiness was enhanced by member checking, peer debriefing, maintenance of comprehensive audit trails, and triangulation. Inter-rater agreement was assessed on 30% of double-coded data (κ = 0.86, indicating strong agreement).

Result and Discussion

Critical Thinking and Democratic Values Development

Because of the intervention, post-test differences observed in comparison groups arose entirely on top of that there were no differences whatsoever at baseline. Pre-test scores showed that the experimental group and the control group were statistically indistinguishable both in terms of critical thinking (Experimental: M=59.2, SD=9.5; Control: M=58.7,SD=9.1), t(148)=0.33, p=0.74, and democratic values (Experimental: M=68.3, SD=8.2; Control: M=67.9, SD=7.9), t(148)=0.31, p=0.76. Post-test results showed substantial between-group differences, with the experimental student score significantly higher than those on both measures. Descriptive post-test statistics for each variable, along with t-values from independent-sample t-tests between groups, are presented in Table 4.

Table 4 Critical Thinking and Democratic Values Scores Comparison

Measure	Experimental Group (n=75)	Control Group (n=75)	t-value	p-value	Cohen's d
Critical Thinking					
Pre-test M (SD)	59.2 (9.5)	58.7 (9.1)	0.33	0.74	0.05
Post-test M (SD)	78.5 (9.1)	64.8 (8.3)	9.64	<0.001***	1.58
Gain Score M (SD)	19.3 (10.3)	6.1 (8.9)	8.42	<0.001***	1.37
Democratic Values					
Pre-test M (SD)	68.3 (8.2)	67.9 (7.9)	0.31	0.76	0.05
Post-test M (SD)	82.3 (7.8)	71.4 (7.2)	8.97	<0.001***	1.46
Gain Score M (SD)	14.0 (9.1)	3.5 (7.6)	7.72	<0.001***	1.26

***p < 0.001

Based on our large effect sizes (Critical Thinking: d=1.58; Democratic Values: d=1.46), it is clear that deep learning models made substantial practical improvements not just beyond the reach of mere statistical significance and historical conventions. MANOVA results showed significant multivariate effects. Wilks' λ = 0.62, $F_{(2, 147)}$ = 45.23; p<0.001; η^2 = 0.38, approximately 38 percent of the variances in combined outcomes attested to the intervention. Compared with their pretest scores, the experimental students were significantly better in terms of critical thinking (t (74) =16.24) and democratic values (t (74) =13.32) <0.001. The critical thinking of control students increased slightly but significantly,

as it was at t-test(N=74) =5.94 and p<0.001. Likewise, their awareness of democratic values was a little better, at p<0.001 (74) =3.99. Evidently both of these reflect developments in people's basic growth cycle and different types of academic experience that are couched in general terms. An analysis of critical thinking subscales revealed the specific cognitive dimensions that benefited from deep learning methods best (Table 5).

Table 5 Critical Thinking Subscale Scores (Post-test)

Subscale	Experimental (n=75) M (SD)	Control (n=75) M (SD)	t-value	p-value	Cohen's d
Analysis	16.2 (2.3)	12.8 (2.1)	9.42	<0.001***	1.54
Evaluation	16.8 (2.4)	13.2 (2.2)	9.56	<0.001***	1.56
Inference	15.7 (2.3)	13.4 (2.0)	6.68	<0.001***	1.09
Deductive Reasoning	14.9 (2.1)	13.7 (2.0)	3.58	0.001**	0.58
Inductive Reasoning	14.9 (2.2)	11.7 (1.9)	9.57	<0.001***	1.56

**p < 0.01, ***p < 0.001

The experimental group demonstrated particularly strong gains in analysis, evaluation, and inductive reasoning precisely the dimensions targeted through problem-based learning, deliberative discussions, and case analysis. This targeted development supports the theoretical alignment between deep learning strategies and specific cognitive skills. Analysis of democratic values subscales illuminated which specific democratic dispositions benefited most (Table 6).

