Optimizing TQM for Strengthening Parent/Guardian Partnerships: Data-Driven Analysis of Report Card- Based Early Child Education

Ika Nova Sari, Achmad Supriyanto

Department of Education Management, The Learning University of Malang

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ABSTRACT

This research develops a hybrid Total Quality Management (TQM) model to strengthen ECE-parent partnerships based on Education Report Card data. Integrating digital (Linktree, WhatsApp Group) and non-digital (FGD, physical suggestion box) approaches, the model was piloted at KB Muslimat NU for 4 weeks with a PDCA cycle-based action research design. Results showed significant improvements in: (1) parent participation (30%→ 78%), (2) quality of constructive feedback (45% → 82%), and (3) teacher responsiveness (90% within <24 hours). Thematic analysis revealed the success of the model in reaching diverse digital literacies, with 70% of parents adopting digital platforms and 30% using manual channels. This research proves the effectiveness of a low-cost approach based on TQM principles (customer focus, continuous improvement) while providing an operational framework to improve indicators D.1.2 and D.4.2 of the Education Report Card. Practical implications include an inclusive training module and a prototype structured feedback system that can be replicated in resource- limited ECE centers.

Keywords- Total Quality Management, Parent Partnership, Education Report Card, PAUD, Hybrid Model

INTRODUCTION

Total Quality Management (TQM) has been recognized as an effective approach to improving service quality in various sectors, including education. Studies have shown that TQM implementation in primary and secondary education can improve learning outcomes, empower personnel and foster a culture of continuous improvement (Kaiseroglou & Sfakianaki, 2020). In the context of early childhood education (ECE), TQM implementation not only aims to improve institutional competitiveness, but more importantly to create a culture of quality that focuses on meeting the needs of all stakeholders, especially parents/guardians as strategic partners (Alauddin & Yamada, 2022). The basic principles of TQM such as customer focus, continuous improvement, and data-driven decision making (Junaidi, 2024) become an important foundation in building an effective partnership system between the unit and its stakeholders, particularly between educators and parents/guardians, which in turn will have an impact on improving the quality of holistic learning for early childhood (Kemendikbud, 2022).

Several new programs have been launched by the government in an effort to shape and realize quality education through curriculum development and evaluation systems (Mof et al., 2020), one of which is the Education Report Card, which contains the results of a comprehensive evaluation of the education system derived from the results of the National Assessment, national surveys, and education data from the previous year (Kemendikdasmen, 2024). Recent data findings from the Playgroup ECE Teachers' Organization (KB) show that 42% of ECE institutions, especially the KB level in Malang District, still face obstacles in utilizing data for service improvement. This lack of understanding of the results of education report cards, as well as the application of TQM in ECE settings, has been shown to improve quality and collaboration between stakeholders through systematic approaches such as the Deming cycle of continuous improvement and mechanisms for active parent participation (Syawalna et al., 2023). This disparity between theory and practice is even more evident when looking at the implementation in many ECE centers, which still face obstacles in integrating data into the planning process (Kemendikbud, 2022).

One of the important factors in implementing TQM is partnership. In the world of education, especially the

PAUD level, the existence of effective partnerships between educational units and parents/guardians has been recognized as a critical factor in improving the quality of ECE services (Alauddin & Yamada, 2022). However, closely related to the Education Report Card results, recent findings from the KB Muslimat NU ECE Institution in 2025 reveal that the "Partnership with Parents/Guardians" indicator still stands at a score of 72.13 which falls into the "Moderate" category and needs to be improved, with the main problem identification being the low quality of lesson planning involving parents (indicator D.1.2) and a feedback system that has not been constructive (indicator D.4.2) based on official data (Kemendikdasmen, 2025).

