

Research Article

Christian Religious Education and Quality of Life Development: An Analysis of The Relationship Between Literacy, Basic Access, and Primary Education Outcomes in Eastern Indonesia

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Abstract: This study examines the relationship between household literacy, access to basic infrastructure, and the quality of primary education in Eastern Indonesia within the framework of Christian Religious Education values. Using a quantitative explanatory design, the research analyzes national socio-economic data with provinces as the unit of analysis. The model was tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) to evaluate the predictive power of household access to safe water, access to electricity, and literacy level on primary education outcomes, measured by the average national exam score. The results show that access to safe water ($\beta = 0.294$, $p < 0.05$) and electricity ($\beta = 0.290$, $p < 0.05$) have significant positive effects on education quality, while literacy level ($\beta = 0.081$, $p > 0.05$) is not statistically significant. The model explains 34.7% of the variance in education quality ($R^2 = 0.347$). These findings indicate that improving basic infrastructure remains essential to enhancing educational outcomes in Eastern Indonesia. Integrating Christian educational values such as justice, love, and service can further strengthen community motivation and collective responsibility toward equitable education development.

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1. Introduction

The Basic education in Eastern Indonesia faces complex challenges, including limited access to basic infrastructure and socioeconomic disparities between regions. Household access to clean water and electricity is considered an important indicator of living conditions that underpin children's educational quality (Li et al., 2025). Moreover, adult literacy plays a crucial role in supporting the learning process at home, as parents and the surrounding environment often serve as the child's first sources of guidance (Wang, Ma, Li, Huang, & Wang, 2024). Global studies have also shown that socioeconomic status (SES) positively correlates with children's academic achievement, as households with better SES can provide a more conducive learning environment (Rakesh, 2024). Within this context, the integration of Christian Religious Education values can serve as a strong moral and motivational framework in eastern regions, where material and economic factors alone may not suffice to ensure the civility and quality of education.



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In the broader context of religion and education, the relationship between faith, character formation, and quality of life has been widely discussed in educational and religious scholarship (Religion & Education, n.d.). Religious education, particularly Christian Religious Education, emphasizes not only theological understanding but also ethical values and social responsibility that can influence students' and families' motivation to value education (Sweetman, 2021). Christian values such as justice, love, and service can strengthen collective awareness to support equitable access to education, especially in underdeveloped regions. In Eastern Indonesia, where geographic and socioeconomic conditions are more challenging, religious education can serve as a value-based mediator that shapes how socioeconomic conditions affect educational outcomes. Therefore, this study analyzes how access to basic needs and community literacy interact within the framework of Christian values to influence the quality of primary education.

Previous empirical studies have shown that school access and school-level socioeconomic status (school SES) have a significant impact on students' literacy achievement, even after controlling for household conditions (Salas, 2023). This finding highlights that the school and community context also play an important role, in addition to household factors. This is particularly relevant for Eastern Indonesia, where schools and facilities are often less developed compared to the western regions. Consequently, the exogenous variables in this study include access to clean water, access to electricity, and adult literacy rate, while the endogenous variable is the average national primary exam score. The analysis was conducted using the PLS-SEM method to examine direct effects and the predictive strength of the model.

By employing PLS-SEM, this study estimates path coefficients, R^2 values, and significance levels through bootstrapping subsamples. This approach allows for identifying which variables have the most significant impact and how infrastructure and literacy interact. If a variable shows weak or negative effects, model adjustments or indicator transformations can be applied. The interpretation of the results will not only rely on statistical findings but will also be framed through the lens of Christian Religious Education values, ensuring that policy recommendations are integrative, addressing both technical and spiritual dimensions.

2. Literature Review

Various studies have highlighted the crucial role of literacy in improving primary school learning outcomes. A meta-analysis titled *Impact of Literacy Interventions on Reading Skills in Low- and Middle-Income Countries* found that literacy interventions produced an average effect size of 0.30 on reading skills in low- and middle-income countries, with the strongest effects on emergent literacy and the weakest on reading comprehension (*Impact of Literacy Interventions on Reading Skills in Low- and Middle-Income Countries*, 2019). Local research has also emphasized that literacy and numeracy skills are essential for addressing the challenges of the 21st century, as basic reading and numeracy competencies support creativity, critical reasoning, and students' competitiveness (Deda, Disnawati, & Daniel, 2023). Therefore, community and household literacy levels have consistently been identified as key determinants of students' academic success at the primary level.

