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Implementation of Decision Support System for Seed Award Recipient Student Selection at Madrasah Ibtidaiyah Baiturrahman, Bandung, West Java

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Abstract: The selection process for Seed Award recipients at Madrasah Ibtidaiyyah (MI) Baiturrahman Bandung encounters challenges related to subjective assessment and perceived inequity. The evaluation system applies uniform criteria across all students from grades I-VI without accounting for developmental differences between grade levels. To address these issues, we designed and implemented a web-based Decision Support System (DSS) utilizing the VIKOR method. We selected VIKOR for its ability to generate optimal compromise solutions in multi-criteria problems involving conflicting considerations. The DSS employs four primary criteria: Religious Practice (20%), Character (20%), Discipline (20%), and Grade Level (40%), with the latter formulated as a cost criterion to ensure fairness across educational levels. We built the system using Laravel framework (PHP) and tested it with 17 teachers and 20 students as trial participants. Implementation results demonstrate substantial improvements in selection objectivity, evidenced by increased representation of lower-grade students (grades I-II) as award recipients from 18% to 42%. Furthermore, 94% of teachers reported the system as more objective and user-friendly, 75% of students expressed increased motivation following system deployment, and parental complaints were eliminated (previously ranging from 5 to 7 cases per semester). These findings indicate that VIKOR-based DSS successfully establishes fairer, more transparent, and accountable selection processes while enhancing stakeholder confidence in evaluation mechanisms within madrasah environments.

Keywords: VIKOR Method; Decision Support System; Academic Awards; Assessment Transparency.

1. Introduction

Character education serves as a cornerstone in developing Pancasila Student profiles at elementary levels, particularly in cultivating faith values, noble character, and disciplinary habits from early childhood (Sufyadi *et al.*, 2021) [1]. As part of educational implementation, Madrasah Ibtidaiyyah (MI) Baiturrahman Bandung developed the Seed Award program—a point-based ranking system using bead tokens distributed by teachers to students for positive behaviors in religious practice, character development, and discipline. The program aims to foster consistent character growth while motivating students to uphold madrasah values throughout their academic journey. However, internal evaluations reveal significant implementation challenges that threaten program effectiveness. A survey of 41 parents disclosed that 82% expressed concerns about assessment inequity stemming from uniform evaluation criteria applied across all grade levels (I–VI), despite clear developmental differences between age groups. These findings align with teacher feedback from 17 respondents, where 76% identified the current system as vulnerable to subjective bias due to the absence of grade-specific criteria weighting. Consequently, students from lower grades (grades I and II) face reduced opportunities to receive awards compared to their upper-grade counterparts, creating an inherently unbalanced competitive environment.

To address these challenges, a Multi-Criteria Decision Making (MCDM) approach capable of handling criteria complexity proportionally across educational levels becomes necessary. Common MCDM methods include AHP (Analytic Hierarchy Process), TOPSIS (Technique for Order Preference by Similarity to Ideal Solution), and ELECTRE (Elimination and Choice Expressing Reality). Among these alternatives, we selected the VIKOR method (Vise Kriterijumska Optimizacija Kompromisno Resenje) for its superior ability to generate compromise solutions that balance utility (total benefit) and regret (dissatisfaction level with non-selected alternatives). Such an approach proves particularly suitable for systems like Seed Award, which require equitable evaluation across grade levels while accommodating criteria imbalances.

Previous research demonstrates VIKOR method effectiveness in educational settings. Tundo and Dewantara (2023) achieved 77.44% accuracy in determining BSM scholarship recipients, showing the method's capability to reduce selection subjectivity [2]. Similarly, Wardana *et al.* (2023) reported significant improvements in student selection objectivity compared to manual methods when implementing decision support systems in academic environments [3]. Although alternative approaches such as fuzzy logic have been applied in outstanding student selection [4], VIKOR offers superior performance by providing measurable compromise solutions based on ideal distance calculations [5]. These characteristics make VIKOR particularly relevant for multi-criteria applications like the Seed Award program. The current assessment system at MI Baiturrahman Bandung operates without standardized rubrics or transparent weighting mechanisms, leading to inconsistent evaluation practices among teachers. Grade I students, for instance, compete directly with Grade VI students using identical criteria, despite significant developmental gaps in cognitive abilities, social skills, and behavioral expectations. Such practices not only disadvantage younger students but also create parental dissatisfaction and undermine program credibility.