Table 6 Democratic Values Subscale Scores (Post-test)

Subscale	Experimental (n=75) M (SD)	Control (n=75) M (SD)	t-value	p-value	Cohen's d
Political Tolerance	17.2 (1.9)	14.6 (1.8)	8.69	<0.001***	1.42
Civic Engagement	16.8 (2.1)	14.2 (1.9)	8.02	<0.001***	1.31
Political Efficacy	16.4 (2.0)	13.8 (1.8)	8.44	<0.001***	1.38
Rights and Freedoms	15.9 (1.8)	14.3 (1.7)	5.67	<0.001***	0.92
Democratic Processes	16.0 (1.9)	14.5 (1.8)	5.04	<0.001***	0.82

***p < 0.001

Experimental group students showed particularly strong gains in political tolerance, civic engagement, and political efficacy—outcomes directly linked to deliberative discussions, service-learning, and active classroom participation. These results suggest that deep learning approaches effectively cultivate both cognitive and affective dimensions of democratic citizenship.

Civic Learning Experiences and Democratic Development

Thematic analysis identified four major themes explaining how deep learning approaches enhanced civic learning experiences and democratic citizenship development.

Theme 1: Enhanced Civic Engagement Through Authentic Problem-Solving

Students consistently reported increased civic engagement resulting from analyzing and addressing real public issues. Classroom observations documented substantial engagement differences (Table 7).

Table 7. Civic Engagement Indicators

Indicator	Experimental Group	Control Group	Difference
Average contributions per discussion	9.7	2.8	+246%
Voluntary participation rate	82%	38%	+116%
Deliberation time (minutes)	38	14	+171%
Student-initiated civic topics	6.4	1.2	+433%
Service hours completed	18.5	0	N/A

One student reflected: Before, civic education felt disconnected from real life. This study just memorized government structures. Now, when we analyze problems like corruption and propose real solutions, I feel genuinely empowered I love engaging with these issues (Student 12, School B).In civic journals they had solicited from 85% of students (n=17/20) that the increase in interest and enthusiasm for civic activities was to compare with their previous experience of education.Service-learning courses in particular deepened the sense of involvement which students revealed. Students told of teaching people how to vote, or working on environmental projects, and how this brought abstract democratic principles into a concrete form of participation in those same affairs affecting our own lives. One student said: Our campaign for clean water made me see that democracy isn't just voting. It's organizing, persuading people, and working together on ways to improve the community. I feel more confident my opinions will count (Student 7, School A).

Theme 2: Development of Critical Civic Reasoning and Political Efficacy

Students described fundamental shifts from passive acceptance of political information to active critical analysis and belief in their capacity to influence civic issues. Figure 1 illustrates progression in questioning sophistication documented through classroom observations.
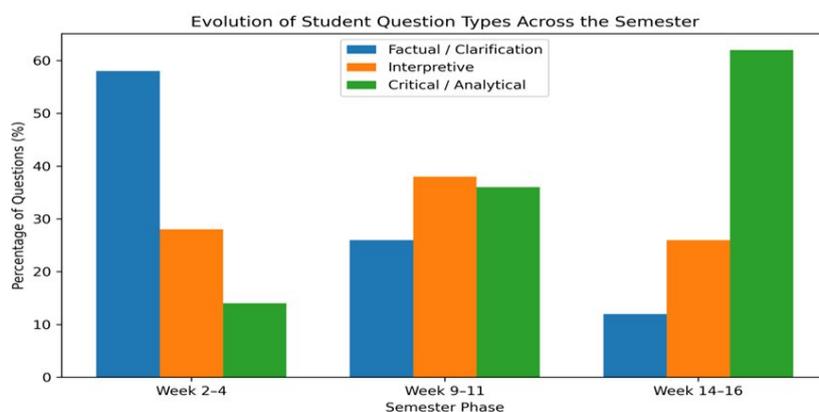
Figure 1. Evolution of Student Question Types Across Semester Percentage of Civic Questions by Type

