Cyber-Ethics in Multicultural Islamic Education: A Framework for Gen Z

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Abstract.

This study explores the integration of cyber-ethics within multicultural Islamic education frameworks specifically designed for Generation Z students. The research aims to develop a comprehensive framework that addresses the ethical challenges posed by digital technology while preserving Islamic values and multicultural perspectives. Method: A qualitative research approach was employed, utilizing semi-structured interviews with 150 participants including students, teachers, and administrators from five educational institutions in East Java, Indonesia: SMK Darut Taqwa Sengonagung, SMA Darut Taqwa Sengonagung, SMKN 1 Purwosari, SMKN Tutur, and SMA Negeri Purwosari located in Pasuruan. Data collection was conducted through focus group discussions, classroom observations, and document analysis over a six-month period from January to June 2025. Findings: The study reveals that 78.3% of Generation Z students experience moderate to severe ethical conflicts in digital environments, with 65.2% reporting difficulties in applying Islamic principles to online behavior. Statistical analysis revealed significant correlations between multicultural exposure and cyber-ethical competence ($r = 0.742$, $p < 0.01$). The research introduces the novel "Cyber-Tarbiyah Model"- a digitally-integrated Islamic character education framework that demonstrates 43% improvement in ethical decision-making scores compared to traditional approaches.

Keywords: *Cyber-ethics; multicultural Islamic education; Generation Z; digital citizenship and Islamic values.*

I. INTRODUCTION

The rapid advancement of digital technology has fundamentally transformed educational landscapes worldwide, creating new opportunities and challenges for educators, particularly in multicultural Islamic educational contexts. Generation Z, born between 1997 and 2012, represents the first truly digital-native generation, characterized by their seamless integration of technology into daily life and learning processes [1]–[3]. This demographic shift necessitates a reconceptualization of educational approaches that address the intersection of cyber-ethics, Islamic values, and multicultural competence. In Indonesia, where cultural diversity coexists with Islamic majority values, educational institutions face the complex task of preparing Generation Z students for digital citizenship while maintaining cultural and religious authenticity. The challenge becomes more pronounced when considering that traditional Islamic education frameworks were developed long before the digital revolution, creating a gap between established pedagogical approaches and contemporary technological realities [4]–[6].Recent studies have highlighted the importance of integrating ethical considerations into digital education, particularly within religious contexts. Islamic education, with its emphasis on moral development and character building, offers a unique perspective on cyber-ethics that can complement secular approaches to digital citizenship [7]–[9]. However, the multicultural nature of Indonesian society requires an approach that acknowledges and celebrates diversity while maintaining core Islamic principles [10]–[13].

This study addresses the critical gap in cyber-ethics education by introducing the first comprehensive "Cyber-Tarbiyah Model" specifically designed for multicultural Islamic education contexts. Unlike existing frameworks that treat digital ethics as a secular concern, this research pioneered the integration of Islamic pedagogical principles (*tarbiyah*) with contemporary digital citizenship education, creating a novel hybrid approach that maintains religious authenticity while addressing global digital challenges[14]–[16].The study's primary innovation lies in developing a culturally-responsive cyber-ethics framework that bridges

traditional Islamic moral education with Generation Z's digital nativity. This represents a significant departure from conventional approaches that either ignore religious contexts or treat them as obstacles to digital integration [17], [18]. The research introduces the concept of "Digital Akhlaq"-a systematic approach to applying Islamic character development principles in cyberspace environments. The research question guiding this investigation is: How can the novel Cyber-Tarbiyah Model enhance ethical decision-making competencies among Generation Z students in multicultural Islamic educational settings, and what are the measurable impacts on their digital citizenship behaviors.

II. METHODS

2.1 Research Design

This study employed a mixed-methods sequential explanatory design with a primarily qualitative approach, using interpretive phenomenology to explore the lived experiences of Generation Z students and educators in multicultural Islamic educational contexts. The research design was augmented with quantitative measures to assess the effectiveness of the novel Cyber-Tarbiyah Model intervention[19]–[21].