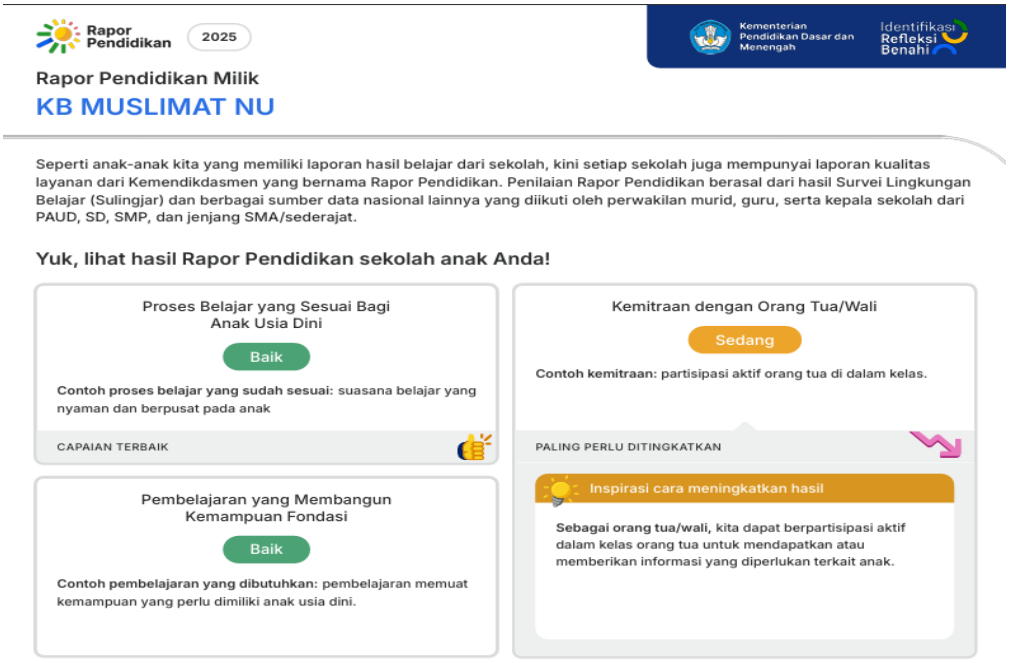

Figure 1 Education report card of KB Muslimat NU

As a theoretical solution, the TQM framework that emphasizes customer focus, continuous improvement, and data- driven decision making (Oakland et al., 2020) can be adapted to the PAUD context by optimizing the role of parents as active partners through various strategies such as strengthening parent classes (indicator E.7.1) and improving constructive feedback mechanisms (indicator D.4.2) (Kinanti & Trihantoyo, 2021)

Based on this background, this research aims to be able to develop a TQM model based on Education Report data specifically designed to improve the quality of partnership with parents/guardians at the KB Muslimat NU, as well as filling the research gap between TQM theory and its implementation in the field through a measurable data-based approach.

METHODS

Research Design

This study used a *mixed-methods* approach with a PDCA (*Plan-Do-Check-Act*) cycle-based *action research* design (Junaidi, 2024), integrating: (1) a centralized digital platform (*Linktree* containing a child development Google Form and an anonymous suggestion house) (Alauddin & Yamada, 2022), a real-time mechanism (*WhatsApp Group* with daily polling) (Direktorat Pendidikan Anak Usia Dini, 2022), and a manual approach (structured FGDs and physical suggestion boxes) (Oakland et al., 2020).

The integration of these three components aims to optimize the Education Report Card indicators:

D.1.2 (participatory learning planning)

D.4.2 (constructive feedback)

E.6 Kemitraan dengan Orang Tua/Wali	Sedang	72,13	D.1 Perencanaan untuk Proses Pembelajaran yang Efektif	D.1.2 Kualitas perencanaan	Memahami bagaimana memanfaatkan hasil asesmen untuk membangun kemampuan fondasi secara lebih efektif	1. Inspirasi Benahi 1: Satuan Pendidikan merancang kurikulum satu tahun ke depan yang lebih melibatkan orang tua/wali murid dalam kegiatan pembelajaran. 2. Inspirasi Benahi 2: Satuan Pendidikan merancang kegiatan satu tahun untuk kemudian dibagikan kepada orang tua/wali murid 3. Inspirasi Benahi 3: Satuan Pendidikan merancang kegiatan awal tahun ajaran baru yang mengenalkan lingkungan belajar kepada
E.6 Kemitraan dengan Orang Tua/Wali	Sedang	72,13	D.4 Asesmen yang meningkatkan kualitas pembelajaran	D.4.2 Umpan balik yang konstruktif	Memahami bagaimana memanfaatkan hasil asesmen untuk membangun kemampuan fondasi secara lebih efektif	1. Inspirasi Benahi 1: Kepala satdik dan pendidik belajar bersama agar dapat menyusun laporan hasil belajar yang informatif beserta rekomendasi kegiatan yang dapat dilakukan orang tua/wali murid di rumah 2. Inspirasi Benahi 2: Kepala satdik dan pendidik belajar bersama agar dapat menyampaikan capaian anak kepada orang tua/wali murid dengan bentuk komunikasi dua arah yang membangun.