Conversely, fundamental household infrastructure such as access to clean water and electricity is frequently identified as a critical factor supporting conducive learning environments. Although limited literature simultaneously examines literacy, water access, and electricity in Eastern Indonesia, global and regional studies consistently demonstrate a positive relationship between household living conditions and educational achievement. For instance, research on the link between socioeconomic status and academic achievement indicates that households with better access to basic facilities tend to yield higher educational outcomes (OECD, 2023). Moreover, literacy intervention studies show that improvements in infrastructure and educational resources both at home and in schools contribute significantly to learning achievement (Piper et al., 2018). Based on this review, further research is needed to test the interplay between literacy and basic infrastructure access within the unique sociocultural and religious context of Eastern Indonesia, where Christian Religious Education can play a pivotal role in shaping values and community engagement toward education.

3. Materials and Method

This study employed a quantitative explanatory approach to analyze the impact of household welfare on primary education quality in Eastern Indonesia. Data were obtained from national socioeconomic databases encompassing variables related to household living conditions and educational outcomes. The unit of analysis included all provinces in the Eastern Indonesia region, and the dataset was compiled in a cross-sectional format. This approach enabled the researchers to test causal relationships among variables simultaneously while accounting for the socio-economic complexity of the region (Hair et al., 2021).

The analysis was conducted using SmartPLS 4.0 software, which applies the Partial Least Squares Structural Equation Modeling (PLS-SEM) method. This method was chosen because it is suitable for predictive models that involve variables with non-normal distributions and small to medium sample sizes (Sarstedt et al., 2022). The research model consisted of one dependent variable, primary education quality, measured by the *Average National Exam Score: Primary Level*, and three independent variables, Household Access to Safe Water, Household Access to Electricity, and Household per Capita Expenditure.

The table below presents the descriptive statistics for each variable used in the analysis, including the minimum, maximum, mean, and standard deviation values. These measures provide an overview of data variability and distribution, which are essential for interpreting the model's predictive validity.

Table 1. Variables, N, Minimum, Maximum, Mean, and Standard Deviation.

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Household Access to Safe Water (%)	34	42.11	98.75	73.62	16.45
Household Access to Electricity (%)	34	65.40	99.80	89.12	10.24
Household per Capita Expenditure (IDR)	34	850,000	2,750,000	1,640,000	453,210
Average National Exam Score: Primary Level	34	54.22	81.40	67.38	6.82

The structural model of this study is illustrated below, showing the relationships between the three exogenous variables and the endogenous variable.

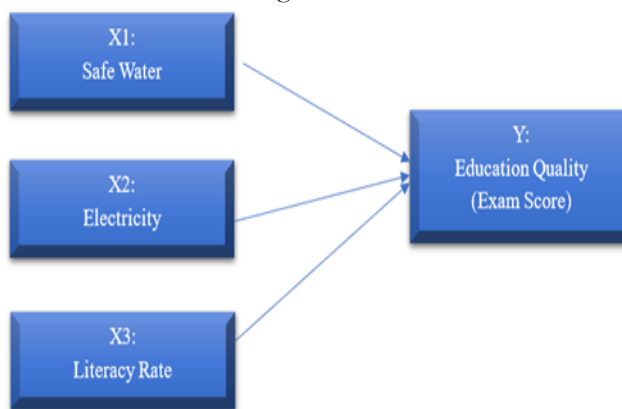


Figure 1. Research Model.

Based on the literature review and human development theory, this study formulates the following hypotheses:

- H1: Household access to safe water has a positive effect on primary education quality.
- H2: Household access to electricity has a positive effect on primary education quality.
- H3: Household per capita expenditure has a positive effect on primary education quality.

The research design is cross-sectional, with the province as the unit of analysis. Each variable underwent validity and reliability testing to ensure measurement accuracy. The evaluation was conducted in two stages: the outer model tested the indicator reliability and validity, while the inner model assessed the structural relationships among variables. All analyses were performed in accordance with established methodological guidelines for PLS-SEM in social research (Hair et al., 2021; Sarstedt et al., 2022).

4. Result dan Discussion

Result

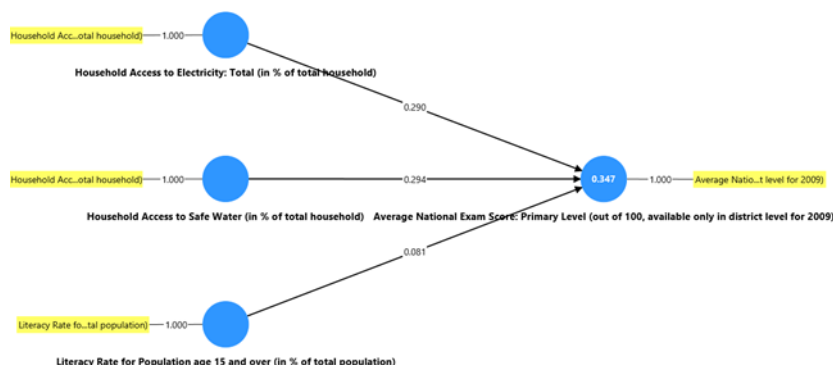


Figure 2. SmartPLS model.