The progression from 14% to 62% critical questions demonstrates systematic development of critical civic reasoning habits. One student articulated this transformation: "I used to accept news and political claims at face value. The deliberative discussions taught me to ask: Who benefits? What evidence supports this? What are alternative perspectives? Now I analyze political rhetoric critically, not just believe what I hear" (Student 15, School C). Interview analysis revealed 90% of participants (n=18/20) reported applying critical thinking skills beyond civic education to evaluate media, political discourse, and public policies. Students described using analytical frameworks from civic class to assess social media posts, news articles, and political speeches. This transfer demonstrates successful cultivation of generalizable civic reasoning skills. Political efficacy increased dramatically. Pre-intervention, students expressed cynicism about youth influence on civic issues. Post-intervention, students articulated confidence in their capacity for civic impact. One student explained: Our environmental advocacy project showed me that even high school students can influence policy. When we presented research to the local council and they adopted our recommendations, I realized youth voices matter. Democracy works when we participate (Student 4, School B).

Theme 3: Cultivating Political Tolerance and Democratic Dialogue

Students valued deliberative discussions, describing how structured dialogue across differences developed tolerance and democratic communication skills. Table 8 presents democratic dialogue outcomes from student interviews.

Table 8 Democratic Dialogue Outcomes from Student Interviews (n=20)

Outcome Category	Frequency	Representative Quote
Respect for opposing viewpoints	20 (100%)	Deliberations taught me that people I disagree with aren't stupid or evil they have different experiences and values. I learned to respect their perspectives while defending mine (Student 11)
Improved argumentation skills	19 (95%)	I learned to support my positions with evidence, not just emotions. When challenged, I had to think deeper and articulate reasons, not just repeat slogans (Student 8)
Recognition of common ground	18 (90%)	Even on divisive issues like religious freedom vs. public order, we found shared values everyone wants safety AND freedom. Finding common ground helps solve conflicts democratically (Student 16)
Comfort with disagreement	17 (85%)	I used to avoid conflict. Now I see that disagreement is normal in democracy. We can disagree respectfully and still work together (Student 3)
Listening skills	19 (95%)	I learned to actually listen to understand, not just wait to argue. Sometimes others' perspectives changed my mind or made me refine my position (Student 14)

What the evidence is showing is that students in deliberative deliberation would produce high-quality democratic dialogue, mutually respecting each other's opinions across substantive controversy, giving reasons for their views that rely on specific evidence, finding areas for agreement while arguing over differences, and devising solutions to problems which can be acted upon by all parties concerned on an equitable basis. The teachers could not believe what they saw: "At first, students were not used to controversy and contradiction. By semester's end they could carry out high-level deliberation, where the subject was democracy. I have seldom seen such a dialogue among adults (Teacher 2, School B).

The growth in political tolerance permeated life outside the classroom. Students came forward to describe how their attitudes had changed toward those social and political groups they had once dismissed or feared. One student said, "Debating with classmates of various backgrounds on the rights of religious minorities, I came to understand their lives. I have become less afraid now and more attuned to diversity" (Student 9, School C). This finding indicates that deep learning approaches can combat polarization by providing structured opportunities for taking other people's points of view.

Theme 4: Cultivating Civic Identity: Commitment to Democratic Principles

Students told of how, after deep learning experiences, they came to feel that their civic identity had grown markedly stronger and that they were now more deeply committed to democratic values as a result. Journals for Civic Development documented this process of change: from regarding themselves as passive subjects who need only observe and suffer with no rights or duties whatever and then suddenly confronting, as Kelley saw it in his own life, a rich menu full of options for involvement in every facet of the community. In their journal, at the start of the semester a student wrote: "I thought citizenship meant simply obeying laws and paying taxes eventually. Now I see it as active participation voting, speaking out against injustice and holding leaders accountable. I'm not just preparing to be a citizen; I'm already practicing citizenship" (Journal entry, Student 5, School A).

