

Instrument development of attitudes towards egalitarian education scale

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ABSTRACT

This paper discusses the instrumentation process that was developed to measure teachers' attitudes towards egalitarian education in the context of a multiracial society. The researchers have developed a new, culturally relevant survey to assess a previously unexplored construct (teachers' attitudes towards egalitarian education). Researchers have employed an eight-step process: i) operationalizing the meaning of attitudes towards egalitarian education; ii) identifying a theoretical framework on attitudes towards egalitarian education; iii) exploring dimensions of attitudes from focus group discussion; iv) drafting preliminary items on egalitarian education based on focus group findings; v) validating the content of the attitudes towards egalitarian education items via expert judgment; vi) conducting a pilot test of the attitudes towards egalitarian education scale; vii) finalizing the attitudes towards egalitarian education scale; and viii) translating the attitudes towards egalitarian education scale. This is the first validated instrument specifically developed for Malay teachers, addressing a critical gap in egalitarian educational research. The careful development process ensures that the questionnaire accurately measures the issues raised in the study. This study provides clear information on how the egalitarian education attitudes scale is implemented and establishes a foundation for future cross-cultural adaptations in similar educational settings.

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1. INTRODUCTION

Egalitarian education, which promotes equal opportunities for all students regardless of socioeconomic, ethnic, or cultural backgrounds, plays a pivotal role in fostering social cohesion and educational equity [1], [2]. In multicultural societies, effective education requires sensitivity to cultural diversity, ensuring that all learners feel respected, included, and supported [3]. Understanding teachers' attitudes towards egalitarian principles is therefore essential, particularly in countries with ethnically diverse populations such as Malaysia.

Despite growing global interest in equity-driven education, the development of reliable and culturally responsive instruments to measure teachers' attitudes toward egalitarian education remains limited [4], [5]. Existing tools often lack contextual sensitivity and cross-cultural validation, making them less applicable in non-Western, multicultural settings [6], [7]. This gap restricts educational researchers and

policymakers from gaining meaningful insights into how educators perceive and respond to issues of fairness, privilege, and integration in the classroom.

While some studies have attempted to assess teacher attitudes related to educational equality [8], few have focused on specific cultural and national contexts, such as that of ethnic Malay teachers in Peninsular Malaysia—a group that operates within a complex sociopolitical and educational landscape. A comprehensive review of major academic databases, including Scopus, JSTOR, and ProQuest, revealed the absence of an instrument that accurately captures the dimensions of egalitarian attitudes among this demographic. In response, this study developed a culturally relevant and psychometrically sound scale tailored to measure Malay teachers' attitudes toward egalitarian education. Grounded in rigorous methodological procedures—including focus group discussions (FGDs), expert validation, pilot testing, and Rasch measurement modeling—this research fills a critical void in the literature.

The innovation of this study lies in its attempt to conceptualize and empirically measure egalitarian education attitudes within a specific national and cultural setting. By doing so, it not only contributes a much-needed measurement tool for Malaysia but also provides a replicable framework for scholars in other multicultural societies seeking to assess similar constructs. Ultimately, this research offers insights that may inform inclusive education policies and promote greater equity in education across diverse global contexts.

2. METHOD

This section outlines the systematic process of scale development, following contemporary best practices in instrument design. It began with defining the conceptual and operational framework, then proceeded to delineate the theoretical foundation and identify key constructs through FGDs. Subsequently, draft items were generated, subjected to expert review, and refined before being finalized. Finally, psychometric validation was conducted, including reliability analysis and exploratory factor analysis (EFA), to ensure the scale's robustness and validity. This multi-phase approach—encompassing construct conceptualization, item development, and empirical validation—aligns with the comprehensive guidelines proposed by Lorenz *et al.* [9], which emphasize iterative refinement, expert engagement, and statistical rigor in cross-cultural contexts.