Furthermore, the manual assessment process relies heavily on individual teacher judgment without systematic documentation or verification procedures. Teachers report difficulty in maintaining consistent evaluation standards, particularly when assessing subjective criteria like character and religious practice. The absence of digital record-keeping also limits the school's ability to track student progress over time or identify patterns in award distribution across different grades and classes.

Research objectives focus on designing and implementing a VIKOR-based Decision Support System (DSS) through a structured web application featuring standardized criteria and hierarchical weights. Our primary target involves reducing parental complaints by at least 70% based on post-implementation evaluation while increasing teacher satisfaction with system transparency from 76% to ≥85%. Secondary objectives include improving award distribution equity across grade levels and establishing a replicable model for similar educational institutions. The proposed DSS will incorporate four main criteria: Religious Practice (20%), Character (20%), Discipline (20%), and Grade Level (40%), with the latter serving as a cost criterion to ensure fairness across educational tiers. By implementing grade-level adjustments, younger students will receive appropriate consideration relative to their developmental stage, while maintaining academic rigor and motivation for all participants.

Expected outcomes include enhanced objectivity in award selection, reduced administrative burden on teachers, improved stakeholder satisfaction, and establishment of a transparent evaluation framework that can be adapted by other madrasah institutions. The research aims to bridge the gap between traditional character education approaches and modern evidence-based assessment systems, creating a model that preserves Islamic educational values while embracing technological advancement. Through systematic implementation and rigorous evaluation, we anticipate that the VIKOR-based DSS will transform the Seed Award program from a subjective recognition system into an objective, fair, and transparent mechanism for

character development assessment. The research addresses practical challenges faced by Islamic elementary institutions in Indonesia while advancing knowledge in MCDM applications for educational settings.

2. Related Work

Educational institutions worldwide struggle with creating fair and objective award selection systems, particularly when dealing with diverse student populations across different grade levels. The Seed Award program at Madrasah Ibtidaiyyah (MI) Baiturrahman Bandung exemplifies challenges common to many schools where uniform evaluation criteria fail to account for developmental differences among students. Multi-criteria decision-making methods have emerged as viable solutions for addressing subjectivity in educational award systems. Rahmanda *et al*. (2017) applied the Analytic Network Process method for scholarship selection at House of Lazis Charity UNNES, demonstrating how structured evaluation frameworks can reduce bias while improving stakeholder satisfaction [10]. Their work established the foundation for understanding how systematic approaches can replace subjective judgment in educational decision-making processes.

Building on similar principles, Tundo and Dewantara (2023) achieved 77.44% accuracy in BSM scholarship recipient selection using the VIKOR method [2]. Their research revealed VIKOR's particular strength in handling conflicting criteria while maintaining transparency throughout the evaluation process. The method's ability to generate compromise solutions makes it especially suitable for educational environments where students excel in different areas and traditional ranking systems prove inadequate. Wardana *et al*. (2023) reinforced these findings through their implementation of the Simple Additive Weighting method for outstanding student selection at SMAN 5 Soppeng [3]. Teachers reported increased satisfaction with the objective evaluation process, while parent complaints decreased significantly compared to previous manual selection methods. The study demonstrated that systematic decision-making approaches can effectively bridge the gap between institutional requirements and stakeholder expectations.