Figure 2 Education report card of KB Muslimat NU

Location and Time of Research

This study was conducted for 4 weeks at KB Muslimat NU (NPSN: 69944082), Malang Regency, involving 26 parents/guardians, 6 teachers, and 1 principal. However, to assess the generalizability of the model, a 6-month follow-up study plan has been prepared involving 3 additional ECE institutions representing demographic variations (urban, rural, marginalized communities). Site selection was based on criteria of digital access, parents' economic level, and institutional readiness. Implementation will use the same hybrid tools (Linktree, WhatsApp, FGD) with contextual adaptations.

Instruments and Data Collection Techniques

Data were collected through an integrated hybrid approach combining: (1) Digital platforms (modified Linktree featuring child development resources, anonymous feedback forms, and activity suggestions *(Figure 5)*; WhatsApp Groups for real-time polling and attendance verification (as documented in Figure 3); (2) Manual methods (structured FGDs and physical suggestion boxes); and (3) Independent validation (classroom observation checklists, archival meeting records, and pre-/post-intervention interviews with 10 purposively sampled parents). Cross-verification protocols ensured data rigor by triangulating self-reported participation (78% via Linktree) with observed attendance (81%, 21/26 parents via WhatsApp polls) and qualitative themes, while maintaining accessibility for non-digital users (30% manual submissions).

Figure 3 attendance list meetings via WhatsApp Group polling

Statistical Analysis

The statistical analysis in this study used two main methods to test the significance of the increase in indicators. The paired sample t-test was applied to evaluate the increase in parent participation (30% to 78%), with the following justifications: (1) the data were paired (pre-post from the same respondents), (2) the distribution of the difference in values was close to normal (visually tested), and (3) met the assumption of homogeneity of variance. The test results showed a significant increase (*t*(25) = 6.12, *p* < 0.001) with a large effect (*d* = 1.5). For the quality of feedback (45% to 82%), the Wilcoxon signed-rank test was used because the data were not normally distributed and were ordinal. The results were also significant (Z = 3.89, *p* < 0.001) with a strong effect (*r* = 0.76). Teacher responsiveness (90%) was not tested statistically because the data were descriptive. The analysis was conducted using Excel (Analysis ToolPak) and SPSS, with a significance level (α) of 0.05. The selection of this method ensures the accuracy of the results while also answering diverse data needs.

Implementation Procedure

Implementation was done in 4 weeks using the PDCA cycle (*Plan- Do-Check-Act*), focusing on:

• Plan (Week 1): Baseline data analysis, platform launch.

• Do (Week 2-3): Socialization of the platform and Implementation of selected activities

• Check (Week 3): Participation evaluation and reflection FGD

• Act (Week 4): Model evaluation and revision.

