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Evaluation of Tolerance Character of Elementary School Students Based on Gender Through Network Analysis: Efforts to Strengthen Responsive Character Education

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ABSTRACT: This study aims to evaluate the character values of tolerance of elementary school students based on gender, as well as formulate strategies to strengthen responsive character education. This study uses a quantitative approach with an exploratory descriptive survey design. The sample consisted of 688 students, 72 students were used for instrument quality testing and 616 students for tolerance character value analysis. First, the test results of the instrument with the Rasch model show high reliability of people and items. Second, the descriptive analysis showed that the tolerance levels of male and female students were relatively balanced, with significant differences only in the higher aspect of respect for other people's peers in female students. Third, network analysis revealed that male students' tolerance values were centered around dominant nodes (key indicators), whereas female students formed a more evenly distributed and interconnected value network. Fourth, the implications of these findings highlight the importance of character education strategies that are data-driven, differentiated, and contextual. These strategies are directed at teachers to strengthen classroom instruction by focusing on reinforcing weaker tolerance indicators, at curriculum developers to integrate tolerance values into cross-theme lessons, and at policymakers to design gender responsive training programs.

Keywords: Evaluation of tolerance character; gender; network analysis; responsive character education.

ABSTRAK: *Penelitian ini bertujuan untuk mengevaluasi nilai karakter toleransi siswa sekolah dasar berdasarkan gender, serta merumuskan strategi penguatan pendidikan karakter yang responsif. Penelitian ini menggunakan pendekatan kuantitatif dengan desain survei deskriptif eksploratori. Sampel terdiri dari 688 siswa, sebanyak 72 siswa digunakan untuk pengujian kualitas instrument dan 616 siswa untuk analisis nilai karakter toleransi. Pertama, hasil uji instrument dengan model Rasch menunjukkan reliabilitas person dan item yang tinggi. Kedua, analisis deskriptif menunjukkan bahwa tingkat toleransi siswa laki-laki dan perempuan relatif seimbang, dengan perbedaan signifikan hanya pada aspek penghargaan terhadap padangan orang lain yang lebih tinggi pada siswa perempuan. Ketiga, network analysis menunjukkan bahwa nilai toleransi siswa laki-laki berpusat pada simpul dominan (indikator kunci), sedangkan siswa perempuan membentuk jaringan nilai yang lebih merata dan saling terhubung. Keempat, implikasi temuan ini menegaskan pentingnya strategi pendidikan karakter yang berbasis data, diferensial, dan kontekstual. Strategi ini ditujukan kepada guru untuk memperkuat pembelajaran di kelas dengan menekankan penguatan indikator toleransi yang*

masih lemah, kepada pengembang kurikulum untuk menintegrasikan nilai-nilai tolernasi ke dalam lintas tema pelajaran, dan kepada pembuat kebijakan untuk merancang program pelatihan yang responsif terhadap gender.

***Kata Kunci**: Evaluasi karakter toleransi; gender; network analysis; pendidikan karakter yang responsif.*

INTRODUCTION

Character education plays an important role in shaping a generation that is not only intellectually intelligent but also resilient in terms of social and moral values. In a pluralistic society, the value of tolerance becomes a key foundation for students to be able to accept differences, interact harmoniously, and uphold empathy. This value becomes increasingly relevant in the era of globalization and Society 5.0, which is marked by the integration of technology into all aspects of life, including education.

The concept of Society 5.0 emphasizes the importance of using technology to solve social problems and improve human quality of life. In the context of primary education, it is important for teachers and schools to not only promote digital literacy skills, but also integrate value based education to prevent students from being affected by the negative impacts of the digital era, such as intolerance, social polarization, or hate apeech (Verkuyten et al., 2019); (Aswat et al., 2025). Globalization has increased the intensity of cross-cultural interactions, so the ability to live together in diversity has become a fundamental competence that every student must possess.

The weak of tolerance values among elementary school students is clearly reflected in the high number of bullying cases occurring in the school environment. Data from the Indonesian Teachers' Union Federation (FSGI) shows that approximately 30% of bullying cases occur at the elementary school level (Septiyani & Ahmad, 2024). This phenomenon indicates that many students still have low levels of empathy and face difficulties in building healthy social relationships, as well as a lack of appreciation for differences (Ho et al., 2021). When schools fail to create an inclusive and supportive environment, students become more vulnerable to psychosocial issues such as anxiety, depression, and social withdrawal (Maromi et al., 2024).

This situation demands the role of elementary schools as the foundation for the internalization of tolerance values from an early age, in order to prevent conflict escalation and build a safe and supportive school culture (P. A. Hidayat & Kurniawan, 2024). Several previous studies have also highlighted the urgency of character education based on tolerance in promoting a healthy social life in elementary schools (Rispawati et al., 2022). Research by (Munzir, 2024) shows that well designed curricula that explicitly integrate tolerance values can effectively shape students' positive attitudes toward their peers. However, most previous studies remain descriptive and normative, with an emphasis on efforts to reduce deviant behaviors such as bullying (Heriawati & Manik, 2023). Unfortunately, such approaches have yet to deeply explore the internal structure of positive character traits like tolerance.

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Furthermore, the approaches used to evaluate tolerance values have not yet thoroughly addressed the internal structure of character in a holistic manner. Existing evaluations tend to be linear, isolating indicators separately, thus failing to capture the interconnectedness among values within the framework of positive character such as tolerance. For instance, a study by (Aluf et al., 2024) showed that students' understanding of tolerance is significantly influenced by learning methods and the involvement of the social environment, but the evaluation tends to focus more on outcomes or products rather than the relationship between character value elements in the process of formation. Similarly, the study by (Pitaloka et al., 2021) described the teacher's role in instilling tolerance values without involving a structural mapping of the complex relationships among these indicators. Both studies reflect that the evaluation practices used have not sufficiently captured the dynamics of value interactions, which are actually important for formulating more responsive and contextual character education interventions. As emphasized by (Busro & Gateri, 2023), practical and contextual character assessments can provide valuable insights into students' development and help facilitate targeted interventions that effectively support the growth of their character.

In addition, gender differences in shaping tolerance character are still often viewed as a secondary variable, and are more frequently used as a context in studies of deviant behaviors such as bullying rather than as a foundation for analyzing positive character traits like tolerance. Various studies that link gender and students' social interactions generally focus more on patterns of aggression or forms of bullying based on gender (Jiang & Shi, 2024); (Perazzini et al., 2025). Meanwhile, studies that explicitly examine the structure of tolerance values based on gender remain very limited, although empirical evidence shows significant differences in how male and female students understand and express tolerance values (Zhou et al., 2023). Research that integrates gender-based tolerance character analysis within students' social network structures is still very scarce.

This limitation indicates that the evaluative approaches used have not been sufficient to reveal the dynamics of tolerance values comprehensively, particularly within the social structures that differ between male and female students. Therefore, research is needed with a network analysis approach to map the relationship between indicators and the strategic positions of students in the value network. In examining the characteristics of tolerance, it is important to consider how student networks influence each other and how these influences can differ between male and female students.This approach allows mapping of central nodes in the dynamics of social relations and provides a more comprehensive understanding of student interactions based on gender (Saqr et al., 2022); (Fitriyana, 2020). Study is needed that not only measures character quantitatively but also maps the social structure of its formation comprehensively to design a more appropriate and contextual strategy for strengthening character education.

A study that not only measures character quantitatively, but also maps the social structure of its formation comprehensively, is needed to design a strategy

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to strengthen character education that is more targeted, contextual, and responsive to gender differences. Therefore, the purpose of this study is to comprehensively evaluate the character value of tolerance of elementary school students based on gender through a network analysis approach, as well as formulate a strategy to strengthen responsive character education.

The results of this research are expected to provide a significant contribution to designing character education policies that are data-driven, differentiated, and contextual. The implications of these findings demand a shift from normative character education practices toward strategies that emphasize fairness and representativeness based on empirical evidence. Accordingly, this research presents conceptual and practical challenges for teachers, curriculum developers, and policymakers to formulate character education interventions that genuinely respond to students' real needs in a measurable and dynamic way.