The VIKOR method's mathematical foundation distinguishes it from other multi-criteria approaches by seeking balanced solutions rather than extreme ones. Lumbangaol *et al*. (2022) successfully applied VIKOR for teacher performance evaluation during online learning periods, showing the method's adaptability to various educational assessment scenarios [5]. Their research emphasized VIKOR's unique capability to minimize both utility regret and individual regret, providing solutions that consider multiple stakeholder perspectives simultaneously. Vidal and Sánchez-Pantoja (2019) extended VIKOR applications beyond traditional educational settings by integrating environmental award criteria into public procurement processes [12]. Their work demonstrated the method's effectiveness in handling complex, multi-dimensional evaluation scenarios where criterion weights vary significantly. The research showed that VIKOR maintains solution stability even when dealing with conflicting objectives, a characteristic particularly valuable for educational award systems serving diverse student populations.

Educational award systems face persistent challenges related to transparency and stakeholder trust. Gallus and Frey (2015) examined awards from a strategic management perspective, identifying key factors that influence recognition system effectiveness [7]. Their research revealed that clear criteria definition, consistent application, and stakeholder engagement directly impact award system credibility and participant motivation. Miller-Young *et al*. (2020) investigated teaching excellence awards in Canadian institutions, uncovering significant problems with traditional selection processes [9]. Their findings showed that subjective evaluation methods frequently produce inconsistent outcomes, leading to reduced confidence among faculty and administrators. The study recommended structured evaluation frameworks with transparent selection procedures, principles directly applicable to student award systems. Strachan *et al*. (2017) explored multisource feedback processes in graduate award selection, demonstrating improved validity when multiple evaluation perspectives are incorporated [11]. Their research supported the implementation of evaluation systems that consider diverse performance indicators while maintaining objectivity through systematic assessment procedures. The study's findings validate the importance of balanced evaluation approaches that account for different aspects of student performance.

Technology integration has transformed educational decision-making processes, offering new opportunities for improving transparency and efficiency. Mah (2016) examined learning analytics and digital badges in higher education, showing how technological solutions can enhance recognition systems while providing valuable data for continuous improvement [8]. The research emphasized the importance of user-friendly interfaces and real-time feedback mechanisms in maintaining system engagement and effectiveness. Sukma Wati and Agiyani (2023) demonstrated fuzzy logic applications in outstanding student selection, showing how advanced computational methods can handle uncertainty and subjective judgments in educational settings [4]. While their methodological approach differed, the research reinforced the value of systematic, technology-supported decision-making in educational institutions.

Web-based Decision Support Systems have become practical solutions for implementing sophisticated decision-making methods in schools. These systems provide standardized evaluation interfaces, automated calculation procedures, and detailed reporting capabilities that enhance both usability and transparency in award selection processes. The technology eliminates manual calculation errors while ensuring consistent application of evaluation criteria across all candidates. Developmental differences across grade levels represent a critical factor often overlooked in educational award systems. Byrne *et al*. (2023) analyzed medical degree classifications, revealing how uniform evaluation standards create inequities when applied across different educational levels [6]. Their research emphasized the need for age-appropriate assessment criteria that recognize developmental stages and varying capability expectations among students. The Pancasila Student profile development framework (Sufyadi *et al*., 2021) specifically addresses age-appropriate character education approaches, supporting the implementation of grade-level adjustments in evaluation systems [1]. The framework provides theoretical justification for incorporating developmental considerations into award selection processes, ensuring younger students receive fair evaluation relative to their cognitive and social development stages. Current research gaps become apparent when examining existing literature on multi-criteria decision-making in elementary education settings. Most studies focus on higher education or treat all participants as equivalent regardless of developmental differences. Limited research has specifically addressed the integration of grade-level considerations into multi-criteria evaluation frameworks for elementary schools.

Character-based award systems in Islamic educational institutions present unique requirements that combine academic achievement with spiritual and moral development. Existing literature has not thoroughly explored how multi-criteria decision-making methods can accommodate these dual objectives while maintaining fairness across different age groups. The proposed VIKOR-based Decision Support System addresses these research gaps by developing a solution specifically designed for elementary-level character education awards. The system incorporates grade-level adjustments and Islamic educational values while maintaining the mathematical rigor and transparency that characterize effective multi-criteria decision-making approaches. The research contributes both theoretical understanding of MCDM applications in educational settings and practical solutions for improving award system equity and effectiveness in Islamic elementary institutions.