Service-learning served as an important locus of identity formation. Students said that serving the community made them feel at home--and responsible to it. One student said, "When I tutor children from this social class, I feel that my contribution has brought a new way of participating in life to the local community. I realized I had the skills and knowledge to help other people. This experience changed the way I think about myself, turning me into a server of others rather than just a consumer" (Student 18, School C).

From interviews, 85% of participants (n=17/20) expressed an intention to remain civically engaged in the future, including voting, volunteering, joining community organizations, and pursuing public service. Students also deepened their commitment to democratic principles

through the program. They learned to articulate nuanced aspects of democratic values such as freedom, equality, and justice, and came to recognize the inherent complexity and tensions involved in upholding these values in practice. One student stated: "I learned that democracy isn't easy—there are difficult trade-offs between freedom and security, majority rule and minority rights. However, I believe that values such as human rights and the rule of law are worth maintaining even when it is difficult" (Student 6, School A).

Implementation Challenges and Facilitating Factors

Understanding implementation dynamics is essential for replication and scaling. Analysis identified both obstacles and enablers (Table 9).

Table 9. Implementation Challenges and Facilitating Factors

Category	Challenges	Facilitating Factors
Time and Curriculum	▪ Deep learning activities required more instructional time than lectures ▪ Pressure to cover standardized test content ▪ Limited class periods (2×45 minutes weekly)	▪ Curriculum flexibility allowing depth over breadth ▪ Administrative support for pedagogical innovation ▪ Integration across subjects (connecting civic issues to history, economics) ▪ Block scheduling for extended deliberations
Student Readiness	▪ Initial discomfort with controversial issues (72% in first 4 weeks) ▪ Limited prior experience with deliberation ▪ Fear of expressing unpopular opinions ▪ Preference for "correct answers" over open inquiry	▪ Gradual introduction of strategies ▪ Explicit teaching of deliberative norms ▪ Creating safe classroom climate ▪ Scaffolding from less to more controversial issues ▪ Celebrating diverse perspectives
Teacher Capacity	▪ Substantial preparation for deliberations ▪ Need for facilitation skills, not just content knowledge ▪ Managing controversial discussions ▪ Assessing democratic values and critical thinking	▪ Comprehensive professional development (40 hours) ▪ Peer learning communities among teachers ▪ Access to deliberation protocols and case materials ▪ Ongoing coaching and support ▪ Recognition of pedagogical innovation
Political Sensitivity	▪ Concerns about discussing controversial issues ▪ Pressure to avoid "political" topics ▪ Fear of parent or administrator complaints ▪ Navigating diverse political perspectives	▪ Clear educational objectives focused on skills, not positions ▪ Emphasis on multiple perspectives ▪ Parent communication about pedagogical approach ▪ Principal support for democratic education ▪ Focus on process over outcomes
Assessment	▪ Difficulty assessing democratic values ▪ Traditional tests inadequate for deep learning ▪ Time-intensive authentic assessments ▪ Balancing formative and summative evaluation	▪ Development of rubrics for deliberation quality ▪ Portfolio assessments including reflections ▪ Peer and self-assessment ▪ Use of validated scales (DVS, CCTST) ▪ Multiple assessment methods

Resources	▪ Limited access to current civic issue materials ▪ Need for diverse perspectives on controversies ▪ Community partnerships for service-learning	▪ Teacher-created resource repository ▪ Online access to news and primary sources ▪ NGO partnerships for issue materials ▪ Student research contributions ▪ Low-cost local service opportunities

Institutions and the community were important to fostering success. Training teachers in professional development proved to be an integral factor for the successful implementation of democracy education. In a heavily Democratic region, teachers participated in a 40-hour training session covering such topics as deliberation facilitation, conflict management, and the creation of a democratic classroom climate. Administrative backing allowed curricular flexibility as well as security against criticism. Thus strong teacher commitment to democratic education sustained implementation in the face of difficulties.