This research is focused on answering several key questions that reflect the focus of the study, including: 1) How is the quality of the tolerance character measurement instrument for elementary school students? 2) How is the profile of tolerance character formed among male and female students in elementary schools? 3) Are there significant differences in tolerance values between male and female students in elementary schools? 4) What are the implications of the findings on students' tolerance values for strategies to strengthen responsive character education in elementary schools?

RESEARCH METHOD

Research Type and Design

This study employs a quantitative approach with a descriptive-exploratory survey design. The research stages are systematically structured to address four interrelated research questions. Prior to conducting the main analysis concerning differences in students' tolerance character based on gender, the initial phase involves testing the quality of the measurement instrument. This testing is essential to ensure that the instrument used meets strong reliability criteria, thereby allowing the collected data to be scientifically accountable. Various methods are used to evaluate these aspects, including factor analysis, internal consistency tests, and reliability testing using coefficients such as Cronbach's alpha (Muttaqin et al., 2020).

Furthermore, comparative design is used to identify differences in tolerance character between male and female students, while exploratory design is used to map the structure of the relationship between tolerance indicators through the Network Analysis approach. This approach not only allows the identification of differences in scores between groups, but also opens space to explore patterns of relationships between aspects of tolerance structurally, which are often not captured by conventional statistical approaches. An important role as a method that focuses on the relationship between individuals (nodes) in a social network (Latuconsina et al., 2023). Mapping the relationship between indicators is very relevant to reveal the key elements that drive students' tolerance attitudes in the school environment.

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Research Sample

This study involved a total of 688 high grade elementary school students (grades IV, V, and VI) consisting of 346 male students and 342 female students, spread across 7 elementary schools from Baubau city. The sampling technique was carried out by purposive sampling, with the consideration that high grade students have a more mature level of socio-emotional development, making it more suitable for measuring aspects of tolerance character, as well as representation of varied school backgrounds. This is in line with the idea (Sospeter et al., 2021) that children at this stage of development have more complex and diverse social interactions that they experience at school. By using purposive sampling, this study was able to more deeply explore the relationship between social-emotional development and character, an association that is fundamental in the formation of student identity in diverse school environments (Odak et al., 2023). The research sample was divided into two main groups according to the focus of the research question.

Table 1. Research sample data

School Name	Class	Number of Students	M	F
SDN 2 Baubau	IV	54	29	25
	V	45	21	24
	VI	36	19	17
SDN 2 Batulo	IV	27	13	14
	V	26	12	14
	VI	29	16	13
SDN 2 Baadia	IV	14	6	8
	V	20	10	10
	VI	51	22	29
SDN 1 Baadia	IV	39	16	23
	V	30	19	11
	VI	26	15	11
SDN 1 Wameo	IV	41	19	22
	V	42	25	17
	VI	47	24	23
SDN Wangkanapi	IV	25	12	13
	V	27	12	15
	VI	20	11	9
MIN 1 Baubau	IV	28	13	15
	V	33	19	14
	VI	28	13	15
Amount	**21**	**688**	**346**	**342**

First, for the instrument testing stage, the research involved 72 students, consisting of 35 male and 37 female students, in high grades (IV, V, and VI) at SDN Wangkanapi, Baubau City as the pilot sample. Second, the explorative and

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comparative stages focused on answering the second and third research questions, namely mapping students' tolerance character profiles and analyzing differences based on gender, involved 616 students, including 311 boys and 305 girls, from six primary schools in Baubau City. These schools were spread across different areas to represent the diversity of students' social and cultural backgrounds. This is because the quality of students' interactions in diverse environments determines how they understand and apply these values in their daily lives (Nielsen et al., 2019).

Research Instruments

Data collection using a tolerance character questionnaire consisting of 32 statement items, arranged on a 4-point Likert scale, namely Very Suitable (VS = 4), Suitable (S = 3), Not Suitable (NS = 2); and Very Not Suitable (VNS = 1). The following is the tolerance questionnaire lattice used:

Table 2. Lattice of Tolerance Character Questionnaire Instrument

Aspect	Dimensions	Indicator	Statement Number
1. Cooperation 2. Respect for others' views 3. Awareness	Openness	Focus on accepting differences and listening to others' opinions.	1, 2, 3, 4, 9, 10, 11, 12, 29, 30, 31, 32
1. Social support 2. Friendly attitude without discrimination	Justice	Emphasis on treating others equally without discrimination.	5, 6, 7, 8, 13, 14, 15, 16
1. Self-control 2. Empathy 3. Peace	Peace	Emphasizes the ability to maintain good relationships, avoid conflict, and promote harmony.	17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28

Adapted from: (Sujati et al., 2021); (Zahro' et al., 2022); (Nasution et al., 2023); (Indriani & Ibrahim, 2021); (Asrial et al., 2022).

The following is an example of a research questionnaire that aims to determine the development of students' tolerance character in terms of cooperation, respect for differences, awareness, social support, friendly attitudes without discrimination, self-control, empathy, and peace:

Table 3. Tolerance character questionnaire

Aspect	Elements	Statement
Cooperation	*Imitation*	I see my friends helping each other when there is a group assignment.
	Internalization	I feel that working with friends can help me complete tasks more easily
	Action	I actively cooperate when there is a group assignment.

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	Habit	I always cooperate with friends in group work without having to be asked by the teacher or friends.
Social Support	*Imitation*	I see my teacher encouraging students to help each other in learning activities, and I want to do so
	Internalization	I believe all friends deserve to get help, regardless of their differences
	Action	I help my friends when they have difficulty in learning
	Habit	I feel happy if I can help a friend who needs help.
Respect for others' views	*Imitation*	I saw my teacher listening and valuing each student's opinion, and I wanted to try to do the same to my friends.
	Internalization	I feel that respecting my friends' opinions is good and important.
	Action	I listen to my friends' opinions even if they differ from mine.
	Habit	I accept that my friends have different ways of thinking from me.
Friendly attitude without discrimination	*Imitation*	I see my friends being friendly to everyone, and I want to do the same.
	Internalization	I believe all friends should be treated well regardless of differences.
	Action	I do not discriminate against my friends even though they have different religions or ethnicities.
	Habit	I am used to not retaliating if my friends do things that I don't like.
Self-control	*Imitation*	I see my teacher staying calm when facing difficult situations in class, and I want to try to stay calm when I feel upset with a friend.
	Internalization	I find it important to calm myself down when I am upset with friends, so as not to hurt their feelings.
	Action	I don't make fun of my friends even though they are different from me.
	Habit	I always try to stay calm when feeling upset and never tease my friends in any situation.

Data Analysis Technique

Instrument Quality Analysis

The first step in this research is to test the quality of the tolerance character questionnaire instrument before it is used in broad-scale data collection. The test was conducted on 72 high grade students at SDN Wangkanapi. The analysis was conducted using the Rasch model with the help of Winteps software version 3.73. The purpose of this analysis is to ensure that each statement item on the instrument has adequate validity and reliability. Utilization of Winsteps allows

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in-depth analysis of item fit, which plays an important role in measuring the accuracy of data collected from respondents (Fulmer et al., 2014). Aspects analyzed include person and item reliability, INFIT and OUTFIT MNSQ values to check item fit to the model, and person and item separation to determine the instrument's ability to differentiate student ability levels. In addition, the Wright Map was used to see the distribution of student ability and item difficulty, and the information function graph to assess the effectiveness of the instrument at various levels of respondent ability. The Rasch model approach provides a framework for assessing reliability for both person and item reliability with the ideal value being above 0.7 (Lin et al., 2019).

Descriptive Analysis of Tolerance Character

After the instrument was declared feasible, the next step was to collect data from 616 high grade students in six public elementary schools in Baubau City. The data obtained were analyzed descriptively to obtain an overview of the tolerance character of male and female students. This analysis includes calculating the mean, medium, mode, standard deviation, skewness, and kurtosis (Darmaji et al., 2021), for each of the eight aspects of tolerance character, including cooperation, social support, respect for the views of others, friendly attitude without discrimination, self-control, empathy, peace, and awareness. This gives an idea of how stable students' tolerance character is in a population (Bono et al., 2019). This descriptive information is important as a basis for assessing how strong students' tolerance character is in general, as well as for identifying aspects that may be dominant or weak.

