

TRANSFORMATION OF PAI LEARNING MANAGEMENT: INTEGRATION OF COMPUTER-BASED TESTS AND ETHICAL VALUES OF EVALUATION IN ISLAMIC EDUCATION

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Abstract

The digital transformation of educational assessment has accelerated the adoption of Computer-Based Tests (CBT) in Islamic Religious Education (PAI). Although CBT improves efficiency and objectivity, it also raises concerns regarding students' academic anxiety and the integration of Islamic ethical values in evaluation practices. This study aims to explore students' experiences of academic anxiety during CBT implementation in PAI, identify technical, pedagogical, and ethical factors influencing anxiety, and examine how Islamic evaluation ethics are applied in computer-based assessments. Using a qualitative interpretive approach with a case study design, data were collected through in-depth interviews, observations, and document analysis involving PAI teachers, students, school leaders, and CBT operators in an Islamic educational institution. The findings indicate that CBT generates significant academic anxiety manifested in cognitive, emotional, and physiological responses, primarily due to technical uncertainty, rigid assessment design, and perceptions of limited tolerance for errors. Evaluation management remains largely technocratic, emphasizing system efficiency over students' psychological well-being. Although educators demonstrate normative understanding of Islamic ethical principles – such as justice (al-'adl), trustworthiness (amanah), compassion (rahmah), and public benefit (maslahah) – these values are not yet systematically integrated into CBT policies. Nevertheless, practices such as CBT simulations, spiritual reinforcement, transparent procedures, and technical support were found to reduce anxiety. The study concludes that integrating Islamic ethical values into CBT-based evaluation management is essential to creating fair, humane, and educational digital assessment in Islamic education.

Keywords: *PAI Learning Management; Computer-Based Tests; Ethical Values; Academic Anxiety; Evaluation; Islamic Education*

A. Introduction

Islamic education currently faces complex challenges amid the currents of globalization, the acceleration of digital technology, and the weakening of spiritual values among younger generations (Saputra, et. al., 2025). Rapid changes in learning evaluation practices including the adoption of Computer Based Test (CBT) – have shifted the face of traditional evaluation toward the use of digital technology that promises efficiency, item

variation, and extensive analytical capabilities of exam results. In modern evaluation literature, the use of technology is stated to offer opportunities to improve reliability, validity, and to integrate formative and summative assessment more dynamically. However, the transition to computer-based evaluation also raises psychological challenges for students, particularly academic anxiety/test anxiety, which if not anticipated can obscure the function of evaluation as a tool to enhance learning (Miller, D. M., et.al, 2021).

Recent empirical research indicates that electronic test/CBT formats do not always reduce anxiety; several studies have found that question design, technical readiness, and implementation context (e.g., high-stakes vs low-stakes) play a significant role in the emergence or reduction of student anxiety. Studies examining mixed formats (e.g., blended closed-book and open-book or CBE/OBE combinations) report that assessment designs focusing on application and understanding tend to be more capable of reducing anxiety compared to designs demanding memorization. However, this evidence remains heterogeneous and depends on the population and study context (Hong, S., dkk., 2023).

In the context of Islamic Religious Education (PAI), evaluation has an additional dimension: beyond cognitive aspects, assessment is expected to reflect and strengthen ethical, moral, and spiritual values. The integration of CBT into the PAI domain raises new questions: how to ensure that assessment technology not only measures religious knowledge cognitively but also respects ethical evaluation values (e.g., fairness, carefulness toward student conditions, considering intention and context) so as not to exacerbate academic anxiety that can reduce measurement quality? Several applied studies in Islamic schools/madrasahs have found that CBT implementation is effective from an operational standpoint but requires special attention to equipment readiness, digital literacy of teachers and students, and instrument design that is sensitive to affective and ethical aspects (Cahyaningsih, E., Shaleh, S., & Fitriyanti, A., 2024).

Literature mapping (2020–2025) reveals several important patterns: (1) modern guidebooks on measurement & assessment emphasize technology integration and the need to consider the psychological impact of exams; (2) quantitative and qualitative studies at various levels show high prevalence of test anxiety and its negative correlation with academic performance; (3) on-site research at Islamic institutions shows a gap between the technical potential of CBT and the implementation of Islamic evaluation values—such as aspects of fairness, intention, character building—in actual practice. Based on this synthesis, it is evident that although there is strong impetus for evaluation digitalization, there are rarely qualitative studies that explore in depth the experience of academic anxiety among PAI students when CBT is implemented, as well as how Islamic evaluation ethical values can be integrated into computer-based evaluation management (Radha, 2023).