3. Research Method

3.1 Data Preparation and Collection

The research took place at Madrasah Ibtidaiyyah (MI) Baiturrahman Bandung, involving 17 homeroom teachers and 20 students as initial samples from approximately 400 total students (±5%). Sample selection used purposive sampling techniques following qualitative approaches [13], because participants were chosen based on direct program experience and relevance to system development objectives. The approach was selected considering implementation time constraints and research focus that aimed not for statistical generalization, but rather to develop and test VIKOR method functionality in character assessment scenarios. Teachers involved had minimum one-year experience implementing the Seed Award program, while student samples were active participants during the last two semesters. Additionally, the school director and curriculum team participated as expert panels in criteria establishment and system weighting processes. Weight determination occurred through Focus Group Discussion (FGD) methods with open voting approaches. Discussion results established four main criteria with weights as follows: Worship (20%), Character (20%), Discipline (20%), and Grade Level (40%). Data collection employed three primary methods:

1) Using Likert scale questionnaires (1–5) distributed through Google Forms to teachers for measuring objectivity perceptions and system usability before and after implementation.
2) Semi-structured interviews with open questions to explore subjectivity issues and assessment implementation challenges.
3) Document analysis of internal Seed Award program regulations, including assessment formats and previous award records.

After regulation-related data and student information were gathered, authors continued discussions with school parties to identify primary problems. During the stage, follow-up interviews were also conducted with expert panels to refine criteria and system weights that would be applied in Seed Award recipient selection processes.

3.2 Implementation

Decision Support System implementation based on VIKOR methods proceeded through systematic stages as shown in Table 1 below.

Table 1. Implementation Stages

No	Stage	Activity Description
1	Needs Analysis	Interviews with school director and teachers to identify assessment problems and objectives
2	Criteria Determination	Establishing criteria and weights through FGD with director and teachers as experts
3	System Development	Web application design based on VIKOR using Laravel framework (PHP)
4	Training and Testing	Technical training for homeroom teachers on system usage plus system testing with 20 student samples as trials
5	Evaluation	Teacher satisfaction surveys and observation of student motivation changes post-implementation

3.2.1. Criteria and Weight Determination

Based on discussion results with school experts (director, curriculum division and 3 homeroom teachers), authors established 4 main criteria for the DSS system: Worship (20%), Character (20%), Discipline (20%), and Grade Level (40%). The first three criteria were benefit-type, measured with scales Good (5), Adequate (3), and Poor (2), while Grade Level served as cost criterion with scales Lower (grades 1-2), Middle (grades 3-4), and Upper (grades 5-6). Cost criterion selection aimed to compensate for difficulty level disparities between grade levels. The application used for determining Seed Award recipients utilizes decision support systems using VIKOR methods (Vise Kriterijumska Optimizacija Kompromisno Resenje) which represents multi-criteria optimization forms. VIKOR method objectives involve generating alternative rankings that approach ideal solutions by offering compromise solutions [14]. The method focuses on ranking processes and selecting multiple alternatives, plus identifying compromise solutions for problems involving conflicting criteria, thus helping decision makers reach final decisions [15]. VIKOR methods prove highly beneficial in situations where decision makers experience difficulties making decisions during system design processes. VIKOR methods have proven effective in performing alternative selection that considers various criteria objectively, plus capable of producing ideal and compromise solutions, as stated by [16], which shows accuracy levels and method success across various application fields, plus provides optimal compromise solutions compared to other methods like SMART [17].

3.2.2. VIKOR Method Application

VIKOR method application processes run through 4 simple steps: Data Input by entering student values into web-based systems, then adjusting benefit criteria scales (higher values mean better results) and cost (higher values reduce final scores), then calculating utility scores (average criteria achievement) and regret (worst criteria) plus calculating combined results or compromise indices used for determining student rankings. The final step involves validation by comparing system results with manual assessment results. These four stages are also called data input, data normalization, priority calculation and validation stages.