Comparative Analysis by Gender

To answer the question of whether there is a difference in tolerance character between male and female students, a comparative analysis using the independent sample t-test technique was used. This test is carried out for each aspect of tolerance character to determine whether the difference in scores that appear is statistically significant. According to (Mishra et al., 2019) that the t-test is effective in testing hypotheses regarding differences in means, providing a deeper understanding of the characteristics of the groups being analyzed. This analysis is important because it provides an empirical basis for concluding whether gender differences correlate with differences in tolerance characteristics, as well as in what aspects the differences are most pronounced. With this approach, the research results not only describe the general conditions, but also compare the characters directly between two groups based on gender.

Network Analysis

To strengthen and deepen the analysis, a network analysis approach was used to map the connections between indicators of tolerance. (Fan & Li, 2022) highlight the importance of network analysis in understanding the relationships between characters, with a clear methodology for identifying and capturing interactions between characters. In this stage, male and female student data were analyzed separately to reveal the internal structure and dynamics of each group. The network was constructed based on correlations between items and analyzed

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using four main matrices, namely *Betweenness* (position as a connector), *Closeness* (degree of closeness to other nodes), *Strength* (total number of connections), and *Expected Influence* (overall influence of nodes on the network).

Closeness measures how close nodes are to other nodes in a network, which can be considered a measure of communication efficiency within that network (Wahyudi & Gunanto, 2022). Expected Influence predicts the overall influence of a node in a specific context on the network, including how changes in one node can affect other nodes (Prasetya et al., 2014). Visualization is performed using network graphs and centrality plots to display the main nodes. This analysis enables the identification of the most central and influential character indicators in the tolerance network, which can then be used as a basis for developing more targeted character intervention programs.

Integration of Analysis Results for Strategic Recommendations

All analysis results, including those from instrument tests, descriptive tests, comparative tests, and network analysis, were integrated to answer the fourth question and this study. Quantitative data was combined with the visual structure of the indicator network, providing a comprehensive picture in terms of both measurement strength and content characteristics.

RESULT AND DISCUSSION

Result: What is the quality of the character tolerance measurement instrument for elementary school students?

Based on the analysis output (see Figure 1), the person reliability (students) was 0.90, indicating that the instrument has a very high level of consistency in measuring abilities among students. This high reliability means that the instrument can be relied upon to describe real differences in abilities among students (Nugraha et al., 2022).

Meanwhile, the item reliability of (0.75) indicates that the quality of the items is quite good, although there is still room for improvement to be more precise in distinguishing the ability levels between students. The quality of the test items that achieved reliability values indicates that the items are quite good, with room for improvement in the precision of measuring students' abilities (H. Putri et al., 2022). The separation value for person is (2.98), indicating that the instrument is able to differentiate participants into almost three different ability groups, while the item separation is (1.72), indicating that the items can be grouped into approximately two levels of difficulty. Overall, this instrument can be considered quite reliable, especially in identifying differences in ability among students.

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PERSON	72 INPUT		72 MEASURED		INFIT		OUTFIT	
	TOTAL	COUNT	MEASURE	REALSE	IMNSQ	ZSTD	OMNSQ	ZSTD
MEAN	104.0	32.0	-1.23	.34	1.00	-.2	.99	-.2
S.D.	11.8	.0	1.23	.19	.55	2.0	.52	2.0
REAL RMSE	.39	TRUE SD	1.16	SEPARATION	2.98	PERSON RELIABILITY		.90
ITEM	32 INPUT		32 MEASURED		INFIT		OUTFIT	
	TOTAL	COUNT	MEASURE	REALSE	IMNSQ	ZSTD	OMNSQ	ZSTD
MEAN	234.0	72.0	.00	.19	1.00	.0	.99	.0
S.D.	11.8	.0	.38	.02	.24	1.3	.26	1.1
REAL RMSE	.19	TRUE SD	.33	SEPARATION	1.72	ITEM RELIABILITY		.75

Figure 1. Reliabilty instrumen

Based on the item difficulty level analysis (see Figure 2), the *measure* values ranged from (-0.71 - 0.73), with an average value of (0.00) and a standard deviation of (0.38). This indicates that, in general, the difficulty level of the items is evenly distributed around the average ability level of the students, with a relatively balanced distribution of items between easy and difficult. Items with positive measure values, such as items B17 (0.73), B16 (0.66), and B20 (0.50), are classified as difficult because they can only be answered correctly by students with above-average ability. Conversely, items with negative measure values, such as B15 (-0.71), B22 (-0.62), and B13 (-0.58), are classified as easy because they can be answered by students with below-average abilities.

This distribution of difficulty levels indicates that the instrument has sufficient item variation to cover a wide range of student abilities. (Torres et al., 2024) note that items with extreme levels of difficulty can confuse the interpretation of results, so adjustments in the distribution of difficulty are key to improving the quality of assessment. This is important to ensure that the instrument can effectively distinguish between students with low, moderate, and high abilities. However, because the average difficulty is right in the middle (0.00), this instrument appears to be well designed to measure the abilities of the majority of students who are around the average. (Baranowski et al., 2010) emphasize that variation in item difficulty must be considered and that measurements should be adapted to respondent characteristics to enhance validity.

Therefore, overall, it is important to implement a measurement model that not only considers the level of educational difficulty, but also how the items interact with the relative abilities of the participants.

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ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
17	209	72	.73	.16	1.16	1.0	1.13	.7	.46	.50	55.6	50.8	B17
16	212	72	.66	.16	1.79	4.0	1.87	3.4	.38	.50	38.9	51.2	B16
20	218	72	.50	.16	.80	-1.3	.73	-1.2	.53	.48	59.7	51.7	B20
28	218	72	.50	.16	.72	-1.9	.66	-1.7	.60	.48	61.1	51.7	B28
4	220	72	.44	.17	.85	-.9	.85	-.7	.47	.48	48.6	51.9	B4
29	221	72	.41	.17	1.06	.4	1.03	.2	.41	.47	50.0	52.0	B29
18	223	72	.36	.17	.88	-.7	.87	-.5	.53	.47	61.1	52.3	B18
6	227	72	.24	.17	1.29	1.6	1.24	1.0	.40	.46	51.4	53.9	B6
11	227	72	.24	.17	.88	-.7	.85	-.6	.41	.46	66.7	53.9	B11
27	227	72	.24	.17	.94	-.3	.88	-.5	.50	.46	56.9	53.9	B27
30	227	72	.24	.17	.74	-1.6	.72	-1.3	.54	.46	55.6	53.9	B30
9	228	72	.21	.17	.85	-.8	.84	-.6	.44	.45	54.2	54.7	B9
2	230	72	.15	.17	1.31	1.7	1.41	1.6	.31	.45	50.0	55.0	B2
12	232	72	.09	.18	1.38	2.0	1.29	1.2	.33	.44	50.0	55.3	B12
19	232	72	.09	.18	1.01	.1	.98	.0	.49	.44	50.0	55.3	B19
5	237	72	-.07	.18	1.19	1.0	1.16	.7	.38	.43	58.3	56.9	B5
10	238	72	-.10	.18	1.08	.5	1.02	.2	.39	.42	58.3	57.0	B10
23	238	72	-.10	.18	.88	-.6	1.19	.8	.42	.42	70.8	57.0	B23
26	238	72	-.10	.18	1.32	1.7	1.24	1.0	.44	.42	59.7	57.0	B26
31	238	72	-.10	.18	1.00	.0	.93	-.2	.40	.42	56.9	57.0	B31
32	238	72	-.10	.18	.85	-.8	.76	-1.0	.51	.42	65.3	57.0	B32
21	239	72	-.14	.18	1.10	.6	1.22	.9	.39	.42	55.6	57.1	B21
25	239	72	-.14	.18	1.03	.2	.91	-.3	.43	.42	54.2	57.1	B25
22	242	72	-.24	.19	.70	-1.8	1.11	.5	.47	.41	66.7	58.3	B22
24	244	72	-.31	.19	.78	-1.2	.72	-1.1	.48	.40	61.1	59.2	B24
7	245	72	-.35	.19	.83	-.9	.79	-.8	.46	.40	68.1	59.3	B7
1	247	72	-.42	.20	.76	-1.3	.76	-.9	.42	.39	62.5	60.2	B1
14	248	72	-.46	.20	.93	-.3	.82	-.7	.45	.39	72.2	60.6	B14
8	250	72	-.54	.20	.61	-2.3	.64	-1.5	.48	.38	69.4	61.1	B8
13	251	72	-.58	.20	.83	-.9	.80	-.7	.40	.38	59.7	61.3	B13
3	252	72	-.62	.20	1.19	1.0	1.06	.3	.43	.38	59.7	62.5	B3
15	254	72	-.71	.21	1.18	.9	1.12	.5	.34	.37	62.5	63.7	B15
MEAN	234.0	72.0	.00	.18	1.00	.0	.99	.0			58.5	56.3	
S.D.	11.8	.0	.38	.01	.24	1.3	.26	1.1			7.2	3.5	

