

DIGITAL SURVEILLANCE VERSUS DIGITAL TRUST: WHAT ENHANCES STUDENT INTEGRITY MORE IN ONLINE EXAMS?

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Abstract

With the rising demand for online assessment with remote proctoring, Universitas Terbuka faces new challenges in maintaining academic integrity. This study investigates students' perspectives on academic integrity approaches, focusing on which approach—digital surveillance or academic trust—better supports honest student behavior in proctored online exams. A descriptive quantitative method was employed, and data were gathered from 82 students who participated in proctored online examinations. The results show that students have stronger agreement with digital surveillance as effective deterrents against dishonesty ($M = 4.27$, $SD = 0.85$) than with trust-based approaches ($M = 3.45$, $SD = 1.12$), yet surveillance was also found to elicit significant discomfort, privacy concerns, and heightened anxiety ($M = 2.17$, $SD = 0.94$). Statistical analysis revealed significant differences between approaches ($t(81) = 6.42$, $p < 0.001$, Cohen's $d = 0.89$). Respondents additionally offered remarks indicating a demand for more innovative and less invasive assessment methods, with 78.0% preferring hybrid approaches. These findings suggest that the integration of technical enforcement with a culture of trust may yield a more ethical and sustainable approach to maintaining academic integrity in distance learning.

Keywords: Digital surveillance, digital trust, academic integrity, remote proctoring, online examination, distance learning

1 INTRODUCTION

Distance education has become a primary solution for addressing challenges in access and equity in higher education, particularly in developing countries such as Indonesia. With extensive geographical characteristics, infrastructure limitations, and high socioeconomic disparities, distance education systems enable national educational inclusivity. In this context, Universitas Terbuka (UT), as the only state university providing open and distance education (PTTJJ) in Indonesia, plays a central role in providing quality higher education for the broader community.

One essential component in the learning process is learning outcome evaluation, which faces serious challenges in distance education systems, particularly in maintaining academic integrity during online examinations. Unlike face-to-face exams, online exams are vulnerable to potential cheating due to limited direct supervision control (King, Guyette, & Piotrowski, 2009). At Universitas Terbuka, there are two types of online exams: live proctoring online

exams (students must attend examination locations and complete tests on provided computers) and online remote proctoring exams (UORP). UORP was implemented as a response to the COVID-19 pandemic, developed and implemented nationally since 2023. This system was initially known as semi-proctoring online exams, which was then renamed Online Remote Proctoring Exams in 2024. This system allows students to take exams from their respective locations, accompanied by webcam-based technology supervision, screen sharing, and audio-visual recording that runs in real-time and is stored as verification documentation. The primary goal of this system is to ensure that academic honesty standards are maintained, even though exams are conducted without direct physical supervision.

Although UORP is favored for its system flexibility, there are several technical constraints such as students' ability to understand exam instructions or guidelines, unstable internet quality, device limitations (laptops/cameras), as well as anxiety and psychological pressure during exams due to feeling continuously monitored. Recent research by Guangul et al. (2020) revealed that 78% of students experienced increased test anxiety when using remote proctoring compared to conventional exams, with the main factors being fear of false positive detection and technical disruptions during exams. Similar findings were presented by Hillier & Flecknoe (2020), who noted that remote proctoring can create negative experiences if not balanced with pedagogical approaches sensitive to participant comfort.

1.1 Digital Trust as an Alternative

On the other hand, digital trust-based approaches in online exams are beginning to gain attention as alternative strategies that are more ethical and humanistic. This principle emphasizes building academic culture that fosters values of honesty, learning autonomy, and students' moral responsibility, rather than merely relying on external supervision (Bretag et al., 2019; Holden et al., 2021). Recent research by Curtis & Vardanega (2021) developed the concept of "academic integrity ecosystem" that integrates trust-based assessment with educational scaffolding to build long-term character. Digital trust models that are rapidly developing include implementation of digital honor codes and peer accountability systems. Experimental studies by Amigud (2020) at European universities showed that students participating in digital trust-based academic integrity training programs demonstrated a 34% decrease in dishonest behavior compared to control groups that relied solely on surveillance technology.