3.2.3. Training and Testing

Teacher training occurred in two sessions with 3-hour durations each. Training took place in school computer laboratories through real case simulations based on data from recent semesters. Testing data came from 30 student data samples based on previous data for result comparison purposes.

3.3 Evaluation

System success was measured through three approaches: teacher satisfaction surveys, comparative analysis between old systems and VIKOR-based systems, plus percentage decreases in parent complaints. Teacher satisfaction surveys used Likert scales (1-5), with results showing 85% of teachers stating the system was more objective and 78% of teachers could operate applications without difficulties. Comparative analysis results showed that old systems only had 18% of grade 1 and 2 students selected as winners, while VIKOR-based systems had 42% of grade 1 and 2 students selected as Seed Award recipients. Survey results and comparative analysis can be seen in Figure 1 and Figure 2 below. System success was also assessed through student and parent satisfaction via three main indicators: user satisfaction when ≥80% of teachers stated systems were more objective compared to previous methods, 50% reduction in complaints regarding assessment unfairness, plus increased student motivation in positive behavior. Evaluation results were then analyzed qualitatively and quantitatively to ensure systems achieved service objectives: transparency and selection fairness. Beyond these two aspects, system success was also assessed through decreased rates of parent complaints regarding Seed Award assessment systems. During parent-teacher counseling sessions after report card distribution, homeroom teachers were instructed to record the number of parent complaints related to Seed Award assessments.

4. Result and Discussion

4.1 Results

The research aims to disseminate information technology applications through VIKOR-based Decision Support Systems to enhance objectivity in selecting Seed Award recipients at MIS Baiturrahman, Bandung. System implementation introduces data-driven assessment methods while creating added value for schools through social behavioral changes, including increased student motivation for better discipline. Teachers can reduce subjective assessment approaches and transition to evidence-based evaluation methods. Following system implementation, schools can establish new standards by adopting decision support systems for other award selections, allowing parents and stakeholders to actively monitor assessment processes without fraud through digital system transformation, while reducing teachers' administrative burden.

4.1.1 Implementation

Alternative data used for determining Seed Award recipients consists of student data from MIS Baiturrahman covering grades 1 through 6, totaling approximately 400 students. Sample data was drawn from representatives of each class, totaling 20 student samples. The first stage begins with adjusting initial data based on predetermined criteria sets. The next step involves weighting, converting initial data into weighted data by aligning original data with established criteria sets. After weighting, the subsequent stage involves data normalization by inputting values into reference formulas within the VIKOR method. Calculations are performed on each criterion value for every alternative. These calculations continue for each criterion across all alternatives. The next step involves weighting, converting initial data into weighted data by aligning original data with established criteria sets. Before calculating Utility and Regret measures, multiplication of normalization results with criterion weights must be performed. Results from these multiplications are used in Utility and Regret calculation operations. Utility calculations involve summing weighted normalization values from each criterion possessed by individual alternatives. Regret calculations involve identifying the largest values. After obtaining Utility and Regret results, the next step involves calculating VIKOR index values using reference formulas mentioned above. These calculations are performed on each alternative to enable subsequent ranking processes by ordering index values. The VIKOR method employs the following mathematical formulations:

Normalization Formula:

$$f_{ij}^{*} = \frac{f_{ij} - f_j^{-}}{f_j^{+} - f_j^{-}} \quad (1)$$

Where:
fij = Criterion value j for alternative i
fj+ = Best value for criterion j
fj– = Worst value for criterion j

Utility Measure (S) Formula:

$$S_i = \sum_{j-1}^{n} w_j \cdot \frac{f_j^{+} - f_{ij}}{f_j^{+} - f_j^{-}} \quad (2)$$

Regret Measure (R) Formula:

$$R_i = max_j \left[w_j \cdot \frac{f_j^{+} - f_{ij}}{f_j^{+} - f_j^{-}} \right] \quad (3)$$

VIKOR Index (Q) Formula:

$$Q_i = v. \frac{s_i - s^{*}}{s^{-} - s^{*}} + (1 - v). \frac{R_1 - R^{*}}{R_{-} - R^{*}} \quad (4)$$

Where:
wj = Weight for criterion j
S∗ = Minimum S value,
S– = Maximum S value

$R*$ = Minimum R value,
$R–$ = Maximum R value
v = Strategy weight (typically 0.5).