2.1. Stage 1: operationalizing the meaning of attitudes towards egalitarian education

In order to arrive at a meaningful conception of egalitarian education that could be applied in the study and measured appropriately, pertinent works on the subject were carefully reviewed [10]–[13]. The operational definition of egalitarian education was derived from this review, taking into account Rawls's interpretation because it made sense in the context of a multiracial society and could be read in conjunction with article 26 of the Universal Declaration of Human Rights (UDHR).

2.2. Stage 2: identifying a theoretical framework on attitudes towards egalitarian education

The researcher proposed a dimension model of attitudes towards egalitarian education that included a single school system, Malay privilege, education funding, and environmental support for the least advantaged students. Of the works reviewed, Rawls's [13] definition of egalitarian education emerged as the most relevant for this study, providing a strong theoretical foundation for the proposed model.

2.3. Stage 3: exploring the dimensions of attitudes from focus group discussion

FGDs were employed as an exploratory qualitative method to elicit in-depth insights from participants and to ensure that the theoretical constructs were contextually relevant and grounded in current school realities, following best practices in instrument development [14] and rigorous qualitative inquiry [15]. FGDs are instrumental in contextualizing theoretical frameworks, as they can reveal the complexities of educational experiences and perceptions [16]. The FGD's goal was to investigate topics related to attitudes toward egalitarian education. The researcher conducted four FGDs in an attempt to ascertain the teachers' perspectives toward the phenomena. This is a method supported by findings emphasizing that FGDs facilitate a comprehensive understanding of stakeholder perspectives on educational processes and social dynamics, crucial for aligning theory with practice in educational settings [16], [17]. Furthermore, research suggests that FGDs can uncover diverse viewpoints, allowing participants to share varied experiences and insights, enriching the theoretical discourse and ensuring it resonates with the current realities in schools [18]. The insights gained from these FGDs were invaluable, confirming the draft themes and ensuring the research was grounded in the actual experiences and attitudes of teachers.

Four focus groups were conducted as part of the initial pilot research with chosen Malay teachers in four distinct regions of the Malaysian Peninsula: the East Coast, the South, the Klang Valley, and the North. Finding out the characteristics of the Malay teachers' opinions about egalitarian education was the main goal

of the FGDs. Purposive sampling, a method frequently used in qualitative research to select participants who are particularly knowledgeable about the phenomenon being studied [19], was employed in this investigation. 19 Malay teachers, aged 27 to 59, from four different government schools in the Malaysian Peninsula, took part in four focus groups, nine of them male and ten of them female.

The focus group leader led the ninety-minute sessions using a pre-planned list of open-ended questions. Open-ended questions are commonly used in FGDs to encourage in-depth discussion and uncover participants' true feelings and thoughts on the subject matter [20]. The sessions were recorded on tape, transcribed, and subjected to a predetermined qualitative analysis technique in order to ascertain the goals and obstacles that ethnic Malay education faces in its pursuit of egalitarian education within the framework of a multicultural society.

2.4. Stage 4: preliminary drafting of egalitarian education items from focus group discussion

For every theme, the researcher provided the operational meaning. Items were taken out of each theme by the researcher. An operational definition of "Malay privileges", for instance, was provided; it read as "Malay teachers' attitude on privileges in education given to the ethnic Malays based on article 153, single constitution." Examples of statements that best express it are "I feel that we should preserve Malay privilege in the education sector", "I believe that special placement quota for Malays to enter boarding schools and Maktab Rendah Sains MARA (MRSM) should be preserved", and "I believe that Malay special right in education is well preserved, in line with the Malaysia Constitution."

The same procedure applied to the other dimensions of opinions regarding single-school systems, money for education, and support for the least advantaged in education. Since the respondents are teachers who speak Malay, the scale was created in their language. The products' wording and, most crucially, their reflection of their corresponding dimensions was carefully checked.

Thematic analysis was the method of choice for analyzing the focus group data, as it allows for the systematic identification, analysis, and reporting of themes within the qualitative data [21]. This method is particularly useful in educational research for exploring complex attitudes and behaviors, as it enables researchers to uncover underlying patterns and meanings within participants' responses. By employing thematic analysis, the researcher was able to infer sentiments towards egalitarian education from the testimonies through inductive reasoning, ensuring that the themes identified were grounded in the data and relevant to the research context.