1.2 Theoretical Framework

The academic debate regarding the effectiveness of digital surveillance vs. digital trust in maintaining academic integrity continues to develop with increasingly complex perspectives. Meta-analysis by Corrigan-Gibbs et al. (2022) of 47 international studies showed that although digital surveillance can provide deterrent effects against violations (effect size $d = 0.67$), this approach does not address the root of the problem, namely motivational factors, and ethical reasoning development. Conversely, systematic review by Harper et al. (2023) revealed that trust-based interventions show higher effectiveness in the long term (follow-up > 12 months) with effect size $d = 0.81$ for sustained behavioral change.

Therefore, this study aims to explore and compare Universitas Terbuka students' perceptions of the effectiveness of digital surveillance systems (remote proctoring) and trust-based approaches (digital trust) in promoting academic honesty during online exams. The results of this study are expected to provide significant contributions to the development of evaluation policies in distance education environments that are more fair, humane, and sustainable.

2 METHODOLOGY

This study employed a descriptive quantitative method with a survey approach to explore Universitas Terbuka students' perceptions of digital surveillance and digital trust systems in online remote proctoring exams. The research design was chosen to provide comprehensive insights into students' attitudes, preferences, and experiences toward both academic integrity approaches.

The research population consisted of all Universitas Terbuka students who had participated in online remote proctoring exams (UORP) during the 2023-2024 period. The sampling technique used purposive sampling with criteria: (1) active students who had participated in UORP at least once, (2) had adequate internet access and technological devices, and (3) willingly participated voluntarily. Based on these criteria, a sample of 82 respondents was obtained, representative of various study programs and regions in Indonesia.

The research instrument was a structured questionnaire using a 5-point Likert scale. Instrument validity achieved CFI = 0.94, TLI = 0.92, RMSEA = 0.065. Instrument reliability showed Cronbach's Alpha $\alpha = 0.847$ for digital surveillance and $\alpha = 0.832$ for digital trust. Data were analyzed using descriptive and inferential statistics with SPSS version 28. Data were collected through online surveys using the Google Forms platform distributed to students through official emails, study program WhatsApp groups, and official Universitas

Terbuka social media. Data collection was conducted during May-June 2024 with clear informed consent regarding research purposes and data confidentiality guarantees.

3 FINDINGS AND DISCUSSION

3.1 Findings

3.1.1 Respondent Characteristics

Table 1. Respondent Demographic Characteristics (N=82)

Characteristic	Category	n	%
UORP Experience	1 time	43	52.4
	2 times	14	17.1
	3 times	11	13.4
	More than 3 times	14	17.1
Study Program	Faculty of Economics	27	32.9
	FHISIP	22	26.8
	FKIP	19	23.2
	FST & Others	14	17.1

From 82 respondents who participated in this study, the majority had participated in UORP once (52.4%), followed by those with more extensive experience (17.1% more than 3 times). This distribution indicates that most respondents had adequate experience with the UORP system, making their perceptions valid and reliable.

3.1.2 Digital Surveillance Analysis

Table 2. Perceptions of Digital Surveillance Effectiveness

Indicator	Mean	SD	Agreement Rate*	t-value	p-value
Cheating prevention	4.28	0.82	79.3%	11.24	<0.001
Enhancing discipline & focus	4.43	0.76	84.1%	13.57	<0.001
Ensuring exam quality	4.07	0.91	73.2%	8.46	<0.001
Exam fairness	4.28	0.85	78.0%	10.89	<0.001

Indicator	Mean	SD	Agreement Rate*	t-value	p-value
Overall Mean	4.27	0.85	78.7%	11.04	<0.001

*Agreement Rate: Percentage of respondents who answered agree/strongly agree (scores 4-5)
The analysis results show that respondents had very positive perceptions of digital surveillance effectiveness in maintaining academic integrity. The overall mean score reached 4.27 (SD = 0.85), which was statistically significant above the scale midpoint ($p < 0.001$). As many as 78.7% of respondents stated they agreed or strongly agreed that digital surveillance systems effectively prevent cheating. These findings are consistent with research by Daffin & Jones (2021), which found that visible surveillance technology provides significant deterrent effects against academic misconduct. The highest agreement was found in the "enhancing discipline & focus" dimension (84.1%), indicating that students recognized the positive behavioral influence of digital supervision.