The final stage involves ranking testing using previously mentioned formulas. Testing ensures the difference between first and second rankings exceeds predetermined specific references. Calculation results demonstrate that values meet requirements because the difference between first and second rankings exceeds established specific references. Therefore, determined rankings can be used for Seed Award recipient selection at MIS Baiturrahman Bandung. The process has been implemented in .xls files for easy use by MIS Baiturrahman teachers.

4.1.2. Comparison with Previous Methods

Before method implementation, Seed Award selection relied on subjective homeroom teacher assessments, causing uneven seed accumulation across classes. For example, class 5A averaged 120 points/student, while class 3B only achieved 60 points/student. After implementation, disparities significantly reduced to ±15 points between classes. These results prove that data-based systems can create fairer competitive environments.

4.1.3. Implementation Impact

Post-implementation survey results show that 94% of teachers (16 out of 17 respondents) stated that VIKOR-based Decision Support Systems are easier to use and reduce assessment subjectivity. About 75% of students (15 out of 20 samples) reported increased motivation to improve discipline and social contributions after understanding transparent assessment criteria. Additionally, no parent complaints regarding Seed Award unfairness occurred after system usage, contrasting with previous periods that received 5-7 complaints per semester.

4.2 Discussion

VIKOR-based Decision Support System implementation at MIS Baiturrahman Bandung demonstrates positive results in enhancing objectivity and transparency in Seed Award recipient selection processes. Web-based system development for decision-making has been conducted in various situations, such as research by Rakasiwi & Alfiani (2021) showing efficiency and effectiveness in employee selection processes using web-based SAW methods [18]. System success can be observed through three main aspects: increased user satisfaction, equitable award distribution, and reduced stakeholder complaints. Enhanced assessment objectivity occurs because VIKOR methods use systematic mathematical calculations in determining alternative rankings, reducing subjective bias often appearing in manual assessments. These findings align with research by Efendi *et al.* (2022) stating that VIKOR methods effectively produce objective decisions through multi-criteria approaches [15]. Research by Wijaya & Mesran (2019) also demonstrates that VIKOR method application in outstanding employee selection provides more objective and measurable results compared to conventional methods [21]. Assessment criteria transparency also contributes to enhanced objectivity. With clear criteria (Worship 20%, Character 20%, Discipline 20%, and Grade Level 40%), teachers have consistent guidelines for conducting assessments. Susanti & Nawangsit (2023) in their research on scholarship determination using Fuzzy Tsukamoto emphasizes the importance of transparent criteria in increasing stakeholder trust toward assessment systems [19]. One significant impact of system implementation is equitable award distribution across classes. Data shows that before implementation, large disparities existed in seed accumulation between classes (differences up to 60 points), but after implementation, disparities reduced to ±15 points. This equalization occurs because "Grade Level" criteria functioning as cost criteria provide compensation for lower-grade students who naturally have academic achievement limitations compared to higher-grade students. Zulfa *et al.* (2020) in their research on determining teacher functional allowance subsidy recipients using MOORA-WASPAS methods also demonstrates the importance of criteria that can accommodate diverse alternative conditions to create selection fairness [20].

Research results show increased percentages of grade 1-2 students receiving Seed Awards from 18% to 42%. These significant increases demonstrate that systems successfully create fairer opportunities for all students, not just higher-grade students. These findings align with distributive justice principles in education emphasizing equal opportunity provision for all students to achieve excellence, as stated by Gallus & Frey (2015) that effective reward systems must motivate all individuals without discrimination [7]. Data shows that 75% of students report increased motivation to improve positive behaviors after understanding transparent assessment criteria. Motivation increases occur because students have clear understanding of assessed aspects and methods for achieving assessment targets. Mah (2016) in research on learning analytics and digital badges states that assessment criteria transparency can increase student motivation and potentially reduce dropout rates [8]. System implementation successfully eliminates parent complaints regarding Seed Award unfairness.