The testimony of the participants corroborated the five dimensions suggested in the study, as shown in Table 1 (see Appendix). To verify the validity and consistency of the themes generated from the FGDs, the researcher consulted with a qualitative research professor from the faculty of education. In addition, four full-time Ph.D. candidates were chosen to serve as the inter-raters to ensure inter-rater reliability, which is critical in qualitative research to minimize subjective bias and enhance the trustworthiness of the coding process [22].

As inter-raters, the Ph.D. candidates' role was to confirm that the themes identified during the coding process were accurate and appropriate. They evaluated the validity and reliability of the themes derived from the interview coding by indicating their agreement or disagreement. The researcher took into account their recommendations, criticisms, and remarks. Next, the researcher conducted thematic analysis and found that several key themes emerged from the FGDs, including a single school system, environmental support for the least advantaged, funding, and Malay privilege. This thorough approach to theme validation strengthened the overall findings and provided a robust foundation for discussing teachers' attitudes towards egalitarian education.

The simplest method of calculating inter-rater dependability agreement was employed by the researcher, who used a percentage of absolute agreement [23]. To find the number of times raters agree on a rating, just count the number and divide it by the total number of ratings. This approach is widely regarded as both successful and useful in qualitative research [24]. When utilizing the percentage of absolute agreement, numbers ranging from 75% to 90% indicate a satisfactory degree of agreement with the themes that were created during the interview [25]. The formula of percent agreement is as follows:

$$\text{Percent agreement} = \frac{\text{Number of agreement}}{\text{Total number of responses}} \times 100\%$$

The result of percentage of absolute agreement is presented in the Table 2.

Table 2. Result of absolute agreement

Theme	Percentage of absolute agreement
National school system	5/5×100%=100%
Malay privileges	4/5×100%=80%
Environmental support for least advantaged students	5/5×100%=100%
Education funding	5/5×100%=100%
Meritocracy	4/5×100%=80%

2.5. Stage 5: content validation of attitudes towards egalitarian education items via expert judgment

Ten specialists from a single public institution in Malaysia were asked to evaluate the draft attitudes towards egalitarian education items based on three criteria: i) language clarity; ii) item necessity; and iii) item relevance. The experts included four Ph.D. candidates studying education at a public university in Malaysia, three associate professors who are senior lecturers in educational psychology, research methodology, and counseling, and a professor with expertise in psychometrics and education evaluation. The content validity ratio (CVR) is a measure of how confidently the most significant and accurate content of an instrument is chosen in the quantitative content validity approach [26], [27]. The content validity form and the dimensions of attitudes towards egalitarian education survey were delivered to all experts by the researcher. It was asked of the experts to state whether or not a particular item is required to operate a build in a group of things. They were therefore asked to rate each item on a three-point scale of “Not necessary, useful but not essential, essential,” assigning a score of 1 to 3. The range of the CVR was 1 to -1. A higher score signifies a higher level of agreement among panel members regarding the necessity of a particular item in an instrument. $CVR = (Ne - N/2) / (N/2)$ is the formula for calculating the CVR, where Ne is the number of panelists who indicate that a panel is “essential” and N is the total number of panelists.

From this validation exercise, two important decisions were reached. Firstly, there were combined items, which should be separated into two items. The items are stated in the Table 3. Secondly, some of the items were not essential and did not clearly operationalize the dimensions. The researcher made the decision to eliminate the items since the CVR was less than 0.60. Table 4 lists the items.

Table 3. List of modified items

Original items	Modified items
– I think that quota system should be abolished, and fair education need to be implemented in education.	– I think that fair and just education need to be implemented in education.
– I believe that corporate sector and entrepreneurs give full support for educational development of underachievers.	– I think that quota system in education should be abolished. – I believe that corporate sector gives full support for educational development of underachievers. – I believe that entrepreneurs give full support for educational development of underachievers.