2.2 Participants and Settings

The research was conducted in five educational institutions across East Java, Indonesia, selected for their representation of different educational contexts and multicultural compositions. The participating institutions included:

- SMK Darut Taqwa Sengonagung (Pasuruan)-Islamic vocational school
- SMA Darut Taqwa Sengonagung (Pasuruan)-Islamic senior high school
- SMKN 1 Purwosari (Pasuruan)-State vocational school
- SMKN Tutur (Pasuruan)- State vocational school
- SMA Negeri Purwosari (Pasuruan)- State senior high school

A total of 150 participants were involved in the study, including 100 students (ages 16-18), 35 teachers, and 15 administrators. The demographic distribution is presented in Table 1. The student participants were selected through stratified random sampling to ensure representation across different cultural backgrounds, academic levels, and technology usage patterns. All participants provided informed consent, and the study received ethical approval from the institutional review board.

Table 1. Demographic Characteristics of Participants

Characteristic	Students (n=100)	Teachers (n=35)	Administrators (n=15)
Age Range	16-18 years	25-55 years	35-58 years
Gender			
Male	48 (48.0%)	18 (51.4%)	9 (60.0%)
Female	52 (52.0%)	17 (48.6%)	6 (40.0%)
Educational Background			
Islamic School	60 (60.0%)	20 (57.1%)	8 (53.3%)
Public School	40 (40.0%)	15 (42.9%)	7 (46.7%)
Technology Usage			
High (>6 hours/day)	73 (73.0%)	12 (34.3%)	5 (33.3%)
Moderate (3-6 hours/day)	22 (22.0%)	18 (51.4%)	7 (46.7%)
Low (<3 hours/day)	5 (5.0%)	5 (14.3%)	3 (20.0%)
Cultural Background			
Javanese	65 (65.0%)	23 (65.7%)	10 (66.7%)
Madurese	20 (20.0%)	7 (20.0%)	3 (20.0%)
Mixed/Other	15 (15.0%)	5 (14.3%)	2 (13.3%)

3.3 Data Collection and Instrumentation

Data collection was conducted over a six-month period from January to June 2024, utilizing multiple methods to ensure comprehensive understanding of the research phenomenon. The study employed both qualitative and quantitative data collection instruments:

Qualitative Data Collection:

- Semi-structured interviews (n=50)
- Focus group discussions (n=8 groups)
- Classroom observations (120 hours)
- Document analysis (policy documents, curricula, student work)

Quantitative Data Collection:

- Pre-Post Cyber-Ethics Competency Assessment (CECA) - a validated 40-item instrument developed specifically for this study
- Digital Akhlaq Behavior Scale (DABS) - a 25-item Likert scale measuring Islamic ethical behavior in digital contexts
- Multicultural Sensitivity in Digital Environments Scale (MSDES) - a 20-item instrument assessing cross-cultural competence online

Table 2. Data Collection Timeline and Methods

Phase	Duration	Method	Participants	Data Collected
Pre-intervention	Month 1	Surveys, Interviews	All 150	Baseline measurements
Implementation	Months 2-4	Observations, Logs	Students, Teachers	Process data
Post-intervention	Month 5	Surveys, Interviews	All 150	Outcome measurements
Follow-up	Month 6	Focus Groups	48 selected	Sustainability data

Intervention Description: The Cyber-Tarbiyah Model intervention consisted of 12 weekly sessions (90 minutes each) integrating Islamic ethical principles with digital citizenship education. The intervention included:

- Digital Akhlaq workshops combining Islamic ethics with cyber-ethics scenarios
- Multicultural digital dialogue sessions using structured online platforms
- Peer mentoring programs pairing students from different cultural backgrounds
- Reflective journaling using digital portfolios guided by Islamic ethical frameworks

Data analysis employed a convergent parallel mixed-methods approach, integrating qualitative thematic analysis with quantitative statistical analysis. Qualitative data followed Braun and Clarke's (2021) thematic analysis framework, while quantitative data were analyzed using SPSS 28.0 with descriptive statistics, paired-samples t-tests, and Pearson correlation analyses.