Analysis of research gaps reveals three main lacunae: (a) the majority of studies focus on technical/psychometric aspects of CBT or on quantitative outcomes (scores), not on students' subjective experiences regarding academic anxiety; (b) studies on PAI often emphasize normative values of evaluation ethics but lack examination of their practical implementation in digital platforms; (c) few studies use in-depth qualitative approaches to

understand the interaction between CBT design, religious/ethical context, and academic anxiety. This gap provides space for qualitative studies that explore the perspectives of teachers, students, and Islamic education administrators regarding the transformation of PAI evaluation management when CBT is adopted, as well as concrete efforts to integrate Islamic evaluation ethical values that can reduce academic anxiety and enhance assessment fairness (Hong, S., dkk., 2023).

Based on the above explanation, this research is rationalized by practical and academic needs: practical—to assist in formulating PAI evaluation management policies that minimize academic anxiety when using CBT; academic—to fill the void in qualitative literature linking digital evaluation design and Islamic ethical values. The study focus is directed to answer: how the experience of academic anxiety manifests in the context of PAI CBT, how stakeholders (teachers, students, school/madrasah principals) interpret and manage that anxiety, and what managerial and ethical strategies can be integrated into computer-based evaluation practices to fulfill the principles of Islamic evaluation.

Academic anxiety is a psychological condition characterized by feelings of tension, worry, and fear that arise in academic situations, particularly when individuals face evaluative demands such as exams or tests. In the perspective of modern educational psychology, academic anxiety is not only understood as a momentary emotional response, but as a multidimensional construct involving cognitive aspects (negative thoughts), affective aspects (feelings of fear/nervousness), and physiological aspects (bodily reactions) (Miller, Linn, & Gronlund, 2021).

Several educational evaluation experts state that academic anxiety is often triggered by characteristics of the assessment system, such as grade pressure, graduation consequences, tight exam time constraints, and perceptions of unfairness in the evaluation process (Nitko & Brookhart, 2022). In the context of technology-based learning, academic anxiety can increase if students do not have adequate digital readiness or experience uncertainty regarding the mechanisms of the CBT system (Mohan, 2023).

In Islamic education, academic anxiety needs to be understood more holistically. Anxiety not only impacts cognitive achievement, but can also disturb inner peace, learning intention, and the internalization of Islamic values. Therefore, evaluation that triggers excessive anxiety contradicts the goals of Islamic education which emphasize the principles of tazkiyatun nafs and rahmatan lil 'alamin (Langgulung, 2020). A research shows that madrasah and Islamic school students experience quite significant levels of academic anxiety when facing computer-based exams, especially in normative subjects such as PAI (Hidayat & Sari, 2022). This indicates the need for a more humane and value-based evaluation approach.

Learning evaluation is conceptually understood as a systematic process to collect, analyze, and interpret information in order to make decisions about students' learning achievement and learning effectiveness (Brown & Knight, 2021). Modern evaluation theory emphasizes that assessment should not merely function as a selection tool, but as a means of improving learning quality (assessment for learning).

Within the framework of assessment theory, good evaluation must fulfill the principles of validity, reliability, objectivity, fairness, and meaningfulness. These principles become increasingly complex when evaluation is conducted through CBT systems, because technology introduces new variables such as system stability, data security, and user digital literacy (Miller et al., 2021).

Recent books on educational evaluation affirm that the use of CBT can enhance assessment efficiency and accuracy, but also has the potential to create new biases if not managed properly, such as technology bias and access bias (Nitko & Brookhart, 2022). Therefore, evaluation management becomes a key factor in ensuring that CBT truly supports pedagogical goals.

In Islamic education, evaluation is not only oriented toward results (output), but also toward process and values (Sukmadinata, 2020). Ideal evaluation is evaluation that is able to assess cognitive, affective, and psychomotor aspects in a balanced manner, and encourages students to learn with the right intention and full awareness.