Student diversity enriched the learning. In classrooms of mixed religion, ethnic and economic background, opinions could be given from different perspectives such that it really was worthwhile to listen. 'We always say,' one teacher remarked, 'that the diversity in our classrooms benefits us for civic education. When students debate religious freedom with Muslim, Christian, Hindu and Buddhist classmates, it isn't some abstract thing but rather their real-life situation' (Teacher 4, School C). The relevance of civic issues naturally motivated student engagement. "Students care about this because it matters to their communities and their futures. That inner motivation leads to real learning" (Teacher 1, School A).

Discussion

The findings of this study provide robust evidence that deep learning pedagogical strategies significantly enhance both critical thinking and democratic values in civic education contexts. Rather than merely reiterating the quantitative outcomes already presented, this discussion focuses on explaining why the deep learning approach was effective and what these results mean for the broader field of civic education. The substantial effect sizes observed ($d = 1.58$ for critical thinking; $d = 1.46$ for democratic values) suggest that the approach produced not only statistically significant but also practically meaningful changes in student outcomes. These results align with and extend Dewey (1997) assertion that genuine learning emerges from active engagement with real problems a principle that proved especially powerful in the civic education context of this study. Crucially, the effectiveness of the model can be attributed to the pedagogical coherence between learning objectives, instructional activities, and assessment methods, as well as to the authentic and contextually relevant nature of the civic issues explored.

This transformation signals a fundamental shift in civic education: from mere knowledge transmission toward the cultivation of democratic competencies through active engagement with real civic challenges (Kartikawati, 2019). When students transition from passive reception of civic knowledge to active engagement with civic problems, they develop more contextualized understanding and a stronger capacity for civic self-reflection (Sant, 2019). It has been pointed out that all of these results can be ascribed to participatory education theories based on Dewey, Freire, and others.

Through solving genuine civic problems, students engage in their own democratic reasoning processes rather than simple memorization (Eriza Zuhry et al., 2024). This tends to increase the level of higher-order cognition while fostering such democratic dispositions as an attitude of openness and ethical judgment (Rosyad & Adelakun, 2026). Growth in civic competence cannot occur in a vacuum of abstract skills and knowledge; it must take place within authentic, lived experiences (Alscher et al., 2022). Growth cannot occur in a vacuum of abstract skills and knowledge; it must takeplace within real lived experiences.

The simultaneous development of higher-order reasoning and democratic orientations can be explained through interconnected learning mechanisms. Authentic civic engagement activates both cognitive and affective dimensions, enabling students to generate their own questions and inquiry pathways (Hoggan-Kloubert & Mabrey, 2022). When students use public reasoning methods as they wrestle with true civic problems, their minds become stronger in their global reasoning capacities (Winarno et al., 2024). The logic and structure of argumentation are particularly reinforced by the deliberative nature of this pedagogical approach. Service-led learning puts abstract civic concepts in touch with real community experience, embedding the civic spirit (Bennett et al., 2009). Structured reflection promotes internalization, because by reflecting on their own movement students can intentionally make cognitive and value changes.

Deep learning pedagogical strategies cultivate specific critical thinking skills in identifiable ways. Problem-based learning directly develops analytical abilities by requiring students to examine civic issues from multiple stakeholder perspectives (Alom et al., 2019). Deliberative discussions reinforce evaluation and argumentation skills, as students must construct evidence-based positions and respond to opposing viewpoints respectfully (Consuelo et al., 2019). Students who lack authentic civic experience are less able to form grounded civic opinions; the experiential basis provided by service-learning and case analysis appears essential for genuine belief formation (Vhalery, 2024). Combining case-based learning with broader civic principles ensures that instructional design is directly linked to intended cognitive outcomes (Agung, 2015). Instructional approaches that actively engage students in civic problem-solving yield stronger outcomes than traditional lecture-based methods

(Ismail et al., 2019). This means that for any classroom community which seeks to actively engage students in public affairs, a participatory and collaborative spirit will be its hallmark rather than any vague dictum or maxim. Democratic classrooms have also become communities where as a matter of course students and teachers hold dialogues about all kinds of subjects.