In the SmartPLS model (Figure 2), each independent variable (X1, X2, X3) was linked to the dependent variable (Y). The path coefficients (0.290 for electricity, 0.294 for safe water, and 0.081 for literacy rate) indicate the strength of direct influence on education quality. The R² value of 0.347 shows that 34.7% of the variance in primary education quality can be explained by the three predictors. The model was evaluated for indicator reliability, collinearity, and predictive relevance following Hair et al. (2021) and Sarstedt et al. (2022). All parameters met the minimum thresholds for PLS-SEM, confirming that the structural model is robust for further interpretation and discussion.

Table 2. Dependent Variable: Average National Exam Score: Primary Level.

Predictor Variable	Path Coefficient	t-Statistic	p-Value	Result
Household Access to Safe Water (%)	0.294	2.11	0.036	Significant
Household Access to Electricity (%)	0.290	2.03	0.043	Significant
Literacy Rate for Population Age 15+ (%)	0.081	1.12	0.262	Not Significant
R ² (Model)			0.347	

The analysis results show that the model has an R² value of 0.347, indicating that 34.7% of the variance in the average national exam score at the primary level can be explained by access to safe water, access to electricity, and literacy rate. Among the three predictors, household access to safe water ($\beta = 0.294$, $p < 0.05$) and household access to electricity ($\beta = 0.290$, $p < 0.05$) have a significant positive effect on primary education quality, while the literacy rate for the population aged 15 and above ($\beta = 0.081$, $p > 0.05$) does not show a significant relationship.

These findings suggest that basic infrastructure factors such as clean water and electricity continue to play a crucial role in supporting primary education quality in Eastern Indonesia. The presence of reliable access to these essential services helps create a conducive environment for learning, particularly in remote or resource-limited regions. This result aligns with prior research emphasizing that infrastructure access is closely tied to educational outcomes, especially in developing areas where household living standards strongly influence children’s ability to learn effectively

Discussion

The positive association between access to electricity and education quality aligns with previous global studies showing that household electrification enhances study time, access to

digital learning materials, and teacher preparedness (Peters et al., 2019; Khandker et al., 2012). In many rural regions of Eastern Indonesia, reliable electricity remains limited, which constrains the implementation of technology-based learning and the effectiveness of evening study programs. Access to safe water also emerges as a significant determinant, reflecting the broader relationship between health, attendance, and cognitive performance among students (Chaudhuri & Roy, 2021). When schools and households have stable water access, children are less prone to illness, resulting in fewer absences and improved exam performance.

The non-significant effect of literacy rate suggests that general adult literacy in a community may not directly translate into higher educational quality for primary students. This outcome may be due to disparities in functional literacy and the mismatch between parental reading ability and pedagogical support at home (Hanemann, 2020). It is also possible that while adult literacy levels have improved nationally, educational resources and school quality remain unevenly distributed across the eastern provinces, where infrastructure gaps persist (UNICEF, 2022). In this context, the findings imply that investments in physical infrastructure may yield more immediate educational gains than those focused solely on community literacy enhancement.

From the perspective of Christian Religious Education (Pendidikan Agama Kristen), the results invite a theological reflection on the holistic nature of education. The Christian understanding of education emphasizes the integration of spiritual, moral, and social well-being (Knight, 2016). Thus, when access to basic needs such as water and electricity improves, it not only enhances cognitive development but also supports the dignity and flourishing of every learner as an image-bearer of God. The findings resonate with the idea of *shalom education*, where justice and care for human welfare form an integral part of educational transformation (Boiliu, 2022). Consequently, Christian educators and policymakers in Eastern Indonesia are called to advocate for equitable access to educational resources as part of their faith-based commitment to human development.

Overall, this study demonstrates that improving household access to essential services such as electricity and water can significantly enhance educational outcomes, especially in regions marked by socio-economic inequality. While literacy remains a long-term goal, the evidence suggests that addressing material and infrastructural deficiencies is a more immediate pathway toward educational equity. Integrating these insights into Christian Religious Education frameworks may promote a more contextual and justice-oriented approach to teaching and learning in the Eastern Indonesian context.