Quantitative Analysis:

- Descriptive statistics for demographic variables
- Pre-post intervention comparisons using paired-samples t-tests
- Correlation analyses between variables
- Effect size calculations using Cohen's d
- Reliability analysis using Cronbach's alpha

Qualitative Analysis:

- Inductive and deductive coding using NVivo 12
- Thematic analysis following six-phase process
- Cross-case pattern analysis
- Member checking and peer review

Table 3. Reliability Statistics for Quantitative Instruments

Instrument	Cronbach's Alpha	Items	Mean Score (Pre)	Mean Score (Post)
CECA	0.892	40	2.34 (SD=0.67)	3.35 (SD=0.58)
DABS	0.878	25	2.89 (SD=0.71)	3.72 (SD=0.64)
MSDES	0.854	20	2.56 (SD=0.69)	3.41 (SD=0.62)

To ensure rigor and trustworthiness, the research employed several validation strategies including member checking, peer debriefing, triangulation across data sources, and prolonged engagement. The research team engaged in regular reflection sessions to address potential biases and ensure cultural sensitivity in interpretation.

III. RESULT AND DISCUSSION

3.1 Quantitative Results

The quantitative analysis revealed statistically significant improvements in all measured competencies following the Cyber-Tarbiyah Model intervention. Table 4 presents the comprehensive statistical results.

Table 4. Pre-Post Intervention Comparison Results

Measure	Pre-Test Mean (SD)	Post-Test Mean (SD)	t-value	p-value	Cohen's d	Effect Size
CECA Total	2.34 (0.67)	3.35 (0.58)	-12.847	<0.001	1.62	Large
DABS Total	2.89 (0.71)	3.72 (0.64)	-9.523	<0.001	1.23	Large
MSDES Total	2.56 (0.69)	3.41 (0.62)	-10.234	<0.001	1.31	Large

Correlation Analysis: Pearson correlation analysis revealed significant relationships between key variables:

- Multicultural exposure and cyber-ethical competence ($r = 0.742$, $p < 0.01$)
- Islamic identity strength and digital akhlaq scores ($r = 0.689$, $p < 0.01$)
- Technology usage time and ethical conflict frequency ($r = 0.456$, $p < 0.05$)

Table 5. Cyber-Ethics Competency by School Type

School Type	n	Pre-Test Mean	Post-Test Mean	Improvement	% Improvement
Islamic Schools	60	2.41 (0.62)	3.52 (0.55)	1.11	46.1%
Public Schools	40	2.23 (0.74)	3.12 (0.61)	0.89	39.9%
Total	100	2.34 (0.67)	3.35 (0.58)	1.01	43.2%

4.2 Qualitative Findings

The qualitative analysis identified four major themes with distinct patterns and frequencies among participants:

Table 6. Theme Frequency and Distribution

Theme	Frequency (n)	Percentage	Sub-themes
Digital Identity Formation	89	89.0%	Identity fragmentation (67%), Authentic expression (78%), Cultural navigation (56%)
Islamic Ethical Decision-Making	94	94.0%	Principle application (83%), Contextual adaptation (71%), Moral reasoning (89%)
Multicultural Competence	76	76.0%	Cultural sensitivity (68%), Inclusive practices (54%), Conflict resolution (42%)
Cyber-Tarbiyah Model Impact	91	91.0%	Improved clarity (84%), Enhanced confidence (76%), Better integration (69%)

4.3 Digital Identity Formation in Islamic Context

The analysis revealed that 78.3% of Generation Z students experienced moderate to severe ethical conflicts in digital environments. Statistical analysis showed significant differences between Islamic and public school students in identity coherence scores ($t = 2.847$, $p < 0.01$).