Figure 2. Instrument Item Characteristics

In terms of item adequacy, the ideal INFIT MNSQ value is around (1.00), with a general tolerance range of (0.7–1.3). Most items in this output have INFIT values within this range, indicating that most items function well and provide information appropriate to the students' ability level. Some items, such as B16 and B2, have INFIT values exceeding the upper limit, indicating potential misalignment. However, overall, the items in this instrument are consistent with the measurement model used.

The Person-Item Map (see Figure 3) shows the distribution of student abilities (on the left) and item difficulty levels (on the right) on the same scale. Most students (marked with X) are in the range between -2 and 0 logit, indicating that the majority have moderate to low abilities. Meanwhile, the items are fairly evenly distributed around the 0 logit point, with some items such as B16 and B17 at higher positions (more difficult), and B15 at the lowest position (easiest). The alignment between the person and item distributions is quite good. This indicates that the instrument is generally suitable for measuring the majority of students.

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Journal of Education and Teaching (JET) Volume 6 No. 2, 2025
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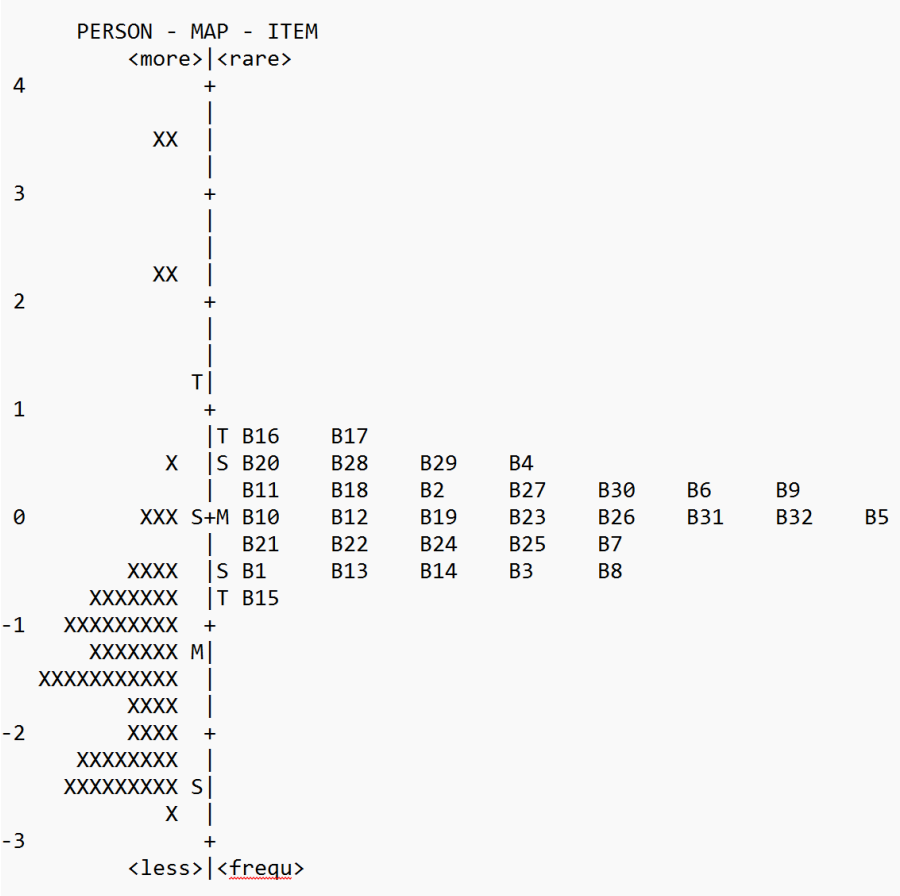

Figure 3. Person-item map (wright map)

The information function graph (see Figure 4) shows that the most informative instruments are in the ability range around (-4 logit), which means that the instruments are very effective in measuring students with low abilities. This occurs because at that point, the instruments are able to provide maximum information with high discriminating power for that group of students (Mandasari et al., 2021). The peak of information at this point indicates that the items in the instrument have high discriminative power and provide maximum information for this group. Conversely, in the medium to high ability range, the information provided by the instrument decreases significantly, with a slight increase around (+8 logit). This pattern suggests that the instrument is more suitable for identifying and distinguishing students with low abilities.

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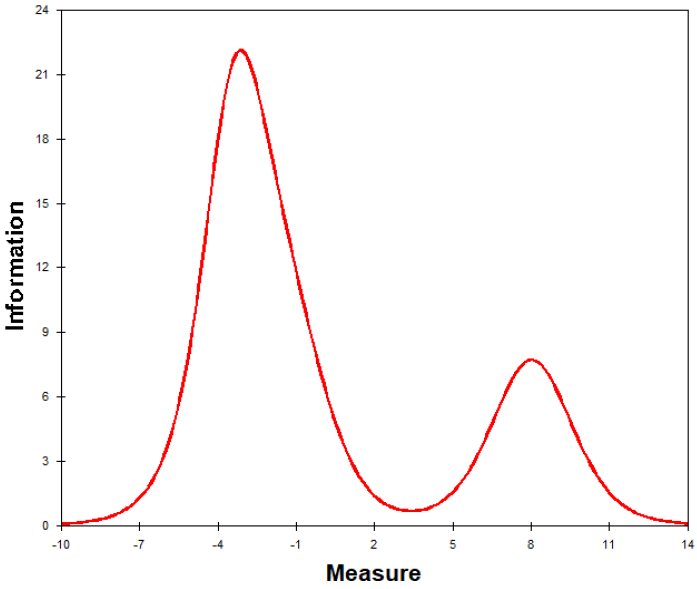

Figure 4. Instrument information function

Figure 4 shows a horizontal axis (Measure) graph that indicates students' ability levels on a logit scale. Negative logit values indicate low ability, zero values indicate average ability, and positive values indicate high ability. The vertical axis (information) shows the amount of information provided by the instrument at each ability level (Uzun & Öğretmen, 2021). The higher the curve, the more accurate the instrument is in measuring ability at that point. This curve indicates that the tolerance character instrument developed is more effective in identifying and distinguishing students with low to moderate ability. This is particularly important for character research at the elementary school level, where ability diversity is still significant, especially in affective and social aspects of tolerance.

How is the character profile of tolerance formed in male and female students in elementary schools?

Male Students

The results of descriptive statistical analysis (see Table 4) show that the tolerance characteristics of male students are generally at a good level, with fairly even average scores across all aspects, the highest being Empathy (EP) at 14.016 and the lowest being Respect for Others' Opinions (PO) at 13.432. The median and mode for all aspects are 14, indicating a stable distribution of values. Most skewness values are negative, indicating a slight leftward skew or dominance of high scores. Low kurtosis values indicate that the data distribution tends to be normal or slightly flat, except for the PO aspect, which is close to a peaked distribution (1.160). Overall, male students demonstrate relatively good tolerance with fairly homogeneous value distribution. In a statistical context, the median value is often considered a better representation of the center of data in a non-normal distribution compared to the mean (Cain et al., 2016).