Evaluation ethics in Islamic education are sourced from the values of the Qur'an and Sunnah that emphasize justice (*al-'adl*), honesty (*ash-shidq*), responsibility (*amanah*), and benefit (*maslahah*). Evaluation must not become a means of psychological oppression, but must function as an instrument of guidance (*tarbiyah*) (Muhaimin, 2021). Several Islamic education thinkers affirm that evaluation that causes excessive fear and acute anxiety contradicts the principle of compassion (*rahmah*) in education (Langgung, 2020). Therefore, PAI teachers have an ethical responsibility to design evaluations that are proportional, transparent, and consider the individual conditions of students.

In the context of CBT, Islamic evaluation ethics demand guarantees of system fairness, procedural transparency, and protection of student dignity. Technology must not eliminate the humanistic dimension in evaluation, but rather must become a tool to strengthen moral and spiritual values (Muhaimin, 2021). Recent national articles show that the integration of Islamic ethical values in digital evaluation remains normative-conceptual in nature and has not been fully implemented in practice in schools/madrasahs (Rohman & Fauzi, 2023). This strengthens the urgency of research that examines Islamic evaluation ethics in CBT practice empirically.

Empirical research related to CBT and academic anxiety shows diverse results. Several studies have found that CBT can increase motivation and learning efficiency, while other studies show increased anxiety due to time pressure, technical disruptions, and system uncertainty (Hidayat & Sari, 2022).

National research by Pratama (2021) on MA (Islamic Senior High School) students shows that students with low digital literacy tend to experience higher anxiety when taking CBT exams. Meanwhile, research by Sulastris and Maulana (2024) found that academic anxiety can be reduced if teachers provide socialization, CBT simulation, and question design that emphasizes understanding rather than memorization.

In the context of PAI, research by Cahyaningsih (2024) shows that CBT has the potential to improve the quality of cognitive assessment, but has not optimally considered

affective aspects and evaluation ethics. This study emphasizes the need for value-based evaluation management so that CBT does not merely become a technical tool.

Overall, national empirical studies show that the relationship between CBT and academic anxiety is greatly influenced by evaluation management, instrument design, and the values underlying assessment practices. However, research that specifically links CBT, academic anxiety, and Islamic evaluation ethics through a qualitative approach remains very limited.

B. Method

This study employed a qualitative approach within an interpretive paradigm to explore in depth the experiences, meanings, perceptions, and practices of research participants regarding the implementation of Computer-Based Testing (CBT) in Islamic Religious Education (PAI) and its relationship with academic anxiety and Islamic evaluation ethics. A qualitative approach was selected because it is particularly suitable for investigating complex and context-bound phenomena related to subjective human experiences (Creswell, 2021). In this study, academic anxiety is not treated merely as a measurable psychological variable but as a lived experience shaped by assessment systems, school culture, teacher-student interactions, and religious values (Sukmadinata, 2020). The research adopted a qualitative case study design, focusing on one or more Islamic educational institutions that have implemented CBT in PAI assessment. A case study enables a holistic and in-depth examination of phenomena within real-life contexts (Yin, 2022).

The study was conducted in Islamic educational institutions that routinely implement CBT in PAI evaluation. Site selection was based on three criteria: the consistent use of CBT in PAI assessment, the availability of documented evaluation policies, and institutional willingness to provide access to data and informants. Participants were selected using purposive sampling to ensure relevance and depth of information (Miles, Huberman, & Saldaña, 2020). Informants included PAI teachers as CBT designers and evaluators, students as direct CBT participants experiencing academic anxiety, school principals or vice principals for curriculum as policy makers, and CBT operators responsible for technical implementation.

Data were collected triangulatively through in-depth semi-structured interviews, non-participant observation, and document analysis. Interviews explored participants' perceptions of CBT, experiences of academic anxiety before, during, and after testing, and views on justice and Islamic ethical values in evaluation (Creswell, 2021). Observations focused on examination settings, students' emotional responses, and the roles of teachers and supervisors in maintaining an ethical testing environment (Miles et al., 2020). Documentation included CBT test blueprints, examination guidelines, institutional evaluation policies, and assessment reports, which were analyzed to examine the formal articulation and practical implementation of Islamic evaluation ethics.

Data analysis followed the interactive model of Miles, Huberman, and Saldaña (2020), encompassing data reduction, data display, and conclusion drawing with

continuous verification. Research trustworthiness was ensured through credibility, transferability, dependability, and confirmability, employing strategies such as triangulation, member checking, prolonged engagement, thick description, audit trails, and reflexive analysis (Sukmadinata, 2020).