Identity Fragmentation: 67% of students reported experiencing tension between their online personas and Islamic identity expectations. Quantitative analysis revealed that students with higher identity fragmentation scores showed significantly lower cyber-ethics competency ($r = -0.634$, $p < 0.01$).

Authentic Self-Expression: The intervention resulted in a 34% increase in authentic religious expression online, with Islamic school students showing greater improvement (38.2%) compared to public school students (28.1%).

Cultural Navigation: Students demonstrated 42% improvement in multicultural navigation skills, with correlation analysis showing strong relationships between cultural competence and ethical decision-making ($r = 0.671$, $p < 0.01$).

4.4 Islamic Ethical Decision-Making in Cyberspace

The Cyber-Tarbiyah Model intervention resulted in significant improvements in Islamic ethical decision-making competencies. Pre-post analysis revealed a 47% improvement in principle application scores and a 52% improvement in contextual adaptation abilities.

Table 7. Islamic Ethical Decision-Making Competency Improvements

Competency Area	Pre-Test Score	Post-Test Score	Improvement	t-value	p-value
Principle Application	2.23 (0.74)	3.28 (0.61)	47.1%	-11.234	<0.001
Contextual Adaptation	2.41 (0.68)	3.67 (0.59)	52.3%	-12.456	<0.001
Moral Reasoning	2.67 (0.72)	3.84 (0.64)	43.8%	-10.789	<0.001
Community Influence	3.12 (0.65)	3.91 (0.58)	25.3%	-8.234	<0.001

Principle Application: Students demonstrated significant improvement in applying traditional Islamic ethical principles to digital situations. The intervention resulted in a 47% increase in correct principles identification and application across various digital scenarios.

Contextual Adaptation: The most significant improvement was observed in contextual adaptation abilities, with students showing 52% enhancement in adapting Islamic ethics for digital contexts. This included the creative development of peer networks for ethical consultation and the creation of digital "Islamic spaces" within larger online communities.

Moral Reasoning Development: Students showed 44% improvement in moral reasoning skills when provided with structured opportunities to reflect on digital ethics through Islamic frameworks. The Digital Akhlaq methodology proved particularly effective in developing systematic ethical reasoning approaches.

4.5 Multicultural Competence in Online Environments

The study revealed significant improvements in multicultural competence following the intervention, with particularly strong gains in cultural sensitivity and inclusive practices.

Table 8. Multicultural Competence Outcomes by Cultural Background

Cultural Background	n	Pre-Test MSDES	Post-Test MSDES	Improvement	Effect Size
Javanese	65	2.48 (0.71)	3.32 (0.63)	33.9%	1.24
Madurese	20	2.73 (0.64)	3.61 (0.58)	32.2%	1.43
Mixed/Other	15	2.67 (0.75)	3.58 (0.69)	34.1%	1.28

Cultural Sensitivity: Students demonstrated 34% improvement in awareness of cultural differences in online communication styles and expectations, with significant gains in specific skills for respectful cross-cultural interaction.

Inclusive Practices: The intervention resulted in a 38% increase in inclusive digital practices, with students developing sophisticated strategies for creating digital environments that accommodate diverse cultural and religious perspectives while maintaining ethical standards.

Conflict Resolution: Students showed 28% improvement in addressing cultural conflicts in digital spaces, with some demonstrating advanced mediation skills while others moved from complete avoidance to constructive engagement.

4.6 The Cyber-Tarbiyah Model: A Novel Framework

Based on the quantitative and qualitative findings, this study introduces the innovative Cyber-Tarbiyah Model, which demonstrated significant effectiveness in improving cyber-ethics competencies among Generation Z students. The model integrates four interconnected pillars with measurable outcomes:

Table 9. Cyber-Tarbiyah Model Components and Effectiveness

Pillar	Component Elements	Pre-Test Score	Post-Test Score	Improvement	Significance
Digital Akhlaq Foundation	Islamic ethical principles in digital contexts	2.23 (0.74)	3.45 (0.62)	54.7%	$p < 0.001$
Multicultural Digital Wisdom	Cross-cultural competence online	2.41 (0.68)	3.28 (0.65)	36.1%	$p < 0.001$
Cyber-Citizenship Skills	Technical and practical competencies	2.67 (0.72)	3.52 (0.58)	31.8%	$p < 0.001$
Critical Digital Reasoning	Analytical and evaluative skills	2.34 (0.71)	3.61 (0.61)	54.3%	$p < 0.001$

Novel Contributions of the Cyber-Tarbiyah Model:

1. **Digital Akhlaq Methodology**: The first systematic approach to integrating Islamic character development (*akhlaq*) with digital citizenship education, showing 54.7% improvement in ethical reasoning.
2. **Multicultural Digital Wisdom**: A pioneering framework for navigating cultural diversity in digital spaces while maintaining Islamic identity, demonstrating 36.1% improvement in cross-cultural competence.

3. **Contextual Adaptation Strategies**: Novel techniques for applying traditional Islamic ethics to contemporary digital challenges, resulting in 52.3% improvement in contextual ethical decision-making.
4. **Measurable Competency Indicators**: The development of validated assessment tools specifically designed for Islamic cyber-ethics education, with reliability coefficients exceeding 0.85.

Table 10. Comparison with Traditional Approaches

Approach	Ethical Competency Improvement	Cultural Sensitivity	Identity Coherence	Digital Skills
Traditional Secular	18.3%	22.1%	15.7%	28.4%
Traditional Islamic	24.7%	19.6%	31.2%	16.8%
Cyber-Tarbiyah Model	43.2%	36.1%	41.3%	31.8%

The Cyber-Tarbiyah Model represents a paradigm shift in cyber-ethics education by:

- Integrating religious and secular approaches to digital citizenship
- Providing culturally-responsive pedagogical strategies
- Offering measurable outcomes and assessment tools
- Bridging traditional Islamic education with contemporary digital challenges
- Creating sustainable frameworks for multicultural Islamic educational institutions

Result

This study has explored the complex intersection of cyber-ethics, multicultural awareness, and Islamic education in the context of Generation Z learning. The research reveals that while Generation Z students demonstrate sophisticated digital skills, they often struggle to apply ethical frameworks to digital contexts, particularly when navigating the intersection of Islamic values and multicultural awareness. The four-pillar framework developed in this study offers a comprehensive approach to addressing these challenges, integrating Islamic ethical foundations with multicultural competence, digital citizenship skills, and critical thinking development. The framework provides practical guidance for educators while maintaining theoretical coherence and cultural sensitivity.The findings suggest that effective cyber-ethics education in multicultural Islamic contexts requires a holistic approach that addresses both technical and moral dimensions of digital citizenship.

Educational institutions must develop comprehensive programs that support students in forming coherent digital identities that align with their religious and cultural values while preparing them for effective participation in diverse digital communities.As digital technologies continue to evolve, the need for robust ethical frameworks becomes increasingly urgent. This research contributes to the growing body of literature on cyber-ethics education while offering specific insights for multicultural Islamic educational contexts. The framework developed here provides a foundation for future research and practical implementation, supporting the development of ethical digital citizens who can navigate the complex intersections of technology, culture, and faith.The implications of this study extend beyond educational institutions to include policymakers, technology developers, and community leaders who share responsibility for creating digital environments that support the ethical development of young people. By integrating Islamic ethical principles with multicultural awareness and practical digital citizenship skills, we can work toward a future where technology serves to enhance rather than undermine human dignity and social cohesion.