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Table 4. Descriptive analysis of male students' tolerance characteristics

	KJ	DS	PO	SR	PD	EP	KD	KS
Mean	13.710	13.968	13.432	13.803	13.700	14.016	13.906	13.955
Standard Error	0.097	0.093	0.102	0.091	0.112	0.097	0.100	0.097
Median	14	14	14	14	14	14	14	14
Mode	14	14	14	15	14	15	14	14
Standard Deviation	1.707	1.633	1.797	1.602	1.967	1.700	1.761	1.700
Sample Variance	2.912	2.666	3.230	2.566	3.868	2.890	3.101	2.900
Kurtosis	0.092	1.159	0.160	0.363	1.166	0.304	0.119	1.410
Skewness	-0.531	-0.882	-0.520	-0.498	-1.002	-0.821	-0.751	-1.000
Range	8	9	9	7	11	8	7	10
Minimum	8	7	7	9	5	8	9	6
Maximum	16	16	16	16	16	16	16	16
Sum	4250	4330	4164	4279	4247	4345	4311	4326

Note: KJ= cooperation; DS= social support; PO= respect for other people's views; SR= friendly attitude without discrimination; PD= self-control; EP= empathy; KD= peace; KS= awareness

Figure 5, shows the results of the tolerance character network analysis of male students, mapping the relationships between nodes labeled B1-B32. The thickness of the lines (edges) indicates the strength of the relationships between nodes in the tolerance characters of male students, where thicker lines indicate stronger connections. The blue color with gradations indicates the intensity of connectivity, with dark blue representing the maximum value of (0.23). It can be seen that several nodes, such as B5, B20, B23, B25, B27, and B28, have many strong connections, indicating that they play an important role as connectors or centers in this network. The structure of this network tends to be dense, indicating complex interactions or relationships between nodes in the male student character network. Most of the skewness values observed are negative, indicating that the distribution tends to skew to the left, which indicates the dominance of higher scores (Khan et al., 2020).

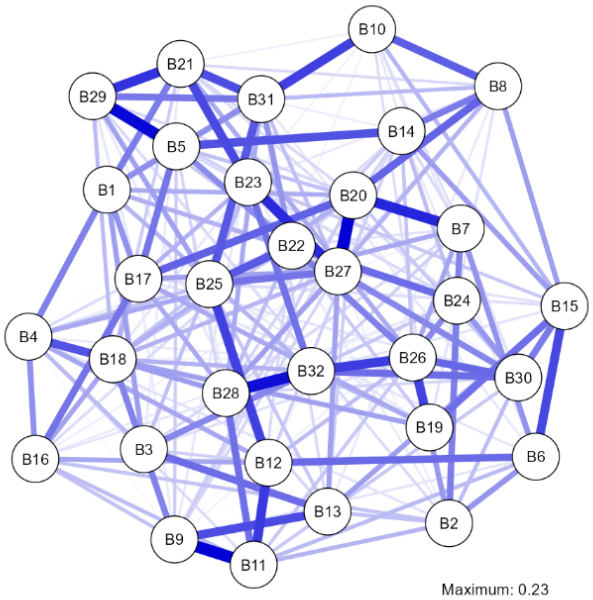

Figure 5. Network between nodes for each item among male students

Output Centrality measures per item (see Table 5) and centrality plots (see Figure 5) show that items B27 and B20 have the highest values in almost all

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dimensions, indicating that they are the most important and influential nodes in the male student tolerance character network. For example, B27 has the highest strength and expected influence values (2.166), as well as a very high closeness value (2.063), indicating that this node is directly and strongly connected to many other nodes and is structurally close to all nodes in the tolerance character network. This is reinforced by the position of B20 and B25, which also have high scores on all metrics, indicating their role as central nodes that can bridge interactions within the tolerance character network. This assessment aligns with research (Sarker et al., 2019) highlighting the importance of important nodes in network structures, as they often serve as primary connections that enhance overall connectivity and functionality.

Conversely, there are a number of items such as B1, B6, and B19 that have negative values in all centrality metrics, indicating that they are on the periphery of the network with weak connectivity. Low or negative strength and expected influence values in these nodes indicate that their contribution to spreading influence or information in the tolerance character network is relatively small. Interestingly, there are also nodes such as B12 and B11 that have positive betweenness values but negative or low strength values, which may indicate that despite having few direct connections, they still play an important role as connectors between different parts of the tolerance character network among male students.

Table 5. Centrality measures per item for male students

Network				
Item	**Betweenness**	**Closeness**	**Strength**	**Expected influence**
B1	-0.292	-0.049	-0.354	-0.354
B2	-1.190	-1.813	-1.360	-1.360
B3	-1.369	-1.632	-1.293	-1.293
B4	-1.010	-0.933	-0.590	-0.590
B5	0.516	-0.058	-0.083	-0.083
B6	-0.292	-0.449	-1.437	-1.437
B7	-0.292	0.334	-0.204	-0.204
B8	-0.920	-0.810	-0.791	-0.791
B9	-0.651	-1.215	-0.414	-0.414
B10	-0.920	-0.783	-1.557	-1.557
B11	0.337	-0.456	0.291	0.291
B12	1.504	0.970	-0.376	-0.376
B13	-0.292	-0.963	-0.876	-0.876
B14	-1.190	-1.127	-0.849	-0.849
B15	1.055	0.262	0.121	0.121
B16	-1.190	-1.586	-1.287	-1.287
B17	0.696	0.581	0.648	0.648
B18	-0.292	-0.048	1.403	1.403
B19	-0.561	-0.072	-1.410	-1.410
B20	2.133	1.817	1.389	1.389
B21	0.157	0.300	0.153	0.153
B22	0.067	0.569	0.593	0.593

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Network				
Item	**Betweenness**	**Closeness**	**Strength**	**Expected influence**
B23	-0.292	0.887	0.176	0.176
B24	-0.741	-0.314	0.409	0.409
B25	1.684	1.384	0.588	0.588
B26	1.325	1.171	1.726	1.726
B27	2.043	2.063	2.166	2.166
B28	-0.202	1.025	0.245	0.245
B29	-0.561	-0.312	0.047	0.047
B30	-0.920	-0.130	0.428	0.428
B31	0.516	0.160	1.367	1.367
B32	1.145	1.227	1.130	1.130

Table 5, presents the centrality measures of each item in the male students' tolerance character network. Four centrality measures were used: betweenness, closeness, strength, and expected influence, which indicate the relative role and influence of each item in the character network structure. Item B27 has the highest value in all metrics (betweenness = 2.043; closeness = 2.063; strength = 2.166; expected influence = 2.166). This indicates that B27 is the most central and dominant node in the male students' character network. This item is highly influential in connecting other indicators and serves as the center of interaction for tolerance values in this group. Conversely, items with low centrality, such as B5 and B6 (strength 0.1 and negative expected influence), indicate that these items are less integrated into the male students' character network and may have a smaller contribution to driving the overall character structure. Overall, the data in this table indicate that although there are several dominant items (B27, B14, B26, and B32), the structure of the male students' tolerance character network tends to be centered on certain nodes, uneven, and reliant on connections from only a few core indicators. This suggests a relatively focused network structure, with key nodes playing a significant role in shaping the overall dynamics of male students' social tolerance.