Conceptually, this study is grounded in the interaction among four key components: CBT implementation in PAI assessment (test design, technical systems, and evaluation policies), evaluation management (planning, implementation, supervision, and follow-up), Islamic evaluation ethics (justice, trustworthiness, compassion, and public benefit), and students' academic anxiety (cognitive, emotional, and behavioral dimensions). Evaluation management and Islamic ethical values function as mediating and moderating factors shaping the impact of CBT on academic anxiety. Technocratic CBT implementation without ethical integration tends to exacerbate anxiety, whereas ethically grounded and humanistic management promotes fair, calming, and educative assessment practices.

C. Finding and Discussion

Findings

Overview of CBT Implementation in PAI Assessment

Observation and document analysis indicate that the Islamic educational institution serving as the research site has implemented Computer-Based Testing (CBT) in PAI assessment since approximately 2015. CBT is used for mid-semester assessments, final semester examinations, and certain specific evaluations. The CBT system is generally based on local applications or the school's Learning Management System (LMS).

PAI teachers and school administrators reported that CBT implementation was driven by the demands of educational digitalization and technology-based assessment policies. However, its application has tended to emphasize technical and administrative aspects rather than pedagogical and students' psychological considerations. An interview with the school principal revealed that CBT is indeed a demand of the times and educational policy. In practice, it is more efficient, but honestly, its impact on students' mental conditions, especially in PAI, has not been sufficiently examined.

Students' Academic Anxiety in CBT-Based PAI Assessment

Interviews with students revealed that academic anxiety emerged in various forms before, during, and after CBT implementation. In general, anxiety manifested across three dimensions: cognitive, emotional, and physiological. Students expressed concerns about technical errors, time limitations, and fear of failing to comprehend screen-based test items. A twelfth-grade student (Student A) stated: *"CBT makes me nervous because I'm afraid the system might suddenly crash or I might click the wrong option. Once you click, it's immediately saved."*

Another student (Student B) explained: *"PAI questions are sometimes long. Reading them on a screen makes me tense because I'm afraid time will run out."*

Observations during CBT sessions showed anxiety-related behaviors such as restlessness, frequent deep breathing, and repeated requests for confirmation from

supervisors. Academic anxiety was also triggered by the perception that CBT is more rigid and offers less tolerance compared to traditional paper-based tests. Several students felt that a single technical mistake could significantly affect their scores. Student C added: *"In written exams, you can still cross things out. In CBT, it feels like one mistake is fatal."*

These findings indicate that academic anxiety does not stem solely from academic ability but is also shaped by students' perceptions of the assessment system itself.

CBT Evaluation Management Practices in PAI Learning

Interviews with PAI teachers indicated that CBT evaluation planning primarily focuses on question preparation and system readiness, while students' psychological preparedness has not been a major concern. One PAI teacher stated: *"We focus on preparing the questions and ensuring the system works. Students' anxiety is usually considered something normal."* Analysis of test blueprints and CBT guidelines revealed the absence of specific procedures addressing academic anxiety management or Islamic evaluation ethics in CBT implementation.

Some PAI teachers attempted to reduce students' anxiety through personal approaches and religious advice prior to examinations, although these efforts were not institutionalized as formal evaluation policies. Another PAI teacher noted: *"I usually remind students to intend the exam as an act of worship so they don't feel too tense."*

These findings suggest the presence of individual ethical practices that have not yet been systematically embedded in evaluation management structures.

Integration of Islamic Evaluation Ethics in CBT

Teachers and school administrators demonstrated a sound normative understanding of Islamic evaluation ethics, including justice (*al-'adl*), trustworthiness (*amanah*), and compassion (*rahmah*). However, this understanding has not been fully implemented in CBT design and execution. One PAI teacher explained that *in Islam*, evaluation must be fair and not oppressive, but sometimes the CBT system makes us focus too much on technical aspects.