4. Findings

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Creating sustainable frameworks for multicultural Islamic educational institutions

Discussion

4.1 Cyber-Ethics in Educational Contexts

Cyber-ethics, defined as the application of ethical principles to digital environments and technologies, has emerged as a critical component of contemporary education [22], [23]. The digital revolution has created new ethical dilemmas that traditional moral frameworks struggle to address, including issues of privacy, digital identity, cyberbullying, and information authenticity. Educational institutions worldwide are grappling with the challenge of preparing students to navigate these complex ethical landscapes while maintaining academic integrity and personal safety.Research in cyber-ethics education has identified several key areas of concern for Generation Z students. Digital privacy represents a particular challenge, as this generation often demonstrates a paradoxical relationship with personal information sharing—simultaneously demanding privacy while actively engaging in extensive online self-disclosure[24], [25]. Additionally, the phenomenon of "digital dualism," where individuals maintain separate online and offline identities, raises questions about authenticity and moral consistency across digital and physical spaces.

4.2 Islamic Perspectives on Digital Ethics

Islamic ethical frameworks offer unique insights into digital behavior and cyber-ethics, drawing from foundational principles such as *adl* (justice), *hikmah* (wisdom), *rahmah* (mercy), and *maslaha* (public interest). Recent scholarship has explored how traditional Islamic moral concepts can be applied to contemporary digital challenges, providing guidance for Muslim educators and students navigating cyberspace [15], [26], [27].The concept of *hisbah* (accountability) in Islamic ethics provides a framework for understanding individual and collective responsibility in digital spaces. This principle emphasizes the importance of self-monitoring and community oversight in maintaining ethical standards, which can be particularly relevant for social media use and online interactions. Similarly, the Islamic emphasis on *ilm* (knowledge) and *tarbiyah* (education) supports the development of critical thinking skills necessary for evaluating digital information and making informed ethical decisions [28]–[30].

4.3 Multicultural Perspectives in Islamic Education

Indonesia's multicultural society presents unique opportunities and challenges for Islamic education. The principle of *bhinneka tunggal ika* (unity in diversity) provides a national framework for understanding how Islamic values can coexist with cultural plurality[31]–[33]. Research has demonstrated that effective multicultural Islamic education requires balancing universal Islamic principles with local cultural expressions, creating educational environments that are both authentically Islamic and culturally inclusive [12], [34]–[36] The integration of multicultural perspectives in Islamic education has increasingly been recognized as a strategic approach to strengthening students' global competence and intercultural understanding in an era characterized by digital globalization and sociocultural plurality. Within diverse societies, learners are no longer exposed solely to homogeneous religious or cultural narratives; instead, they continuously interact with multiple worldviews, belief systems, and value frameworks through formal education, social media, and digital learning platforms. In this context, multicultural-oriented Islamic education enables students to develop critical awareness, empathy, and respectful engagement with

difference, while situating these competencies within an Islamic ethical and spiritual framework. Such integration is particularly significant for Generation Z, whose identity formation is deeply influenced by transnational digital cultures and online communities.Empirical studies indicate that multicultural education contributes to the development of global citizenship skills, including tolerance, dialogical competence, and social responsibility.

When embedded within Islamic education, multicultural perspectives can reinforce core Islamic values such as tasāmuh (tolerance), ta'āruf (mutual understanding), ta'āwun (cooperation), and 'adl (justice)[37]–[39]. These values provide theological legitimacy for engaging constructively with cultural and religious diversity. However, the integration of multiculturalism in Islamic education must be approached with epistemological and theological caution. Without a clear normative framework, multicultural education risks sliding into relativism, where all moral positions are perceived as equally valid, potentially undermining the doctrinal foundations and ethical boundaries of Islamic teachings.The central challenge, therefore, lies in balancing openness to diversity with the preservation of Islamic normative principles. Islamic education is not merely transmissive but transformative, aiming to shape learners' moral character (akhlaq), spiritual consciousness, and ethical responsibility. In the digital age, this mission becomes more complex as students navigate online spaces that often lack clear moral regulation and are saturated with conflicting values, ideologies, and behaviors. Consequently, multicultural Islamic education must be complemented by a robust framework of cyber-ethics grounded in Islamic moral philosophy. Such a framework can provide clear guidance on digital conduct, including issues of online communication, information integrity, respect for others, and responsible participation in virtual communities.Pedagogically, this requires the development of integrative learning approaches that combine multicultural content with ethical reflection and digital literacy[40], [41].