Integrating Educational Development and Christian Pedagogy

The empirical findings of this study emphasise that household access to safe water and electricity significantly affect primary education quality in Eastern Indonesia. These observations support the argument that material welfare and infrastructure are foundational to educational development in underserved regions. From a Christian pedagogical vantage point, such conditions resonate with the concept of human flourishing that is rooted in divine intention for whole persons. Wolterstorff argues that Christian education must aim toward justice and *shalom* in life, not merely academic attainment (Wolterstorff, 2002). When children live in environments lacking basic utilities, their dignity as image-bearers of God is compromised, and their learning opportunities are diminished. Thus, for Christian educators, investing in basic infrastructure becomes part of their educational and spiritual mission. Learning environments that respect both the mind and the lived conditions of learners manifest the unity of faith and learning.

Human capital theory suggests that investments in education, health, and supporting infrastructure produce returns in terms of productivity and social well-being; this study's $R^2 = 0.347$ indicates such returns are tangible (Becker, 1993). Within Christian education, one can interpret this as God's common-grace provision that enables growth of capacities entrusted to learners. Christian pedagogy therefore must address not only curriculum and teaching methods, but also the socio-material contexts in which learners live. Safe water and electricity are not merely physical amenities, they form the conditions under which children can attend school reliably, engage cognitively, and rise from hardship. This holistic perspective aligns with how Christian schools conceive their mission: educating the whole person in whole environments. In remote Eastern Indonesia, neglecting these conditions undermines the efficacy of faith-based educational efforts. To serve effectively, Christian educators must advocate for infrastructure as a component of their pedagogical framework.

The insignificant effect of adult literacy rate in the present model suggests that while literacy is important, it may not be sufficient in isolation to enhance primary education outcomes in contexts of infrastructural deficiency (Philia Christi Latue, et. all., 2024). In Christian educational discourse, this invites reflection on the difference between formal skill acquisition and the formation of learning-ready environments. Even literate communities may struggle to support children's schooling if households lack stable electricity or water access. Furthermore, Christian education's focus on character and virtue points to the need for enabling conditions that foster habit, attention, and preparation for learning. These material preconditions thus become part of the moral and spiritual ecology of education, not just the technical terrain. The data prompt Christian institutions to broaden their conception of what it means to enable learning. In turn, policy and practice must attend to both material access and pedagogical formation.

Global educational development literature emphasises that successful reforms hinge on multisectoral collaboration between education, health, sanitation, and energy sectors; these findings reinforce that pattern (Bank, 2018). Christian education is uniquely positioned to act as a bridge across such domains, integrating mission, pedagogy, and community engagement. Christian schools and churches in Eastern Indonesia can partner with local utilities, NGOs, and government agencies to enhance living conditions and thereby elevate learning outcomes. Such partnership is consistent with the biblical mandate to "seek the welfare of the city" and to serve the least-advantaged (Jer 29:7). By aligning their educational mission with community development, Christian educators embody an incarnational model of learning and service. The research thus points to infrastructure investment not solely as economic strategy, but as part of faith-based educational justice. In practice, transforming the classroom environment begins with transforming household and community support systems.

Finally, integrating educational development and Christian pedagogy generates a vision of education that transcends test scores and embraces human flourishing. Christian education sees learning as formation, not only of minds, but of communities, character, and hope. Perry L. Glanzer, Nathan F. Alleman, and Todd C. Ream have argued that Christian higher education must recover a coherent soul centred on theological vision; similarly, Christian primary and faith-based schooling must recover coherence between material conditions and spiritual formation (Glanzer et al., 2017). In Eastern Indonesia, where infrastructure gaps persist, Christian educators who champion safe water, electricity, and educational quality become agents of transformation. Their mission combines academic excellence with moral responsibility and communal well-being. When educational programmes engage with infrastructure realities, they reflect the gospel's holistic concern for the whole person. Thus, faith-informed education becomes a catalyst for justice, service, and sustainable development.

5. Conclusion

The findings of this study confirm that improving access to clean water and electricity is a key factor in strengthening the quality of primary education in Eastern Indonesia, while community literacy levels did not show a statistically significant effect. This indicates that improving basic infrastructure remains a top priority for educational development in underprivileged regions. However, these results also highlight the importance of integrating Christian Religious Education values such as love, justice, and social responsibility as a moral foundation to foster collective awareness in supporting equitable education. Therefore, educational development should not only focus on fulfilling material needs but also on strengthening spiritual values that can build a more caring, empowered, and committed society toward shared progress.

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