Similarly, strong gains in political tolerance, civic engagement, and political efficacy imply that deep learning is effective at inculcating democratic values. An atmosphere of structured deliberation gives dissent and pluralism its normal place (Luzyawati et al., 2024). With service-learning, students see their civic action happen in reality and can feel the tangible benefits more than ever (Tan, 2007). In a democratic classroom climate, the very idea of participation or cooperation becomes nothing less than daily practice. This goes beyond just being a good concept to put into practice, and ensures that the classroom really is a part of society. Beyond cognitive and attitudinal outcomes, the findings give rise to a change in student learning orientation. Students are no longer only passively receiving information but have started asking questions of what others say (Jeffcoate, 1970). This is a shift away from the custodial position of consciousness students previously had because they now take their own initiative in fostering their mental life (Biesta, 2014). Students gain civic understanding through evidence evaluation, dialogue and reflection. This transformation is crucial at present, in civil education where students must critically sift out the complex of political information.

The results also highlight the importance of pedagogical coherence in civic learning design. Deep learning strategies were effective because learning objectives, instructional activities, and assessment methods were tightly aligned. Civic problems functioned as core learning drivers rather than illustrative examples. This coherence ensured that critical thinking and democratic values developed simultaneously. The study therefore reinforces the argument that effective civic education requires integrated instructional design rather than fragmented pedagogical approaches.

Conclusions

This study demonstrates that integrating deep learning pedagogical models into civic education significantly enhances both students' critical thinking skills and democratic values, yielding large effect sizes (Critical Thinking: d = 1.58; Democratic Values: d = 1.46). These outcomes were evidenced through multiple measures spanning analysis, evaluation, inductive reasoning, political tolerance, civic engagement, and political efficacy, as well as qualitative indicators of civic identity development and deliberative capacity. The central finding is that the transition from knowledge transmission to authentic civic engagement—

through problem-based learning, deliberative discussion, service learning, case analysis, and structured reflection—enables students to develop both the cognitive skills and democratic dispositions essential for active citizenship. This study contributes to democratic education theory by offering empirical support for Dewey's (1916) claim that democratic competence is learned through the practice of democracy, while also providing a concrete, replicable pedagogical model for diverse civic education contexts.

Several directions for future research are recommended. First, longitudinal studies tracking students over three to five years post-intervention are needed to assess whether the observed gains in critical thinking and democratic values are sustained and whether they translate into actual civic behaviors such as voting, volunteering, and community leadership. Second, comparative effectiveness research examining individual deep learning components would help clarify which specific strategies produce the greatest impact, supporting more efficient implementation. Third, implementation studies examining how contextual variables—class size, teacher experience, community context, and political climate—moderate program effectiveness would provide practical guidance for adapting the model to diverse educational settings. In conclusion, this study affirms that deep learning pedagogical models represent a promising and evidence-based pathway toward more effective civic education. Only through authentic, participatory civic experiences can schools cultivate citizens who possess both the critical thinking skills and democratic dispositions required to sustain and advance democratic societies, particularly amid growing political polarization and civic disengagement.

References

Agung, L. (2015). The Development of Local Wisdom-Based Social Science Learning Model with Bengawan Solo as the Learning Source Leo Agung S Historical Education Study Program of Social Science Department of Teacher Training and Education. *American International Journal of Social Science*, *4*(4), 51–58. www.aijssnet.com

Alom, M. Z., Taha, T. M., Yakopcic, C., Westberg, S., Sidike, P., Nasrin, M. S., Hasan, M., Van Essen, B. C., Awwal, A. A. S., & Asari, V. K. (2019). A state-of-the-art survey on deep learning theory and architectures. *Electronics*, *8*(3), 292. https://doi.org/https://doi.org/10.3390/electronics8030292

Alscher, P., Ludewig, U., & McElvany, N. (2022). Civic education, teaching quality and students' willingness to participate in political and civic life: Political interest and knowledge as mediators. *Journal of Youth and Adolescence*, *51*(10), 1886–1900. https://doi.org/https://doi.org/10.1007/s10964-022-01639-9

Asmaroini, A. P., & Utami, P. S. (2017). Pelaksanaan Pendidikan Demokrasi Siswa Sma Di

Kabupaten Ponorogo. *JPPKn (Jurnal Ilmiah Pendidikan Pancasila Dan Kewarganegaraan)*, *2*(1).