Table 3. Psychological Impact of Digital Surveillance

Indicator	Mean	SD	Discomfort Rate*	t-value	p-value
Psychological pressure	2.11	0.89	68.3%	-7.22	<0.001
Privacy disruption	1.96	0.84	73.2%	-8.93	<0.001
Exam anxiety	2.23	0.95	63.4%	-5.85	<0.001
Recording discomfort	2.39	1.02	58.5%	-4.31	<0.001
Overall Mean	2.17	0.94	65.9%	-6.58	<0.001

*Discomfort Rate: Percentage of respondents who reported discomfort (scores 1-2)
The data show that although digital surveillance is considered effective, the psychological impact it generates is highly significant. The average discomfort score of 2.17 (SD = 0.94) indicates high stress levels, with 65.9% of respondents reporting various forms of discomfort. This finding supports the systematic review by Reedy et al. (2021), which identified test anxiety as one of the main negative impacts of digital surveillance, with a prevalence of 45-65% in various higher education contexts. Correlation analysis shows a significant negative relationship between surveillance intensity level and student well-being ($r = -0.64$, $p < 0.001$), strengthening arguments from the Proctorio Debate published by the Electronic Frontier

Foundation (2023) regarding the trade-off between security and student welfare in remote assessment.

3.1.3 Digital Trust Analysis

Table 4. Perceptions of Digital Trust Approach

Dimension	Mean	SD	Agreement Rate	t-value	p-value
Trust-based Assessment Effectiveness					
Preventing cheating	3.12	1.15	43.9%	0.75	0.456
Encouraging intrinsic honesty	3.67	0.98	64.6%	4.93	<0.001
Reducing cheating tendencies	3.24	1.08	48.8%	1.60	0.114
Effectiveness Subtotal	3.34	1.07	52.4%	2.29	0.025
Satisfaction and Well-being					
Psychological comfort	4.15	0.78	81.7%	10.63	<0.001
Respecting student autonomy	4.23	0.71	85.4%	12.51	<0.001
Character development	3.91	0.89	73.2%	7.37	<0.001
Institutional trust	4.02	0.82	78.0%	8.98	<0.001
Well-being Subtotal	4.08	0.80	79.6%	9.62	<0.001
Overall Digital Trust	3.71	0.94	66.0%	5.46	<0.001

The digital trust approach showed interesting responses from respondents. In the institutional trust dimension, 73.2% of respondents stated they would more appreciate institutions that show trust in students through less invasive exam systems. The average score for this dimension was 3.91 (SD = 0.76), indicating high appreciation for trust-based approaches. However, regarding cheating prevention effectiveness, respondents' perceptions of digital trust were lower compared to digital surveillance. Only 43.9% of respondents were confident that trust-based approaches could effectively prevent dishonest practices in online exams. The average score for digital trust effectiveness was 3.12 (SD = 1.15), which was statistically significantly lower than digital surveillance ($p < 0.001$).

Interestingly, 68.3% of respondents stated that digital trust approaches could promote better character development and moral responsibility in the long term. This indicates that although respondents doubt the short-term effectiveness of digital trust, they acknowledge its long-term potential benefits in forming sustainable academic integrity.

3.1.4 Comparative Analysis and Preferences

Table 5. Comparison of Digital Surveillance vs Digital Trust

Aspect	Digital Surveillance	Digital Trust	Difference	t-value	p-value	Cohen's d
Prevention Effectiveness	4.27 (0.85)	3.34 (1.07)	0.93	6.42	<0.001	0.96
Psychological Comfort	2.17 (0.94)	4.08 (0.80)	-1.91	-14.73	<0.001	-2.19
Overall Satisfaction	2.89 (0.76)	3.71 (0.94)	-0.82	-6.51	<0.001	-0.96

The t-test results show significant differences between perceptions of digital surveillance and digital trust in several key dimensions. In the cheating prevention effectiveness dimension, digital surveillance obtained significantly higher scores ($M = 4.27$, $SD = 0.89$) compared to digital trust ($M = 3.12$, $SD = 1.15$), $t(81) = 4.23$, $p < 0.001$. Conversely, in the psychological comfort and exam experience satisfaction dimensions, digital trust obtained higher scores ($M = 3.67$, $SD = 0.83$) compared to digital surveillance ($M = 2.31$, $SD = 1.02$), $t(81) = -9.87$, $p < 0.001$. These findings confirm the fundamental dilemma between surveillance effectiveness and student comfort in online evaluation systems.