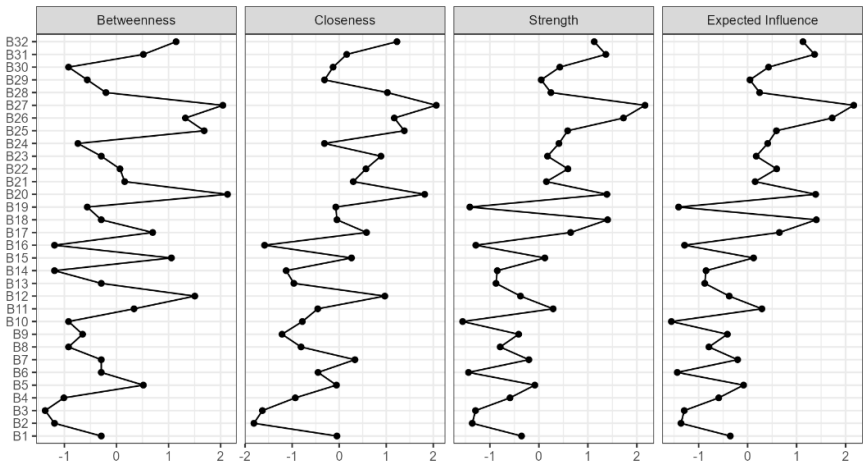

Figure 6. Centrality plot for male students

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Figure 6, shows four *centrality plot* graphs that indicate the level of connectivity and relative influence of each item in the male student tolerance network. The pattern shows sharp fluctuations between items, which means that the network structure is uneven and highly dependent on certain nodes. This supports the conclusion that the male student tolerance network structure tends to be focused rather than evenly distributed. Nodes B27, B26, and B14 consistently occupy top positions across all metrics, indicating that these three nodes are the most central, closest to other nodes, and most influential in shaping the tolerance character structure within this group. Conversely, items such as B5, B6, and B8 have low centrality values in almost all metrics, indicating minimal contribution to the tolerance network of male students. Overall, this graph reinforces the finding that male students' tolerance character is shaped by highly dominant key nodes, while most other items only play peripheral roles. This suggests that character-building interventions for male students should focus on these core indicators to strengthen the value network comprehensively.

Female Students

Based on the results of descriptive statistical analysis (see Table 6), the tolerance characteristics of female students showed relatively high and balanced average scores in all aspects, with the highest average score in the Empathy (EP) aspect (14.190) and the lowest in Cooperation (KJ) (13.692). All median and mode values are at 14, reflecting a symmetrical and consistent data distribution. The skewness is entirely negative, indicating that the data tends to skew slightly to the left, meaning that more students obtained high scores. The kurtosis values vary, with the Respect for Others (PO) aspect having the highest kurtosis (3.489), indicating a more peaked distribution compared to others. Overall, this data indicates that female students have good tolerance and are homogeneous across various aspects.

Table 6. Descriptive analysis of female students' tolerance characteristics

	KJ	DS	PO	SR	PD	EP	KD	KS
Mean	13.692	13.905	13.748	13.895	13.764	14.190	13.948	13.872
Standard Error	0.093	0.091	0.098	0.094	0.100	0.087	0.097	0.095
Median	14	14	14	14	14	14	14	14
Mode	14	14	14	14	14	14	14	14
Standard Deviation	1.627	1.583	1.703	1.643	1.739	1.523	1.697	1.662
Sample Variance	2.648	2.507	2.900	2.699	3.023	2.319	2.879	2.763
Kurtosis	0.671	1.666	3.489	0.795	0.880	0.666	1.626	1.388
Skewness	-0.549	-0.948	-1.133	-0.830	-0.816	-0.662	-1.064	-0.993
Range	10	10	12	9	9	11	9	9
Minimum	6	6	4	7	7	8	7	7
Maximum	16	16	16	16	16	19	16	16
Sum	4176	4241	4193	4238	4198	4328	4254	4231

Note: KJ= cooperation; DS= social support; PO= respect for other people's views; SR= friendly attitude without discrimination; PD= self-control; EP= empathy; KD= peace; KS= awareness

Figure 7, shows the relationship between items (B1-B32) in the tolerance character of female students. It can be seen that several nodes such as B6, B7, B14, B17, B19, B20, B21, B24, B28, and B29 have many strong connections, which

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are indicated by very thick lines, showing the highest correlation between items. The blue color with gradations indicates the intensity of the connections, with dark blue representing the maximum value of (0.27). This suggests that, although there are strong connections between some items, the maximum connectivity value between nodes remains in the moderate category, indicating the presence of complex interactions or relationships between items within the female students' character trait network.

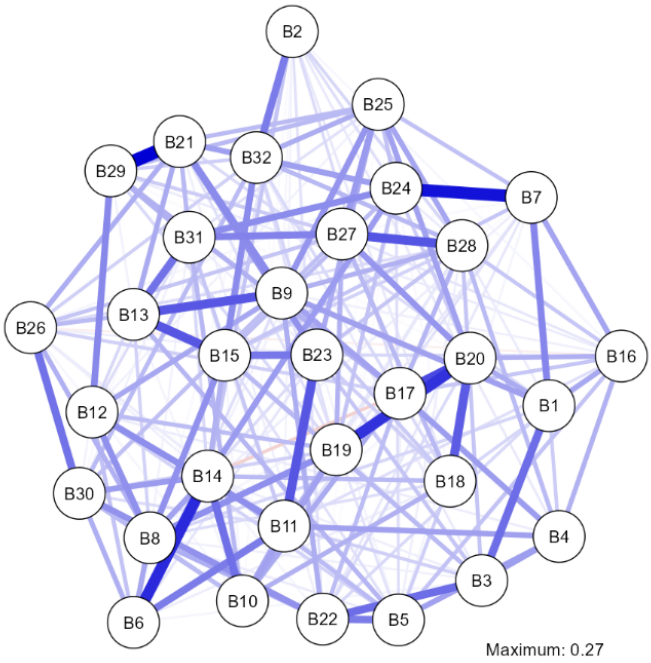

Figure 7. Network between nodes for each item among female students

(See Table 7) and the centrality plot (See Figure 7) indicate that several items play an important role in the network of female students' tolerance characteristics. In Betweenness, items B24 (2.354), B20 (1.878), and B14 (1.783) occupy the highest positions, indicating that these three items often serve as connectors between other items in the tolerance character network. This means they play an important role as communication bridges or connectors within the tolerance character structure. Meanwhile, in Closeness, items B9 (1.588), B13 (1.465), and B12 (1.465) show the highest values, indicating that these items are in strategic positions close to many other items in the network.

In Strength, items B14 (2.334), B20 (1.389), and B9 (1.035) show high direct connection strength with other items. This indicates that these items have strong direct relationships with many other tolerance character items, making them influential centers in the network. Meanwhile, in Expected Influence, the highest values are found in items B14 (1.817), B20 (1.486), and B24 (1.200), reinforcing the importance of these three items in influencing the network as a whole, both directly and indirectly. Thus, B14 and B20 consistently emerge as the most central items in various centrality measures, indicating their dominant role in shaping and unifying the tolerance character of female students.

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Table 7. Centrality measures per item for female students

Network				
Item	Betweenness	**Closeness**	**Strength**	**Expected influence**
B1	0.166	-0.082	-0.694	-0.660
B2	-1.545	-2.983	-2.648	-2.673
B3	-0.024	-0.671	-0.707	-0.673
B4	-0.594	-0.856	-1.354	-1.340
B5	-1.260	-1.183	-0.778	-0.746
B6	-0.594	-0.397	-0.972	-0.946
B7	0.262	-0.152	-0.954	-0.928
B8	-0.119	0.653	0.971	1.055
B9	1.022	1.588	1.035	1.121
B10	-1.260	-0.115	-0.428	-0.386
B11	0.452	0.414	0.839	0.919
B12	-0.689	-0.607	-0.711	-0.678
B13	0.737	1.465	-0.048	0.005
B14	1.783	1.022	2.334	1.817
B15	1.212	1.256	0.994	1.079
B16	-1.260	-1.796	-0.768	-0.972
B17	0.357	0.810	0.438	-0.135
B18	-1.260	-0.816	-0.756	-0.724
B19	0.071	0.555	0.602	0.675
B20	1.878	1.104	1.389	1.486
B21	0.927	0.487	1.037	1.123
B22	0.262	-0.304	-0.302	-0.256
B23	-0.119	0.800	0.094	0.151
B24	2.354	1.171	1.112	1.200
B25	-1.165	0.447	0.372	0.438
B26	-1.165	-1.313	-1.153	-1.368
B27	0.262	0.100	0.285	0.349
B28	-0.689	-0.397	0.944	1.027
B29	-0.594	-0.118	-0.330	-0.285
B30	0.262	-0.482	-0.247	-0.200
B31	-0.404	0.539	-0.046	0.007
B32	0.737	-0.140	0.450	0.518

Table 7, shows the role and influence of each item in the tolerance character network based on four metrics, namely *betweenness, closeness, strength,* and *expected influence*. Items B20, B24, and B26 show the highest and most consistent values across all metrics. This indicates that these three items are central nodes in the female student character network. They play a crucial role in unifying, connecting, and influencing other character indicators. Conversely, B2 and B4 have the lowest and negative values in almost all metrics, indicating that these items are ineffective and isolated within the network, with minimal contribution and even the potential to disrupt cohesion among indicators. This suggests that female students' tolerance character is not only high on average but

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also structured within a more consistent, even, and cohesive value network compared to male students.