Table 4. List of removed items

Dimension	Items	Comment	Status
Funding	– I think Perbadanan Tabung Pendidikan Tinggi Nasional (PTPTN) is a good educational funding plan.	Not Essential	Removed
	– I think <i>waqaf</i> system should be empowered as it is a good educational funding.	Not essential	Removed
National school system	– I think there are too many types of schools in Malaysia.	Not essential	Removed

2.6. Stage 6: pilot testing the attitudes towards egalitarian education scale

51 Malay teachers in a secondary school in Selangor were given the attitudes towards egalitarian education scale to see whether the items made sense to the target group and to see if it was reliable. In order to get relevant responses, the Malay instructors who were part of the pilot study were carefully chosen with the assistance of the schools. They were all of sound mind and clear thinking.

The 51 Malay instructors who were chosen at random to receive the questionnaires were given the questions and response categories. By selecting the response category that most accurately reflected their opinions towards egalitarian education, data were collected. A later section of this chapter reports on the findings of the pilot test.

An EFA was conducted on the data in order to identify the aspects of opinions regarding egalitarian schooling. EFA is a robust statistical method used to uncover underlying factors that explain variance in a dataset, which is particularly crucial for understanding complex constructs like educational opinions [28]. The study's use of principal axis factoring (PAF) enabled it to: i) extract factors or dimensions that could be used as markers of attitudes towards egalitarian education; ii) assess each extracted dimension's reliability; and iii) calculate the cumulative share of variance explained by each dimension.

Before the results were concluded and understood, two key assumptions of PAF were verified by the data: i) the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, a statistic that shows if there are enough items for each factor. The KMO value should be over 0.7 [29] and ii) Bartlett's sphericity test, which determines whether the initial variables have a suitable degree of correlation. If the test is not significant at $p < 0.05$, PAF is not the right choice [30].

Based on the scatterplot and a factor's eigenvalue of 1.0 or above, the final factor structure's number of factors was decided [31]. Cross-loaded items were excluded from the study and were only kept as factors when their factor loadings had a value of at least 0.4 [31]. Subsequently, the elements were labeled according to a shared theme or concept among the products that were ultimately chosen to symbolize them.

2.7. Stage 7: finalization the attitudes towards egalitarian education scale

Following a thorough examination of the items based on the opinions of experts and the outcomes of pilot tests, the scale was completed and prepared for the real data collection. The researcher has made the decision to validate the research constructs through the use of Rasch analysis as a method. Educational scholars [32]–[35] have utilized Rasch analysis extensively in validating instruments, as it provides a robust framework for measuring latent traits. The model's interval measure improves the accuracy of the validation procedure [36]. The final version had four sections: Section 1 had 5 items about the demographic profile of the respondents; Section 2 had 28 items about attitudes towards egalitarian education on four dimensions; Section 3 had 30 items about the respondents' self-concept; and Section 4 had 5 items about the respondents' general acceptance of egalitarian education.

2.8. Stage 8: translation of the attitudes towards egalitarian education scale

The scale was translated into English by the researcher for use in reference documentation. The two specialists with fluency in both Malay and English were assigned to check the translation for accuracy [37], [38]. A ten-year English teacher with a Teaching English as a Second Language (TESL) degree from Queensland University of Technology is one of the specialists. The other person has a master's degree in education and is conversant with the concepts that the scale is intended to measure. After undergoing a thorough examination by these two specialists, certain modifications were suggested and implemented correspondingly to guarantee accurate translation of the scale and easily understandable terminology throughout. This will make it easier to use the scale in subsequent research projects.