Bennett, W. L., Wells, C., & Rank, A. (2009). Young citizens and civic learning: two paradigms of citizenship in the digital age. *Citizenship Studies*, *13*(2), 105–120. https://doi.org/10.1080/13621020902731116

Biesta, G. (2014). Learning in Public Places: Civic Learning for the Twenty-First Century. In *Civic Learning, Democratic Citizenship and the Public Sphere* (pp. 1–11). Springer Netherlands. https://doi.org/10.1007/978-94-007-7259-5_1

Consuelo, S.-M. M., Ignacio, G. O. C., Francisco, D.-P. J., & Jorge, M. A. L. (2019). Will personalized e-Learning increase deep learning in higher education? *Information Discovery and Delivery*, *47*(1), 53–63. https://doi.org/10.1108/IDD-08-2018-0039

Cresswell, J. W. (2003). *Research design: qualitative and mixed-method approaches*. Thousand Oaks, California: Sage Publications Inc.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design; Choosing among five approach* (3rd ed.). Sage Publications, Inc.

Dewey, J. (1974). *John Dewey on education: Selected writings*.

Dewey, J. (1997). How we think. Mineola. *New York: Courier Dover*.

Eriza Zuhry, F., Aulia, H., Nasywa Zulfita, Rouli Margaretha, Matang, M., & Lham Hudi. (2024). Civic Education Efforts in Cultural Aspects for the Formation of Student Identity. *Jurnal Edukasi Terkini*, *1*(1), 1–7. https://doi.org/10.70310/hgjvq985

Fitri Lintang, F. L., & Ulfatun Najicha, F. (2022). Nilai-Nilai Sila Persatuan Indonesia Dalam Keberagaman Kebudayaan Indonesia. *Jurnal Global Citizen : Jurnal Ilmiah Kajian Pendidikan Kewarganegaraan*, *11*(1), 79–85. https://doi.org/10.33061/jgz.v11i1.7469

Freire, P. (2020). Pedagogy of the oppressed. In *Toward a sociology of education* (pp. 374–386). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780429339530 34/pedagogy-oppressed-paulo-freire

Hoggan-Kloubert, T., & Mabrey, P. E. (2022). Civic Education as Transformative Education. *Journal of Transformative Education*, *20*(3), 167–175. https://doi.org/10.1177/15413446221103173

Hollins, E. R. (2015). *Culture in school learning: Revealing the deep meaning*. Routledge.

Intania, I. (2020). Interaksi Simbolik Dan Imaji Religious Dalam Membangun Citra Pondok Pesantren Nurul Jadid. *Atthulab: Islamic Religion Teaching and Learning Journal*, *5*(1), 71–85. https://doi.org/10.15575/ath.v5i1.7317

Ismail, R., Safieddine, F., & Jaradat, A. (2019). *E-university delivery model : handling the evaluation process.* *25*(7), 1633–1646. https://doi.org/10.1108/BPMJ-10-2018-0281

Ismanto, E., Vitriani, & Khairul Anshari. (2022). Pengembangan Media Pembelajaran e-Modul untuk Pembelajaran Berbasis Project Based Learning (PjBL). *Jurnal Pengabdian UntukMu NegeRI*, *6*(2), 17–24. https://doi.org/10.37859/jpumri.v6i2.3628

Jeffcoate, R. (1970). Why multicultural education? *Education 3-13*, *9*(1), 4–7. https://doi.org/10.1080/03004278185200021

Johnson, E. B. (2002). *Contextual teaching and learning: what it is and why it's here to stay* (I. Corwin, Pres (ed.)).