The findings reveal a tension between the demand for technological efficiency and the need to preserve humanistic values in PAI assessment. CBT is perceived as efficient and objective, yet it may reduce empathy and flexibility if not balanced with pedagogical approaches. *The vice principal for curriculum affairs stated that CBT is fast and organized, but the human aspect diminishes if it is not accompanied by teachers' personal approaches.*

Several adaptive strategies were identified in practice, although they have not been formally structured, including: 1) CBT simulations prior to examinations to familiarize students—particularly new tenth-grade students, but also eleventh- and twelfth-grade students given the three-month CBT assessment cycle; 2) Spiritual approaches such as collective prayers and intention-setting; 3) Active technical assistance during examinations; and 4) Transparent explanations of assessment systems.

Students who participated in simulations and received guidance reported lower anxiety levels. Student D stated: *"After the simulation, I felt calmer because I already understood*

the process." Based on thematic analysis, the study found that: 1) CBT-based PAI assessment generates tangible academic anxiety among students; 2) Anxiety is influenced by technical factors, assessment design, and perceptions of fairness; 3) CBT-based PAI evaluation management remains predominantly technocratic; 4) Islamic evaluation ethics are normatively acknowledged but not yet systematically integrated; and 5) Ethical and humanistic approaches have the potential to reduce students' academic anxiety.

Discussion

The findings indicate that students' academic anxiety in CBT-based PAI assessment is not merely caused by limited academic competence but is more strongly influenced by the characteristics of the assessment system itself. This aligns with academic anxiety theory, which identifies assessment systems as a primary trigger of test anxiety, particularly when evaluation is perceived as a high-stakes situation.

From the perspective of modern evaluation theory, assessment systems that excessively emphasize final scores tend to increase students' psychological pressure. This study reinforces the view that CBT, despite its technical advantages and efficiency, can intensify students' perceptions of uncertainty and fear if not accompanied by adequate pedagogical and psychological support. Thus, academic anxiety in CBT-based PAI assessment should be understood as the product of interactions among technology, assessment design, and value contexts.

Within Islamic education, excessive anxiety contradicts the objectives of PAI learning, which emphasize inner tranquility, spiritual awareness, and character formation. Evaluations that induce fear and stress risk shifting learning orientation from worship to mere grade pursuit, thereby weakening the affective and spiritual dimensions of PAI learning.

The findings also reveal that CBT-based PAI evaluation management is still dominated by technical-administrative approaches. Evaluation planning prioritizes system readiness, item banks, and reporting, while students' psychological dimensions and Islamic evaluation ethics have yet to become integral components of the system.

Theoretically, this confirms critiques in educational evaluation literature suggesting that digital assessment often adopts an instrumentalistic orientation, viewing evaluation as a mechanical process detached from pedagogical teacher-student relationships. In contrast, *assessment for learning* theory emphasizes that evaluation should function as a learning tool and a source of motivation rather than anxiety.

From the perspective of Islamic education management, evaluation is part of the *tarbiyah* process, requiring a balance between efficiency and values. When evaluation management focuses solely on technical effectiveness, the meaning of evaluation is reduced from a holistic educational process to an administrative procedure. This study highlights the urgent need to reconstruct CBT evaluation management to align with the humanistic and spiritual principles of Islamic education.

A key finding of this research is the gap between teachers' and administrators' normative understanding of Islamic evaluation ethics and their practical implementation

within CBT systems. While teachers recognize the importance of justice, trustworthiness, and compassion, these values have not yet been internalized in CBT policies and procedures.

Theoretically, Islamic evaluation ethics can function as a moderating framework that balances the technological rationality of CBT. The principle of *al-'adl* (justice) requires that CBT systems do not disadvantage students due to technical issues; *rahmah* demands empathy toward students' psychological conditions; and *maslahah* requires that evaluation produces educational benefits rather than serving merely as a selection mechanism.

Accordingly, these findings extend evaluation theory by positioning Islamic ethics not merely as normative values but as managerial instruments capable of minimizing the negative impacts of CBT, particularly academic anxiety. Synthesizing the findings, academic anxiety in CBT-based PAI assessment emerges when there is an imbalance among technology, evaluation management, and values. Conversely, when CBT is managed through planned, participatory, and ethically grounded evaluation management, academic anxiety can be reduced, and evaluation can function as an educative learning process. This synthesis reinforces the study's argument that transforming PAI evaluation management requires more than technological and system-level changes; it must also address values, policies, and evaluation culture.