3. CONCLUSION

This study holds important implications for the international educational research community, particularly in the areas of multiculturalism, equity, and inclusive pedagogical practices. Although the instrument was developed within the specific context of Malay teachers in Malaysia, the comprehensive and systematic methodology—comprising FGDs, content validation, pilot testing, and Rasch analysis—provides a replicable framework for researchers in other multicultural societies. The scale contributes not only as a psychometrically sound tool but also as a conceptual model for understanding teachers' attitudes towards egalitarian education across diverse cultural settings. As such, the findings from this research may inform future comparative studies and policy discussions aimed at promoting educational equity in pluralistic contexts. The careful and methodical development of the scale for measuring attitudes towards egalitarian education, as detailed in the method section, ensures that the instrument is both reliable and contextually relevant. Each step of the process—from item generation to expert validation and pilot testing—was designed to accurately measure the constructs identified as critical in this study. The newly developed scale is the first of its kind tailored for Malay teachers in a multicultural educational setting, addressing a previously unmeasured dimension in egalitarian education research. While the results are integrated within the methodological steps, they demonstrate the scale's robustness and applicability. This study not only fills a significant gap in the literature by providing a tailored instrument for Malay teachers but also lays a foundation for future research and applications in similar multicultural educational settings. Further studies can build upon this work to refine and expand the scale's use, potentially adapting it to other cultural contexts or educational levels.

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C : **C**onceptualization

M : **M**ethodology

So : **S**oftware

Va : **V**alidation

Fo : **F**ormal analysis

I : **I**nvestigation

R : **R**esources

D : **D**ata Curation

O : Writing - **O**riginal Draft

E : Writing - Review & **E**diting

Vi : **V**isualization

Su : **S**upervision

P : **P**roject administration

Fu : **F**unding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

DATA AVAILABILITY

The authors confirm that the data supporting the findings of this study are available within the article.

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APPENDIX

Table 1. The testimony of the participants

Theme	Main idea	Verbal support example	Inter-rater				
			1	2	3	4	5
Malay privilege	– Malaysia Federal Constitution	"We do not have much to do with the other races, we just want them to respect the social contract that we signed earlier. There is privilege for Malays and Islam and it must be respected." (FGD2/Participant 1/DU27)					
	– Social contract agreed	"For example, MRSRM, it still prioritizes the Malays, same goes to scholarship. Malays are given special scholarship quota, either Majlis Amanah Rakyat (MARA) or Jabatan Perkhidmatan Awam (JPA). This is to help Malays." (FGD1/Participant 2/DU36)	/	/	/	/	/
Education funding	– Fair distribution	"Because if you look at the corner of the paper, on paper, if we look at the allocation of our provisions it looks like the sort of division is balanced, but when we get down to on the ground, we see the reality of the fact that this education looks from the perspective of facilities and so on. The Malays are lagging behind. For example, we go and see in the East Coast, the National school, the facility for this school is left behind compared with the Chinese type of school. They get the financial aid from both government and private sector. We can see they earn more." (FGD3/Participant 3/DU14)	/	/	/	/	/
	– Equal opportunity						

Table 1. The testimony of the participants (continue)

Theme	Main idea	Verbal support example	Inter-rater				
			1	2	3	4	5
Environmental support for least advantaged students	– Rural and urban poor people	“While, right! Whereas if we look at the quality or ability of the Malay students in the villages in the East Coast, they can do better but maybe the constraints cause them no chance compared to students (Chinese) who are in these vernacular schools. They get a complete facility, complete facility.” (FGD3/Participant 3/DU14)	/	/	/	/	/
	– Equal opportunity						
National school	– Integration and close gap among races	“The different type of school, cause our relationship among races, are not so close.” (FGD1/Participant 4/DU22) “The reason is that I see too many types of schools in our country. We have national schools, Chinese national schools, Tamil national schools, religious schools, MRSM, Sekolah Berasrama Penuh (SBP), private and private schools. I do not see how it can help us in uniting Malaysians.” (FGD2/Participant 3/DU5) “We have too many types of schools. I’m sometimes confused with our education system. He said education as the core of unity, but this many school system will not unite the people.” (FGD6/Participant 3/DU69)	/	/	/	/	/
	– Equal opportunity						
Meritocracy	– Equal opportunity	“We are worried that meritocracy system gives bad effect to Malay in rural area.” “Meritocracy will not benefit poor people in rural area as they do not have good facilities, good environment and accessibilities.”					

BIOGRAPHIES OF AUTHORS



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