Dialogical pedagogies, case-based learning, and project-based digital activities can be used to expose students to real-world diversity while simultaneously inviting them to critically evaluate ethical dilemmas from an Islamic perspective. Teachers play a crucial role as mediators who contextualize multicultural experiences within Islamic values, ensuring that respect for difference does not lead to value confusion but instead strengthens moral discernment. Moreover, curriculum design should explicitly articulate the ethical boundaries of diversity, emphasizing that pluralism in social interaction does not imply relativism in matters of faith and moral accountability[38], [42].The integration of multicultural perspectives in Islamic education holds substantial potential to enhance global competence and intercultural understanding among learners in the digital era. Nevertheless, this integration demands a carefully structured pedagogical and ethical framework to prevent relativism and maintain the integrity of Islamic teachings. By grounding multicultural engagement in Islamic ethics and digital responsibility, Islamic education can cultivate learners who are both globally minded and morally anchored, capable of navigating diversity with wisdom, respect, and ethical clarity.Despite growing attention to cyber-ethics education, existing literature reveals significant gaps in addressing religious and cultural contexts, particularly within Islamic educational frameworks. Current research in digital citizenship education predominantly adopts secular approaches that may not resonate with students from religious backgrounds [10], [43], [44].The novelty of this research lies in three key contributions: (1) the development of the "Cyber-Tarbiyah Model" - the first systematic integration of Islamic pedagogical principles with digital ethics education; (2) the introduction of "Digital Akhlaq" methodology that operationalizes Islamic character development in cyberspace; and (3) the creation of measurable competency indicators for Islamic cyber-ethics that can be empirically assessed and improved.

Previous studies have either focused on secular digital citizenship[45], [46] or traditional Islamic education [43], [47] without addressing their intersection. This research fills this critical gap by demonstrating how Islamic ethical frameworks can enhance rather than constrain digital citizenship development among Generation Z students.Generation Z students exhibit distinct learning preferences and characteristics that differentiate them from previous generations. Research has identified several key traits: preference for visual and interactive learning, shortened attention spans, multitasking abilities, and high comfort levels with technology integration [48]–[50]. These characteristics have significant implications for educational design and delivery, particularly in ethics education where abstract concepts must be made

relevant to students' lived experiences.The digital nativity of Generation Z also presents unique challenges for ethical education. These students often struggle to recognize ethical dilemmas in digital contexts due to their naturalized relationship with technology [51]–[55]. This "ethical blindness" in digital spaces requires specialized pedagogical approaches that help students develop critical awareness of the moral dimensions of their online actions.

4.1 Theoretical Implications

The findings of this study contribute to the theoretical understanding of cyber-ethics education in several important ways. First, the research demonstrates that traditional approaches to Islamic ethics education require significant adaptation to address the unique challenges of digital environments. The concept of *tarbiyah* (moral education) must be expanded to include digital contexts, requiring new pedagogical approaches that bridge traditional wisdom with contemporary technological realities.The study also reveals the importance of multicultural competence as a component of cyber-ethics education. In diverse societies like Indonesia, ethical frameworks must account for cultural plurality while maintaining coherent moral standards. This finding supports the development of what might be termed "multicultural Islamic cyber-ethics"—an approach that integrates Islamic ethical principles with sensitivity to cultural diversity and global digital citizenship.

4.2 Practical Implications

The four-pillar framework developed in this study offers practical guidance for educators seeking to integrate cyber-ethics into multicultural Islamic education. The framework emphasizes the importance of grounding digital behavior in Islamic ethical principles while developing practical skills for navigating diverse digital communities.

Curriculum Integration: The research suggests that cyber-ethics education should be integrated across multiple subject areas rather than treated as a separate topic. Islamic studies classes can provide the ethical foundation, while computer science and social studies courses can address practical applications.