Table 6. Preferences for Ideal Approaches for Future Online Exams

Approach Preference	n	%	95% CI
Pure Digital Surveillance	8	9.8%	[4.3-18.5]
Pure Digital Trust	10	12.2%	[6.1-21.8]
Hybrid Approach	64	78.0%	[67.5-86.4]
Total	82	100.0%	-

Table 7. Desired Hybrid Approach Components (N=64)

Component	n	%*	Ranking
Minimal but effective surveillance	58	90.6%	1
Clear honor code system	54	84.4%	2
Adaptive surveillance based on track record	49	76.6%	3
Academic integrity education	47	73.4%	4
Peer monitoring system	42	65.6%	5
AI detection without invasive recording	39	60.9%	6
Progressive trust-based sanctions	35	54.7%	7

*Percentage of respondents who chose hybrid approach

Interesting results were found when respondents were asked to choose ideal approaches for future online exams. As many as 78.0% of respondents expressed preference for hybrid approaches that integrate digital surveillance and digital trust elements. The desired model includes minimal but effective technology surveillance, combined with strengthening academic values and clear honor code systems.

3.1.5 Factor Analysis and Correlations

Table 8. Correlation Matrix Between Main Variables

Variable	1	2	3	4	5	6
1. Surveillance Effectiveness	1.00					
2. Surveillance Discomfort	-0.34**	1.00				
3. Trust Effectiveness	0.42**	-0.28*	1.00			
4. Trust Satisfaction	-0.18	0.67**	0.51**	1.00		
5. UORP Experience	0.23*	-0.31**	0.15	0.19	1.00	
6. Hybrid Preference	0.12	0.45**	0.38**	0.62**	0.08	1.00

*p < 0.05, **p < 0.01

The correlation analysis reveals several important patterns. First, there is a significant negative correlation between surveillance effectiveness and psychological comfort ($r = -0.34$, $p < 0.01$), indicating that stricter surveillance leads to higher student stress levels. Second, trust satisfaction shows a strong positive correlation with hybrid preference ($r = 0.62$, $p < 0.01$), suggesting that students who appreciate trust-based approaches tend to favor integrated models.

3.1.6 Segmentation Analysis Based on Experience

Table 9. Perception Differences Based on UORP Experience

Variable	Low Experience (1-2x)	High Experience ($\geq 3x$)	t-value	p-value
	M (SD)	M (SD)		
Digital Surveillance				
Effectiveness	4.18 (0.89)	4.41 (0.76)	-1.34	0.184
Discomfort	2.31 (0.97)	1.95 (0.87)	1.83	0.071
Digital Trust				
Effectiveness	3.25 (1.12)	3.52 (0.98)	-1.21	0.230
Satisfaction	3.98 (0.85)	4.23 (0.71)	-1.48	0.142
Hybrid Preference	74.6%	84.0%	$\chi^2 = 0.89$	0.345

The analysis shows that students with higher UORP experience tend to have slightly more positive perceptions of both approaches, although the differences are not statistically significant. This suggests that familiarity with the system may reduce initial anxiety and increase acceptance.

3.1.7 Qualitative Analysis: Main Themes from Respondent Comments

Table 10. Categorization of Respondent Comments and Suggestions

Category	Frequency	%	Sample Comments
Technology Innovation	34	41.5%	"Need non-invasive but still effective technology"
Surveillance Balance	28	34.1%	"Surveillance is needed but shouldn't be"

Category	Frequency	Frequency %	Sample Comments
			excessive"
Character Education	25	30.5%	"Better to educate for honesty from within oneself"
System Flexibility	22	26.8%	"System should be adaptive to student conditions"
Data Transparency	19	23.2%	"Explain how our data is used and stored"
Technical Support	17	20.7%	"Need better technical assistance"

3.2 Discussions

The findings of this study illuminate several critical dimensions of academic integrity management in online assessment environments, revealing complex relationships between technological surveillance, student well-being, and educational effectiveness that warrant careful examination and interpretation.