Kartikawati, D. (2019). The Implementation of Multicultural Educational Communication within the Islamic Education and Character Development (IECD) Subject at Elementary Schools in Indonesia. *International Journal of Multicultural and Multireligious Understanding*, *6*(2), 256–267.

Kumalasari, D., Azmi Luthfiyani, N., & Grasiawaty, N. (2020). Analisis Faktor Adaptasi Instrumen Resiliensi Akademik Versi Indonesia: Pendekatan Eksploratori dan Konfirmatori. *JPPP - Jurnal Penelitian Dan Pengukuran Psikologi*, *9*(2), 84–95. https://doi.org/10.21009/jppp.092.06

Liu, Y., Chen, L., & Yao, Z. (2022). The application of artificial intelligence assistant to deep learning in teachers' teaching and students' learning processes. *Frontiers in Psychology*, *13*, 929175. https://doi.org/10.3389/fpsyg.2022.929175

Luzyawati, L., Rosyad, A. M., & Lissa, L. (2024). Students' perception concerning e-learning based on moodle platform: A study of learning outcome. *AIP Conference Proceedings*, *2982*(1).

Naval, C., Villacís, J. L., & Ibarrola-García, S. (2022). The Transversality of Civic Learning as the Basis for Development in the University. *Education Sciences*, *12*(4), 240. https://doi.org/10.3390/educsci12040240

Nugraha, R. A., & Budimansyah, D. (2022). The Use Mobile Learning in Higher Education: What Were the Cause of Student's Satisfaction on Civic Education Learning Use. *Annual Civic Education Conference (ACEC 2021)*, 534–541. https://doi.org/10.2991/assehr.k.220108.096

Rosyad, A. M., & Adelakun, N. O. (2026). Implementation of Deep Learning Approach of Pancasila Education to Increase Critical Thinking Students. *International Journal of Science Education and Cultural Studies*, *4*(2), 47–64. https://doi.org/10.58291/ijsecs.v4i2.463

Sant, E. (2019). Democratic Education: A Theoretical Review (2006–2017). *Review of Educational Research*, *89*(5), 655–696. https://doi.org/10.3102/0034654319862493

Singh, A., Raj, K., Kumar, T., Verma, S., & Roy, A. (2023). Deep Learning-Based Cost-Effective and Responsive Robot for Autism Treatment. *Drones*, *7*(2), 81. https://doi.org/10.3390/drones7020081

Stokamer, S. T., & Clayton, P. H. (2023). Student civic learning through service learning: Instructional design and research. In *Research on student civic outcomes in service learning* (pp. 45–66). Routledge.

Tan, C. (2007). Islam and citizenship education in Singapore: Challenges and implications. *Education, Citizenship and Social Justice*, *2*(1), 23–39. https://doi.org/10.1177/1746197907072124

Tobin, K. (2010). Civic education in emerging democracies: Lessons from post-Communist Poland and Romania. *Journal of Research in International Education*, *9*(3), 273–288. https://doi.org/10.1177/1475240910382996

Vhalery, R. (2024). Pancasila-Based Character Education in the Society 5.0 Era: A Systematic Literature Study. *Journal of Education: Development and Review (Jedar)*, *1*(1), 46–53.

Wang, C., Chen, Y., Liu, F., Elliott, M., Kwok, C. F., Peña-Solorzano, C., Frazer, H., McCarthy, D. J., & Carneiro, G. (2024). An Interpretable and Accurate Deep-Learning Diagnosis Framework Modeled With Fully and Semi-Supervised Reciprocal Learning. *IEEE Transactions on Medical Imaging*, *43*(1), 392–404. https://doi.org/10.1109/TMI.2023.3306781

Winarno, W., Muchtarom, M., & Fauziyah, H. (2024). Readiness and efforts of civics teachers in developing literacy and numeracy skills. *Journal of Education and Learning (EduLearn)*, *18*(4), 1209–1223. https://doi.org/10.11591/edulearn.v18i4.21425