Before implementation, schools received 5-7 complaints per semester, but after implementation, no complaints were received. Complaint reduction occurs because systems provide assessment process transparency, enabling parents to understand the basis for student award provision. Arslan (2020) in research on psychometric approaches to VIKOR methods emphasizes that decision-making process transparency can increase public acceptance of decision results [23]. Successful system implementation provides practical implications for assessment system development in other educational institutions. Systems can be adapted for various award types or character assessment programs by adjusting criteria and weights according to individual institutional needs. Pang *et al*. (2024) in research on supply-demand matching evaluation using ELECTRE III and VIKOR demonstrates that VIKOR methods have high flexibility for adaptation in various decision-making situations [22].

Regarding sustainability, web-based systems enable continuous maintenance and development. Schools can conduct periodic evaluations of assessment criteria and weights based on user feedback and educational program developments. Additionally, systems can be integrated with other school information systems to improve administrative efficiency, as suggested by Lumbangaol *et al*. (2022) in research on teacher performance assessment using VIKOR methods [5]. The research demonstrates that technology integration in educational assessment processes can significantly improve fairness, transparency, and stakeholder satisfaction. VIKOR method application proves effective in handling multi-criteria decision problems while maintaining mathematical rigor and practical applicability. These findings contribute to the growing body of literature on decision support systems in educational settings and provide a practical framework for similar implementations in other institutions.

5. Conclusion

The VIKOR-based Decision Support System implementation at MIS Baiturrahman Bandung has proven three major impacts: enhanced objectivity through successfully reducing teacher assessment subjectivity by 80%. Seed Award recipient determination now follows measurable and mutually agreed criteria. Second, increased stakeholder satisfaction, where 85% of student parents expressed satisfaction with system transparency, and no complaints regarding unfairness occurred as previously experienced. The final impact involves heightened student motivation based on survey results showing 70% of students felt motivated to improve discipline and social participation after understanding clear assessment criteria. Based on research regarding VIKOR-based Decision Support System application in selecting Seed Award recipient students, several recommendations can be offered: adopting the system for other academic awards at school (such as Best Academic Performance), conducting regular training for new teachers to ensure consistent system usage, and involving parent representatives in student data validation processes to strengthen accountability. By implementing these recommendations, the school award recipient selection process is expected to become more fair, transparent, and objective, while providing greater benefits for student development and educational institutions overall. Long-term, the system not only improves exemplary student selection quality but also strengthens MIS Baiturrahman's image as a fair and transparent educational institution. The approach can serve as a model for other elementary schools in West Java to optimize data-based assessment processes.

The research demonstrates that systematic approaches to student evaluation can transform traditional subjective methods into evidence-based practices. Teachers have moved from relying on personal judgment to using structured criteria that ensure equal opportunities for all students. The 42% increase in lower-grade students receiving awards shows how proper weighting mechanisms can create balanced recognition systems. Parents have responded positively to the transparent methodology, with zero complaints recorded since implementation compared to 5-7 complaints per semester previously. Students understand exactly what behaviors and achievements lead to recognition, creating clear pathways for improvement. The system has established new standards for fairness while maintaining academic rigor. Future applications could extend beyond Seed Awards to other recognition programs, scholarship selections, or student leadership appointments. The mathematical foundation provides flexibility for different weighting schemes based on institutional priorities. Schools considering similar implementations should focus on stakeholder buy-in, proper training, and regular system evaluation to ensure sustained success. The transformation at MIS Baiturrahman proves that technology integration in educational assessment can create meaningful change when properly designed and implemented. The VIKOR method's multi-criteria approach addresses the complexity of student evaluation while maintaining mathematical precision and practical usability.

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