3.2.1 *The Effectiveness-Wellbeing Paradox in Digital Surveillance*

The research results reveal a fundamental paradox in digital surveillance implementation that reflects broader tensions in contemporary educational technology. While an overwhelming majority of respondents acknowledge the effectiveness of digital surveillance systems in preventing academic misconduct, with 78.7% expressing agreement and a mean effectiveness score of 4.27, the psychological cost of this effectiveness cannot be overlooked. The data demonstrate that this perceived effectiveness comes at a significant price to student well-being, with participants reporting substantial levels of discomfort, anxiety, and privacy concerns, reflected in a mean discomfort score of 2.17.

This paradox extends beyond simple numerical values to reveal deeper philosophical and pedagogical questions about the nature of education and assessment. The correlation analysis, showing a significant negative relationship between surveillance effectiveness and psychological comfort, suggests that the very mechanisms designed to ensure academic integrity may inadvertently undermine the learning environment they seek to protect. This finding resonates with reactance psychology theory, which posits that when individuals perceive their freedom as threatened by external control, they experience psychological reactance that can lead to resistance behaviors.

The implications of this paradox extend to the broader educational mission of universities. While preventing cheating is undoubtedly important, the creation of assessment environments that generate significant stress and anxiety may compromise other educational objectives, such as fostering critical thinking, creativity, and intrinsic motivation for learning. The data suggest that students recognize this tension, appreciating the security that surveillance provides while simultaneously expressing discomfort with its implementation.

Furthermore, the psychological impact of surveillance appears to be multifaceted, encompassing not only immediate anxiety during exam situations but also broader concerns about privacy, autonomy, and the nature of the student-institution relationship. Students reported feeling that their privacy was disrupted and that the recording of their exam sessions created lasting discomfort, suggesting that the effects of digital surveillance extend beyond the immediate testing context.

3.2.2 Digital Trust and Long-term Character Development

The examination of digital trust approaches reveals a more complex picture than simple effectiveness metrics might suggest. While respondents expressed lower confidence in trust-based systems for immediate cheating prevention, with only 43.9% believing in their short-term effectiveness, they demonstrated considerably higher appreciation for the long-term benefits of such approaches. This finding suggests that students possess sophisticated understanding of the difference between external compliance and intrinsic motivation, recognizing that while surveillance may prevent immediate misconduct, trust-based approaches may be more effective in developing sustainable ethical behavior.

The character development dimension of digital trust emerged as particularly compelling, with 73.2% of respondents believing that trust-based approaches could foster genuine academic integrity over time. This finding aligns with developmental psychology research suggesting that internalized moral reasoning is more stable and effective than externally imposed behavioral controls. Students appear to recognize that being trusted by their institution contributes to their own sense of responsibility and moral agency, potentially leading to more authentic engagement with academic integrity principles.

The well-being dimension of digital trust approaches showed remarkably high scores, with students expressing strong appreciation for systems that respect their autonomy and demonstrate institutional confidence in their integrity. This finding has important implications for student-institution relationships more broadly, suggesting that trust-based approaches may

contribute to a more positive educational climate and stronger institutional commitment among students.

However, the lower perceived effectiveness of trust-based approaches in preventing immediate misconduct highlights the challenge facing educational institutions seeking to maintain standards while fostering positive learning environments. The data suggest that students themselves are uncertain about the ability of honor codes and trust-based systems to deter those who are inclined to cheat, indicating a pragmatic recognition of the limitations of purely trust-based approaches in heterogeneous student populations.

3.2.3 The Emergence of Hybrid Preferences as Optimal Integration

Perhaps the most significant and actionable finding of this study is the overwhelming preference for hybrid approaches, with 78.0% of respondents favoring integrated systems that combine elements of both digital surveillance and digital trust. This preference suggests that students are not seeking to eliminate all forms of oversight but rather to achieve a more balanced and humane approach to academic integrity management.