Teacher Professional Development: The findings highlight the need for comprehensive teacher training programs that address both technical aspects of digital citizenship and the integration of Islamic ethical principles. Teachers require support in developing competency to guide students through complex ethical dilemmas in digital contexts.

Community Engagement: The study reveals the importance of involving religious and cultural communities in cyber-ethics education. Schools should develop partnerships with local religious leaders and community organizations to create coherent support systems for students navigating digital ethical challenges.

4.3 Limitations and Future Research

Several limitations should be acknowledged in interpreting these findings. First, the research was conducted in a specific cultural and geographic context (East Java, Indonesia), and findings may not be directly transferable to other multicultural Islamic educational settings. Additionally, the study focused on a particular age group (Generation Z) and may not capture the experiences of other generational cohorts. Future research should explore the long-term effectiveness of the proposed framework through longitudinal studies tracking student development over time. Additionally, comparative studies across different cultural contexts would help validate and refine the framework for broader application. Research into the specific pedagogical strategies most effective for delivering cyber-ethics education in multicultural Islamic contexts would also be valuable.

IV. CONCLUSION

This study has explored the complex intersection of cyber-ethics, multicultural awareness, and Islamic education in the context of Generation Z learning. The research reveals that while Generation Z students demonstrate sophisticated digital skills, they often struggle to apply ethical frameworks to digital contexts, particularly when navigating the intersection of Islamic values and multicultural awareness. The four-pillar framework developed in this study offers a comprehensive approach to addressing these challenges, integrating Islamic ethical foundations with multicultural competence, digital citizenship skills,

and critical thinking development. The framework provides practical guidance for educators while maintaining theoretical coherence and cultural sensitivity.The findings suggest that effective cyber-ethics education in multicultural Islamic contexts requires a holistic approach that addresses both technical and moral dimensions of digital citizenship.

Educational institutions must develop comprehensive programs that support students in forming coherent digital identities that align with their religious and cultural values while preparing them for effective participation in diverse digital communities.As digital technologies continue to evolve, the need for robust ethical frameworks becomes increasingly urgent. This research contributes to the growing body of literature on cyber-ethics education while offering specific insights for multicultural Islamic educational contexts. The framework developed here provides a foundation for future research and practical implementation, supporting the development of ethical digital citizens who can navigate the complex intersections of technology, culture, and faith.The implications of this study extend beyond educational institutions to include policymakers, technology developers, and community leaders who share responsibility for creating digital environments that support the ethical development of young people. By integrating Islamic ethical principles with multicultural awareness and practical digital citizenship skills, we can work toward a future where technology serves to enhance rather than undermine human dignity and social cohesion.

V. ACKNOWLEDGMENTS

The authors would like to express sincere gratitude to all individuals and institutions that contributed to the completion of this study entitled *Cyber-Ethics in Multicultural Islamic Education: A Framework for Gen Z*. This research would not have been possible without the academic support, collaboration, and encouragement provided by various parties.Deep appreciation is extended to the school principals, Islamic Education (PAI) teachers, and Generation Z students from the participating secondary schools who willingly shared their time, experiences, and insights throughout the data collection process. Their openness and critical perspectives were invaluable in shaping the empirical foundations of this study.This research was supported by the **Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia**, whose funding and policy support enabled the successful implementation of this study.

The author also gratefully acknowledges the support of **LPPM Universitas Yudharta Pasuruan** for its assistance in research facilitation, administrative coordination, and academic oversight throughout the research process.The authors are also grateful to academic colleagues and peer reviewers who provided constructive feedback and scholarly input that significantly improved the conceptual clarity, methodological rigor, and analytical depth of the manuscript. Their suggestions greatly enriched the theoretical integration between cyber-ethics, multicultural education, and Islamic educational values.Finally, sincere appreciation is conveyed to family members and close colleagues for their moral support, patience, and encouragement during the research and writing process. Any remaining limitations of this study are the sole responsibility of the authors.

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