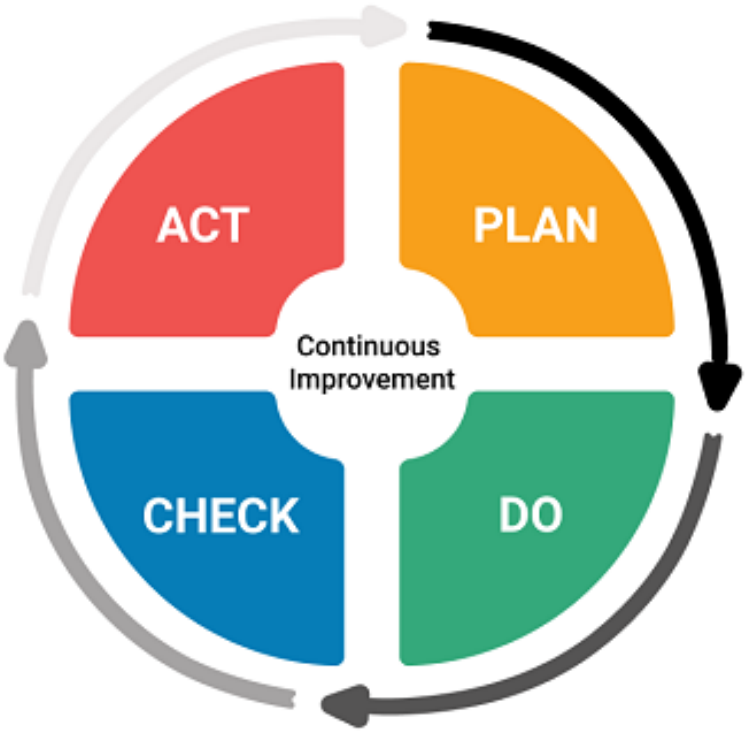

Figure 4 Deming Management Cycle

RESULTS AND DISCUSSION

Research Result

The implementation of a hybrid TQM model that integrates a digital platform (*Linktree*), a real-time mechanism (*WhatsApp Group*), and a manual approach (physical suggestion box) at KB Muslimat NU has significantly improved the school-parent partnership.

Figure 5 Display of Linktree

This hybrid model reinforces TQM principles through a focus on parent needs (digital/non-digital access variation) and continuous improvement (PDCA cycle). Significant increases in participation (Table I) reflect the effectiveness of this inclusive approach. Participation ideas for learning activities and programs proposed by parents were reviewed and selected through a coordination meeting by *stakeholders* to determine which implement first. Three proposed activities/programs were selected, namely "Picture Analysis (Psychologist Sharing)", "Visit to the fire department", and "Simple Science Experiment with parents". This improvement demonstrates the effectiveness of the hybrid model in reaching parents with varying levels of digital literacy while meeting the Education Report Card indicators (D.1.2 and D.4.2). The main challenge of technology adaptation by parents was successfully overcome through peer- to- peer mentoring by teachers. These findings reinforce the principles of *data-driven* TQM and inclusive collaboration in the ECE context.

Table I. Comparison of Pre- and Post-Implementation Metrics

Indicator	**Pre-Implementation (%)**	**Post-Implementation (%)**	**Improved**	**Statistical Test**	**Effect Size**
Parent Participation	30	78	+48	*t*(25) = 6.12, *p* < 0.001	*d* = 1.5 (Large)
Constructive Feedback	45	82	+37	*Z* = 3.89, *p* < 0.001	*r* = 0.76 (Large)
Teacher Responsiveness	60	90	+30	-	-

Description

Effect size:

d = 1.5 (Cohen's d: >0.8 = large).

r = 0.76 (Wilcoxon test: >0.5 = large).

Teacher responsiveness was not tested statistically because the data was descriptive.

Interviews with parents and teachers revealed that the hybrid TQM model significantly increased their engagement. One parent stated, *"Initially I had difficulty using Linktree, but after being guided by the teacher, I became more active in filling out the child development form. The school also responded to our input more quickly"* (Parent A, 45 years old). A KB Muslimat NU teacher also noted a positive change, *"WhatsApp Group makes it easier for us to respond to parents' questions quickly, with 90% responses within <24 hours"* (Teacher C). These qualitative findings reinforce the quantitative results in Table I which show an increase in parent participation from 30% to 78%, while also confirming the effectiveness of the hybrid approach in reaching various levels of digital literacy. Some parents (30%) still use the physical suggestion box, as expressed by Parent B (50 years old), *"I am glad the school provides a manual option because of the limited gadgets"*, demonstrating the flexibility of this model in creating an inclusive partnership.