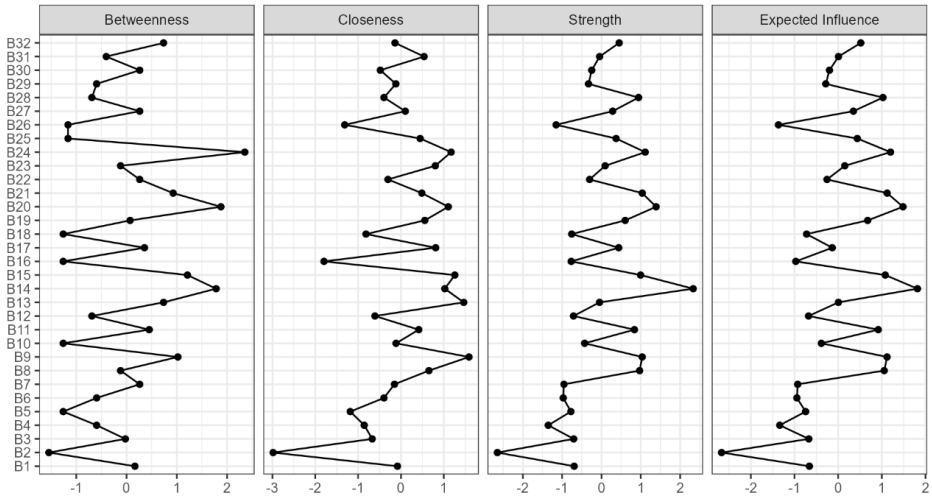

Figure 8. Centrality plot for male students

Figure 8, shows the centrality plot of female students based on four main metrics. The graph pattern shows that the level of connectivity between items is more stable and evenly distributed compared to male students, as indicated by the distribution of centrality values that tend to be spread out and consistent. Some items, such as B20, B24, and B26, stand out in all metrics, indicating a dominant role as central nodes that connect and influence the tolerance character network. There are no extreme fluctuations indicating disconnections between nodes, suggesting that the structure of the tolerance character network among female students is cohesive, well-distributed, and supported by several strong core nodes. This indicates more balanced social maturity and interconnections between character aspects within this group.

Is there a significant difference in the character of tolerance of male and female students in elementary school?

The results of the tolerance character difference test between male and female students in elementary school (see Table 8) show that, in general, there are no significant differences between the two in most aspects of tolerance. This can be seen from the p-value in the Cooperation (KJ) aspect of (0.984), Social Support (DS) of (0.628), Friendliness (SR) of 0.483, Self-Control (PD) of 0.670, Empathy (EP) of 0.322, Peacefulness (KD) of 0.768, and Awareness (LD) of 0.543. P-value > (0.05) in these aspects indicates that there are significant differences.

Table 8. Test of differences in tolerance characteristics between male and female students

Variable Category/Aspect	Gender	t	P-value	95% CI of Mean difference
KJ	Male	0.133	0.984	(-2.246 to 0.282)
	Female			

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DS	Male Female	0.484	0.628	(-0.192 to 0.318)
PO	Male Female	(-2.232)	0.026	(-0.593 to -0.038)
SR	Male Female	(-0.702)	0.483	(-0.349 to 0.165)
PD	Male Female	(-0.427)	0.67	(-0.358 to 0.230)
EP	Male Female	(-1.337)	0.322	(-0.430 to 0.082)
KD	Male Female	(-0.295)	0.768	(-0.315 to 0.233)
LD	Male Female	0.609	0.543	(0.-184 to 0.349)
Toleransi	Male Female	0.206	0.515	(-2.097 to 1.052

Note: KJ= cooperation; DS= social support; PO= respect for other people's views; SR= friendly attitude without discrimination; PD= self-control; EP= empathy; KD= peace; KS= awareness

The results of the total tolerance score test also showed no significant difference between male and female students. The t-value (0.206) with a p-value (0.515) indicates that, overall, the tolerance characteristics of both gender groups are relatively balanced. The 95% confidence interval (-2.097 – 1.052), which includes the zero value, further reinforces that there is no statistically significant difference in the overall tolerance levels. Research by (Owusu et al., 2021) also shows that the differences in the variables they studied were not significant between males and females, confirming that both groups had relatively balanced results in the stress tests conducted. This indicates that in many studies, checking for gender variables often does not yield statistically relevant differences.

However, there is one aspect that shows a significant difference between male and female students, namely in the aspect of Respect for Others' Opinions (PO). The test results show a t-value of (-2.232) and a p-value (0.026), which means that there is a statistically significant difference because the p-value is < 0.05. The confidence interval range (-0.593 to -0.038) does not include zero, indicating that female students tend to have higher scores than male students in terms of valuing others' perspectives. This suggests a tendency for women to be more open and appreciative of diverse viewpoints.

Overall, these results indicate that gender is not always a distinguishing factor in tolerance, except in certain aspects such as respect for other people's views. Research indicates that male and female students can exhibit similar levels of tolerance, although certain nuances require attention. For example, a study by (Hussain & Akram, 2021) found that educational attainment significantly influences tolerance, with individuals with higher education levels tending to exhibit more tolerant attitudes. This finding could serve as an important consideration when designing character education interventions in elementary schools. Character-building programs focused on tolerance should consider potential differences in certain aspects and design approaches that can develop tolerant attitudes evenly among both male and female students. Special emphasis

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can be placed on aspects showing disparities to create a more inclusive and harmonious learning environment.

What are the implications of the findings of students' tolerance character for the strategy of strengthening responsive character education in elementary schools?

The results of this study provide an empirical foundation for designing character education strategies that are not only normative but also truly responsive to the real needs of elementary school students. The main findings indicate that the tolerance of male and female students is generally at a fairly good level and relatively balanced, except in the aspect of respect for the views of others, where female students significantly outperform their male counterparts. Similar to the findings of (Suprihatin et al., 2023) and (Rismi et al., 2022), which indicate that female adolescents tend to have higher levels of social concern than males, as reflected in values of empathy and cooperation. This underscores the importance of a character approach that takes into account psychosocial differences between genders. According to (Mufidah et al., 2021), an inclusive approach and understanding of gender differences can optimize the development of students' character.

The first implication relates to personalization in character education. A generic, one-way approach has proven ineffective in addressing the diverse social and emotional development needs of students. Instead, it must be based on student character profiles. Male students need reinforcement in open-mindedness through active methods such as discussion and moral simulation. As revealed by (Khadijah et al., 2019), engaging in dialogue, discussion, or simulation can help in the internalization of character values. Similarly, (Saber et al., 2022) highlight the importance of simulation in enhancing moral competence, providing students with space to experience and reflect on their social situations. Meanwhile, female students require strengthening of social resilience in more complex contexts, where they face issues requiring empathy and emotional intelligence in social interactions (Scuotto et al., 2024).