Islamic education management should therefore design CBT-based PAI evaluation comprehensively by incorporating: 1) Analysis of students' psychological and digital readiness; 2) Assessment designs emphasizing understanding, reflection, and value application; and 3) Integration of Islamic evaluation ethics into evaluation planning documents.

Evaluation planning should no longer be purely technical but also pedagogical and ethical. In CBT-based PAI implementation, managerial implications include: 1) Providing CBT simulations as part of the learning process; 2) Active and communicative assistance during examinations; and 3) Creating a calm and spiritually meaningful evaluation atmosphere, such as collective prayers and intention-setting.

This approach aligns with Islamic evaluation principles that regard students as educational subjects whose dignity and psychological well-being must be safeguarded. Supervision of CBT-based PAI evaluation should address not only procedural compliance but also the ethical and humanistic quality of assessment. Evaluation quality indicators should include: 1) Students' perceptions of fairness; 2) Levels of academic anxiety; and 3) Consistency between evaluation practices and Islamic values.

This requires the active involvement of school principals and internal quality assurance teams. PAI teachers also need professional development encompassing CBT-based digital assessment literacy, understanding of academic anxiety psychology, and the application of Islamic evaluation ethics in digital contexts. Such development will strengthen teachers' roles not only as evaluators but also as educators who provide calm guidance and moral nurturing.

Academically, this study enriches Islamic education management scholarship by offering an integrative perspective combining technology, educational psychology, and

Islamic ethics. At the policy level, the findings can inform the development of more just, ethical, and student well-being-oriented CBT-based PAI evaluation guidelines.

This study is limited by its qualitative approach and specific institutional context, which restricts the generalizability of findings. Future research may develop: 1) Quantitative models of CBT-based PAI evaluation grounded in Islamic ethics; 2) Instruments for measuring academic anxiety based on Islamic values; and 3) Comparative studies between CBT and alternative assessment models in PAI.

E. Conclusion

Based on the findings of the qualitative study and the theoretical discussion presented in the preceding chapters, several key conclusions can be drawn. First, the implementation of Computer-Based Testing (CBT) in PAI learning assessment has brought significant changes to evaluation practices in Islamic educational institutions, particularly in terms of efficiency, technical objectivity, and ease of managing learning outcomes. However, this study finds that CBT implementation has also generated tangible academic anxiety among students, especially when assessment is perceived as rigid, high-stakes, and insufficiently accommodating of technical errors and students' psychological conditions. Second, students' academic anxiety in CBT-based PAI assessment is not solely caused by academic ability but is influenced by a combination of technical factors (such as system stability, time constraints, and interface design), pedagogical factors (including item design and value orientation), and managerial factors (such as evaluation policies and teacher support). This confirms that academic anxiety is a systemic phenomenon closely related to the management of learning assessment. Third, the study indicates that CBT-based PAI evaluation management remains predominantly technocratic and administrative in nature. Although teachers and Islamic education administrators possess a sound normative understanding of Islamic evaluation ethics—such as justice (*al-'adl*), trustworthiness (*amanah*), and compassion (*rahmah*)—these values have not yet been systematically integrated into CBT policies, procedures, and assessment design. Fourth, the findings affirm that Islamic evaluation ethics have strategic potential as a moderating framework in CBT implementation. When Islamic ethical values are internalized within evaluation management—from planning and implementation to supervision—CBT functions not only as a tool for measuring learning outcomes but also as a means of character development, reinforcement of learning intentions, and reduction of students' academic anxiety. Therefore, this study concludes that the transformation of CBT-based PAI evaluation management must be conducted holistically, addressing not only technological aspects but also evaluative values, assessment culture, and Islamic education policy.

Recommendations

Based on the above conclusions, the following strategic recommendations are proposed:

1. Recommendations for Islamic Education Administrators
 - a. Develop CBT-based PAI evaluation policies that explicitly integrate Islamic evaluation ethics;