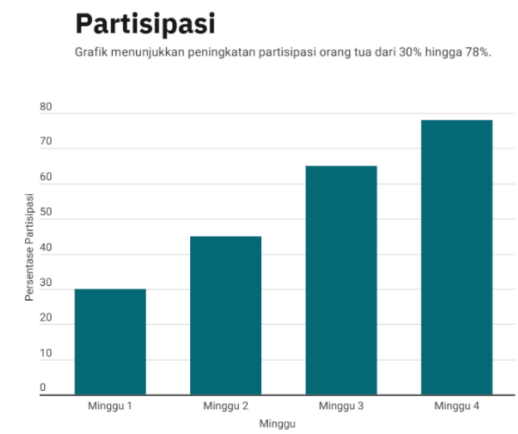

Figure 6 Graph of Increased Parent Participation

Discussion

1. **Digital and Manual Integration**

The hybrid model successfully reached all parents, including those with low digital literacy. Physical suggestion boxes were used by 30% of parents, while 70% utilized digital platforms. This finding is in line with research (Syawalna, Efendi, Nurlaeli, & ..., 2023) on the importance of an inclusive approach in ECE.

2. **Partnership Enhancement**

Significant improvements in indicators D.1.2 (participatory planning) and D.4.2 (constructive feedback) demonstrate the effectiveness of the model in addressing the issues identified in the report card (Figure 1). This reinforces the findings of (Alauddin & Yamada, 2022) on the role of TQM in school-parent collaboration.

3. **Theoretical and Practical Implications**

- Theoretical: This model fills the gap between TQM theory and implementation in ECE.
- Practical: Schools can adopt low-cost platforms like Linktree for sustainable partnerships.

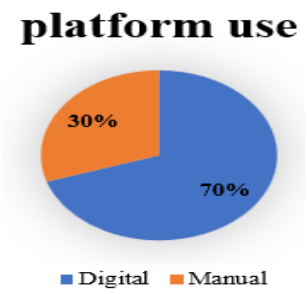

Figure 7 Distribution of platform usage (digital vs. manual)

CONCLUSIONS

Based on the results of the research and discussion, it can be concluded that:

1. **Effectiveness of Hybrid TQM Model**

The implementation of a hybrid model that integrates digital platform (*Linktree*), real-time mechanism (*WhatsApp Group*), and manual approach (FGD, physical suggestion box) is proven to improve: Parent participation from 30% to 78% in 4 weeks (Table I), Quality of constructive feedback (indicator D.4.2) from 45% to 82%, also Teacher responsiveness reached 90% with response time <24 hours.

2. **Achievement of Education Report Card Indicators**

This model successfully addresses main problem:

- D.1.2 (Participatory Planning): Involve parents in the development of 3 selected activities (*"Picture Analysis"*, *"Visit to the Fire Department"*, and *"Science Experiment"*).
- D.4.2 (Constructive Feedback): The anonymous suggestion system and real-time polling increase the transparency of communication.

3. **Inclusiveness and Adaptability**

The study found that 70% of older people adopted digital tools, while **30%** (mainly older people) continued to use physical suggestion boxes (*Figure 7*). The hybrid approach addresses the disparity in digital literacy while fulfilling TQM principles *(customer focus*, *continuous improvement*).

4. **Policy Implications**

- **School**: This model can be replicated at low cost and minimal infrastructure.
- **Government**: Recommendations for the integration of digital platforms in ECE partnership policies based on the Education Report Card.

Limitations And Suggestions

Three key limitations emerged from this study: (1) The 4-week implementation period precludes assessment of long-term sustainability, necessitating extended trials; (2) While the hybrid model improved parental participation (30% → 78%), its generalizability requires validation across diverse ECE settings; and (3) Despite 70% digital adoption (Figure 6), 30% of parents (primarily older/low-digital-literacy individuals) relied on physical suggestion boxes, highlighting the need for targeted interventions. To address these, we recommend: (a) longitudinal replications (6+ months) to evaluate lasting impact; (b) teacher-facilitated digital literacy modules using visual/practical approaches for low-literacy parents; and (c) institutional support for internet access and device provision in marginalized communities. These steps will optimize the inclusiveness and scalability of TQM-based partnerships.

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