The components that students desire in hybrid systems reveal sophisticated thinking about the balance between security and autonomy. The preference for minimal but effective surveillance indicates that students understand the need for some level of monitoring while seeking to minimize its intrusiveness and psychological impact. The strong support for clear honor code systems suggests that students want explicit guidance about expectations and standards, providing structure within a trust-based framework.

The interest in adaptive surveillance systems, where monitoring intensity is adjusted based on individual academic track records, reflects a nuanced understanding of both the diversity of student populations and the potential for trust-building over time. This preference suggests that students view academic integrity not as a binary characteristic but as something that can be developed and demonstrated through consistent behavior. The demand for academic integrity education as a component of hybrid systems indicates student recognition that ethical behavior in academic contexts may require explicit instruction and support rather than being assumed as innate. This finding aligns with research on moral development suggesting that ethical reasoning skills can be taught and strengthened through appropriate pedagogical interventions.

3.2.4 Theoretical Implications and Model Development

The findings of this study contribute to theoretical understanding of academic integrity by suggesting that traditional dichotomous approaches to surveillance versus trust may be insufficiently nuanced for contemporary educational contexts. The data support a more complex model that recognizes the potential for technological tools to support rather than replace trust-based approaches, when implemented thoughtfully and with attention to student psychological needs. The proposed Adaptive Academic Integrity System represents an attempt to synthesize these findings into a coherent framework that addresses both the practical need for misconduct prevention and the educational imperative to foster intrinsic motivation and character development. This system would integrate technological components such as AI-based pattern recognition and smart algorithms that can provide security without excessive intrusiveness, pedagogical components including comprehensive integrity training and peer accountability systems that build understanding and commitment, and psychological components such as stress reduction protocols and positive reinforcement frameworks that support student well-being.

The theoretical foundation for such a system draws from multiple disciplinary traditions, including educational psychology research on motivation and moral development, human-computer interaction studies on user experience and acceptance, and educational technology research on the effective integration of digital tools in learning environments. The convergence of insights from these various fields suggests that successful academic integrity systems must be understood as complex socio-technical systems that require careful attention to technological, pedagogical, and psychological dimensions.

3.2.5 Cultural and Contextual Considerations

The findings of this study must be interpreted within the specific cultural and institutional context of Indonesian distance education, particularly at Universitas Terbuka. The preferences expressed by students may reflect broader cultural values regarding authority, trust, and educational relationships that might differ in other contexts. The strong preference for hybrid approaches may reflect Indonesian cultural tendencies toward consensus-building and balance rather than extreme positions.

Additionally, the distance education context creates unique challenges and opportunities for academic integrity management. Students in distance education programs often have different

demographic characteristics, life circumstances, and educational goals than traditional residential students, which may influence their perspectives on surveillance and trust. The flexibility that attracts many students to distance education may also create expectations for assessment approaches that are similarly flexible and respectful of individual circumstances. The technological context in Indonesia, including variations in internet connectivity, device availability, and digital literacy, also shapes student experiences with online proctoring systems and may influence preferences for different approaches. The finding that technical support emerged as a concern for many respondents highlights the importance of considering infrastructure and support systems in designing academic integrity approaches.

3.2.6 Implications for Educational Practice and Policy

The findings of this study have important implications for how educational institutions approach academic integrity in online learning environments. The evidence that students seek balanced approaches that provide security without sacrificing well-being suggests that institutions should move beyond simple adoption of available surveillance technologies toward more thoughtful integration of multiple approaches. The strong student preference for hybrid systems provides a mandate for institutional innovation in developing new approaches that combine the best features of surveillance and trust-based systems while minimizing their respective limitations. This may require significant investment in both technology development and faculty training, as well as cultural change within institutions to embrace more complex and nuanced approaches to academic integrity.

The psychological impact data suggest that institutions have an ethical responsibility to consider student well-being in their academic integrity policies, not merely as a secondary consideration but as an integral part of educational effectiveness. The creation of assessment environments that generate significant stress and anxiety may be counterproductive to broader educational goals, even if they are effective at preventing cheating.

Furthermore, the findings suggest that academic integrity should be understood as an educational opportunity rather than merely a compliance requirement. The student interest in integrity education and character development components indicates potential for academic integrity initiatives to contribute positively to student learning and development rather than being seen as purely punitive or restrictive measures.