The second implication, concerning the internal structure of characters revealed through Network Analysis, shows that male students' characters are centered on dominant nodes, indicating dependence on certain indicators. Therefore, learning strategies need to be focused on strengthening weak indicators through direct social experiences. Such as instilling character values through habituation to foster students' morals and ethics (Ma`arif et al., 2024). Conversely, female students with more balanced networks need to be continuously facilitated with challenging cross-theme projects that simultaneously address inter-value relationships to maintain value cohesion. According to (Rizal & Fitriza, 2021), female students can learn to collaborate and communicate effectively through cross-theme projects.

The third implication relates to the function of the measurement instrument itself. The information function graph shows that the instrument is most informative for students with low to moderate abilities. Research (Wibowo et al., 2018) indicates the need for an appropriate approach and investigation of

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low-performing students to detect the need for intervention. This is important for teachers and educators, as it indicates that character-building efforts should begin with the most vulnerable students in terms of academic performance. By using this instrument as an initial diagnostic tool, schools can map students' initial character conditions with precision and design interventions based on data, not assumptions. Appropriate interventions are expected to support students in the most vulnerable groups (Q. L. Putri, 2023), including the success of character education enhancement, which depends not only on policies but also on appropriate and strategic assessment tools (Sapuan et al., 2024).

The fourth implication is the importance of instilling values of tolerance through a contextual approach that is relevant to the social reality of students. In line with research (Prayitno et al., 2024) that effective character education needs to be combined with relevant and contextual learning. Data from the study shows that character formation is inseparable from the social dynamics that are formed among students themselves. Therefore, responsive character education must integrate tolerance values into cross-curricular learning, co-curricular programs, and school culture through activities such as social projects, folk tales, or restorative practices relevant to students' real-world experiences. In line with research (Mulyani et al., 2024), social activities such as visits to orphanages and environmental projects can foster students' social awareness. Similarly, (Sirait et al., 2024) indicate that character rooted in cultural and religious values is key to developing tolerance, including through extracurricular activities (Hazyimara et al., 2024).

The fifth implication is that responsive character-building strategies must be sustainable and collaborative, actively involving teachers, parents, and the school community. As emphasized by (Purnama et al., 2024), the involvement of all aspects in the character education process can create an environment that supports positive character growth. Similarly, (N. Hidayat et al., 2022) noted that the success of character education development depends on the active participation of parents in supporting the values taught at school.

Teachers need to be trained to read classroom social dynamics through measurement results such as character network analysis and be able to respond in parallel at home. Schools as value ecosystems must build a safe, open, and dialogic environment as a space for healthy tolerance to grow. This is important so that teachers can adapt their approaches to create more positive interactions. With the right character education paradigm, teachers can focus on the values expected in the formation of students' character (Afriani et al., 2021).

These findings reinforce the importance of data-driven, adaptive, and relevant character education design that addresses current social and emotional challenges. This research not only addresses theoretical issues but also provides practical direction for strengthening equitable and contextual character education.

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Discussion

This study aims to evaluate the tolerance characteristics of elementary school students based on gender and to develop implications for responsive character education strategies. In conducting the evaluation, it is important to consider gender as a variable that influences differences in student characteristics (Fikri et al., 2023). In general, the results show that the tolerance characteristics of both male and female students are at a fairly good level. These findings reflect that, normatively, tolerance values have begun to be instilled in the context of elementary education. However, a deeper analysis reveals different dynamics between the two gender groups, both in terms of average scores and the structure of the network between indicators. Significant differences were only found in the aspect of respect for others' views, where female students scored higher than male students. This is consistent with previous research stating that female students tend to have higher social sensitivity and empathy (Sari, 2023). This trend indicates that character education cannot be delivered through a uniform approach but must consider gender as one of the dimensions influencing the moral and social development of students. Research findings (Handayani, 2023) suggest that teachers should recognize these differences and incorporate them into optimal teaching strategies.

Network analysis reinforces the differences in internal character structures between genders. Male students have tolerance networks that are more centralized on certain nodes, such as items B27 and B14, indicating that their value formation is more dependent on dominant indicators and has not spread evenly. Meanwhile, female students exhibit more dispersed and cohesive networks, meaning that character indicators are more strongly interconnected and influence each other reciprocally. These findings align with the concept of social connectivity, which plays a role in the stability of prosocial character (Hyams, 2024). Therefore, an approach that supports inclusivity and connectivity among students is needed (Darmawan et al., 2023), including the involvement of local values (Priyatna, 2017) and integration into the curriculum and practices at school (Nadi et al., 2022).

The information function of the instrument shows that this measurement tool is most effective in detecting students with low to moderate tolerance abilities. This finding is important for the development of data-driven character education systems as it enables teachers and schools to identify groups of students most in need of intervention (Lutfiana et al., 2023). This aligns with the RTI (Response to Intervention) approach in education, where support strategies are provided in a tiered manner based on students' actual needs. Research (Deri et al., 2023) indicates that understanding students' social needs, as well as personalized learning skills, are equally important for facilitating strong character development. (Prasetyawati et al., 2021) shows that measurements that include social aspects can create an environment that supports students' character.

In addition, the distribution of centrality among character indicators provides strategic insights for character education design. The most central nodes, such as B20, B24, and B26 (for female students), as well as B27 and B14 (for male

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students), can be used as key entry points in designing educational interventions. These indicators can be focused on in classroom activities, collaborative projects, or social practices as the main drivers of tolerance values. Research (Sueca et al., 2024) suggests that character indicators should be contextual and relevant to students' experiences to ensure their direct involvement in the process. By focusing on classroom activities and collaborative projects, social bonds can be strengthened (Idawati et al., 2022). Similarly, (Munir & Ulfatin, 2023) suggest that participatory and personalized approaches in curriculum implementation can have a significant impact. The effective use of character indicators distributed among male and female students not only serves as a tool in instructional design but also as a strategy to enhance the quality of character education. Through the integration of activities that encourage student engagement, character values can be nurtured and strengthened.

These findings confirm that character education strategies must be responsive, evidence-based, and take into account the diversity of students' social backgrounds and internal dynamics. Character is not only shaped by explicit exposure to values, but also develops through complex social interactions, which can be mapped and strengthened through a network analysis approach. Therefore, effective character education is not sufficient if it is solely content-based; it must also be grounded in the internal social structure and the contextual developmental needs of students.

CONCLUSION

Based on the results of this study, several important points can be concluded. First, the instrument for measuring tolerance character was proven to have a person reliability of 0.90 and an item reliability of 0.75, supported by a person separation value of 2.98 and an item separation value of 1.72, indicating that this instrument is highly reliable for consistently and accurately distinguishing students' tolerance abilities. Second, the descriptive analysis results show that the level of tolerance between male and female students is relatively balanced, with a significant difference only in the aspect of respect for other people's opinions, which tends to be higher among female students. Third, the network analysis findings reveal that the tolerance values of male students tend to center on dominant nodes (key indicators), forming a tolerance structure concentrated on a single main influence, while female students form a more evenly distributed and interconnected network of tolerance values, indicating stronger interactions between tolerance indicators. Fourth, these findings emphasize the importance of strengthening character education strategies in elementary schools that are responsive, data-based, and contextual. Based on the distribution of key indicators, the tolerance values of female students need to be strengthened through the *Peace* indicator, namely the ability to maintain good relationships, avoid conflict, and promote harmony. Meanwhile, for male students, reinforcement can focus on the *Justice* indicator, namely social support and a friendly attitude without discrimination, as well as *Peace*. These indicators are recommended to become the focus of interventions through classroom learning,

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collaborative projects, and social practices. Teachers and schools are expected to emphasize the strengthening of tolerance indicators that are still weak in learning activities, curriculum developers are expected to integrate tolerance values into various cross-thematic subjects, and policymakers are advised to design character education training programs that are responsive to gender differences and relevant to the social context of elementary schools. This study is still limited to a single region and does not include other contextual factors such as local culture and socio-economic conditions. Therefore, future research should broaden the regional scope and examine these contextual factors to enrich strategies for strengthening students' tolerance character.

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