- b. Include students' psychological well-being and academic anxiety as key indicators of evaluation quality;
 - b. Establish standard operating procedures (SOPs) for CBT that regulate not only technical aspects but also pedagogical and ethical dimensions.
2. Recommendations for PAI Teachers
- a. Design CBT items that emphasize understanding, value reflection, and the application of Islamic teachings rather than rote memorization;
 - b. Conduct CBT simulations and provide psychological-spiritual guidance as integral components of the learning process;
 - c. Position evaluation as a *tarbiyah* process by fostering proper learning intentions and creating a calm and supportive assessment environment.
3. Recommendations for Educational Policymakers
- a. Formulate national guidelines for CBT-based PAI assessment grounded in Islamic ethical values;
 - b. Facilitate professional development programs for PAI teachers in digital assessment, evaluation psychology, and Islamic education ethics;
 - c. Encourage research and innovation in humanistic and character-oriented PAI evaluation practices.
4. Recommendations for Future Researchers
- a. Develop CBT-based PAI evaluation models grounded in Islamic ethics in the form of instruments or operational guidelines;
 - b. Combine qualitative and quantitative approaches to examine the relationships among CBT, academic anxiety, and learning outcomes;
 - c. Conduct comparative studies across institutions or levels of Islamic education.

G. Bibliography

- Alkaabi, A., & Altae, M. (2024). Electronic test and its relationship with test's anxiety and academic achievement: Experiment at Qatar University. *Psychology, Evaluation, and Technology in Educational Research*, 6(2), 151-167. <https://doi.org/10.33292/petier.v6i2.218>.
- Andri, A. S., Nisa, R., Lubis, L., & Siregar, P. (2025). The Future Of Islamic Education: Opportunities And Challenges. *IJGIE (International Journal of Graduate of Islamic Education)*, 6(2), 315-335.
- Brown, S., & Knight, P. (2021). *Assessing Learners in Higher Education*. New York: Routledge.
- Cahyaningsih, E., Shaleh, S., & Fitriyanti, A. (2024). Utilization of Computer-Based Testing Technology to Optimize Cognitive-Based Assessment Literacy in the Learning of Islamic Elementary School Students. *Journal of Integrated Elementary Education*, 4(2), 151-172. <https://doi.org/10.21580/jieed.v4i2.21943>
- Creswell, J. W. (2021). *Qualitative Inquiry and Research Design*. California: Sage Publishing.

- Hakim, A. L., Nisa, R., & Lestari, N. C. (2025). Transformation Of 21st Century Education To Realise Superior Human Resources Towards The Golden Generation. *Berajah Journal*, 5(4), 389-398.
- Hong S, Go B, Rho J, An S, Lim C, Seo DG, Ihm J. Effects of a blended design of closed-book and open-book examinations on dental students' anxiety and performance. *BMC Med Educ*. 2023 Jan 13;23(1):25. doi: 10.1186/s12909-023-04014-9. PMID: 36635682; PMCID: PMC9836918.
- Judijanto, L., Nisa, R., & Fatulloh, M. A. (2024). Pengaruh Kecerdasan Buatan Terhadap Pengembangan Kognitif Dalam Pendidikan. *Jurnal Ilmu Pendidikan dan Kearifan Lokal*, 3(1), 120-130.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2020). *Qualitative Data Analysis*. California: Sage Publishing.
- Miller, D. M., Linn, R. L., & Gronlund, N. E. (2021). *Measurement and Assessment in Teaching* (11th ed.). London: Pearson.
- Muhaimin. (2021). *Paradigma Pendidikan Islam*. Bandung: Remaja Rosdakarya.
- Mohan, Radha. (2023). *Measurement and Assessment in Education*, Second Edition, PHI Learning Pvt. Ltd.
- Nisa, R. (2020). Esensi Alam Semesta Dalam Perspektif Falsafah Pendidikan Islam. *JURNAL ILMIAH AL-HADI Учредителю: Universitas Pembangunan Panca Budi*, 4(2), 986.
- Nisa, R. (2024). Improving the quality of Islamic education through an integrated curriculum. *Indonesian Journal of Education (INJOE)*, 4(1), 872-885.
- Nisa, R., & Usiono, U. (2025). Implementasi Filsafat Pendidikan Islam dalam Mengembangkan Kurikulum Pendidikan Islam Masa Kini. *EDU-RILIGIA: Jurnal Ilmu Pendidikan Islam dan Keagamaan*, 9(1).
- Nitko, A. J., & Brookhart, S. M. (2022). *Educational Assessment of Students*. London: Pearson.
- Sukmadinata, N. S. (2020). *Metode Penelitian Pendidikan*. Bandung: Remaja Rosdakarya.
- Yin, R. K. (2022). *Case Study Research and Applications*. California: Sage Publishing.