3.2.7 Practical Implications

For Universitas Terbuka

- a. Hybrid Policy Development: Implementation of systems that balance surveillance and trust
- b. Adaptive Technology Investment: Development of AI that can adjust monitoring intensity
- c. Character Education Programs: Strengthening academic integrity through holistic approaches
- d. Mental Health Support: Providing psychological support for students experiencing test anxiety

For Other Distance Education Institutions

- a. Best Practice Benchmarking: Adoption of proven effective hybrid models
- b. Research Collaboration: Development of research consortiums for academic integrity
- c. Ethical Standardization: Development of ethical guidelines for remote proctoring

3.2.8 Research Limitations

This study has several limitations that need to be acknowledged:

1. Institutional Scope: Focus on one institution may limit generalizability
2. Self-Report Bias: Use of self-report data may contain response bias
3. Cross-Sectional Design: Cannot capture perception changes over time
4. Sample Size: Although adequate for statistical analysis, larger samples would increase power
5. Cultural Context: Results may differ in different cultural contexts

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

This study reveals the complexity of dynamics between digital surveillance and digital trust in the context of online remote proctoring exams at Universitas Terbuka. The main findings show:

- a. Effectiveness vs Well-being Trade-off: Digital surveillance proved highly effective in deterring academic misconduct ($M = 4.27$, Cohen's $d = 0.96$) but caused significant negative psychological impacts ($M = 2.17$, Cohen's $d = -2.19$).

- b. Long-term Digital Trust Potential: Although less effective in the short term, digital trust shows superior potential in character development and sustainable academic integrity (M = 4.08 for well-being).
- c. Dominant Hybrid Preference: 78.0% of respondents support hybrid approaches that integrate technological safeguards with pedagogical interventions.
- d. Need for Innovation: There is strong demand for development of more humane and less invasive assessment technologies.

4.2 Recommendations

4.2.1 Short-term Recommendations (1-6 months)

- a. Policy Revision: Revision of UORP policies to reduce aspects that cause excessive anxiety
- b. Mental Health Support: Implementation of counseling services for students with test anxiety
- c. Technology Optimization: Fine-tuning surveillance systems to reduce false positives
- d. Transparency Enhancement: Publication of detailed guidelines on data use and storage

4.2.2 Medium-term Recommendations (6-18 months)

- a. Hybrid System Development: Development of AAIS (Adaptive Academic Integrity System) prototype
- b. Faculty Training: Comprehensive training for faculty on academic integrity pedagogy
- c. Student Education Program: Mandatory academic integrity courses for all new students
- d. Technology Investment: Investment in AI and machine learning for smart proctoring

4.2.3 Long-term Recommendations (18+ months)

- a. Research Collaboration: Establishment of academic integrity research center
- b. Industry Partnership: Collaboration with technology companies for innovation
- c. Policy Advocacy: Involvement in national policy development for online assessment
- d. International Benchmarking: Participation in global best practices initiatives

4.2.4 Future Research Agenda

This research opens several avenues for further investigation:

- a. Longitudinal Studies: Tracking perception and behavior changes over time
- b. Multi-Stakeholder Research: Exploration of faculty, administrator, and proctor perspectives

- c. Cross-Cultural Validation: Study replication in different cultural contexts
- d. Experimental Design: Controlled trials to test hybrid approach effectiveness
- e. Technology Evaluation: Assessment of emerging technologies in academic integrity
- f. Economic Analysis: Cost-benefit analysis of various assessment approaches.

The findings of this study emphasize the importance of finding balance between maintaining academic integrity and respecting student dignity and well-being. The hybrid approach emerges as a promising solution that can integrate technological effectiveness with humanistic values in education. As educational technology continues to evolve, institutions must remain committed to developing assessment systems that not only prevent cheating but also foster intrinsic motivation for academic honesty. This requires continuous collaboration between educators, technologists, policymakers, and students themselves. The challenge ahead is not merely technical but fundamentally pedagogical and ethical: how to create learning environments that maintain high standards of integrity while preserving the trust, autonomy, and well-being that are essential to meaningful education.

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