Journal of Theoretical Educational Science, 18(2), 255-279, April 2025
Kuramsal Eğitimbilim Dergisi, 18(2), 255-279, Nisan 2025
[Online]: http://dergipark.org.tr/akukeg
DOI number: http://doi.org/10.30831/akukeg.1538463

# Harmful Values from the Lens of Teachers in Mathematics Classrooms with Gifted Students

# Özel Yetenekli Öğrencilerin Yer Aldığı Matematik Sınıflarında Öğretmenlerin Bakış Açısından Zararlı Değerler

**Fatma Nur AKTAŞ***

**Received:** 25 August 2024 **Research Article** **Accepted:** 3 February 2025

**ABSTRACT:** This study aims to identify the harmful values experienced by secondary school mathematics teachers in classrooms with gifted students. The participants in the study, which was designed as an interpretative phenomenological design, were two secondary school mathematics teachers. The participants selected using purposive sampling had teaching experiences in inclusive classrooms with gifted students. The data obtained through group interviews, enriched with classroom video recordings, were analyzed by the interpretative phenomenological analysis method. The findings revealed harmful reflections of values contrary to the expectations concerning their positive cultural role. Categories were obtained in the context of mathematics teachers', gifted students' and pupils' values and institutional values. Teachers' harmful values are control, mathematical reasoning, considering students' expectations, equality, relevance (daily life), teacher expectations and esoteric (teaching approach). Gifted students' harmful values are practice, familiarity, memorization, feedback and overconfidence. Other students' harmful values are practice, familiarity, memorization and concretization (learning approach). The institutional values are democracy and inclusive education (teaching approach). The diversity in the sources of values and the resulting conflicts of values have led to undesirable reflections of positive values. Consequently, harmful results were experienced concerning the values alignment, the teachers' skill to manage values and the reflection of institutional values in practice. By revealing the harmful consequences of values, striking implications for teachers, institutions and future research are presented.

**Keywords:** Harmful values, mathematics classrooms, middle school mathematics teachers, gifted students.

**ÖZ:** Bu çalışmanın amacı, ortaokul matematik öğretmenlerinin özel yetenekli öğrencilerin yer aldığı sınıflardaki deneyimledikleri zararlı değerleri tespit etmektir. Yorumlayıcı fenomenolojik desende tasarlanan araştırmanın katılımcıları iki ortaokul matematik öğretmenidir. Amaçlı örnekleme metoduna göre belirlenen katılımcılar özel yetenekli öğrencilerin yer aldığı kaynaştırma sınıflarında ders verme tecrübelerine sahip olan öğretmenlerdir. Sınıf video kayıtlarıyla zenginleştirilmiş grup görüşmeleriyle elde edilen veriler yorumlayıcı fenomenolojik analiz metoduyla analiz edilmiştir. Bulgularda, değerlerin pozitif kültürel rollerine dair beklentilerinin aksine risk teşkil eden yansımaları belirlenmiştir. Matematik öğretmenlerinin, özel yetenekli ve diğer öğrencilerin sahip olduğu değerler ve kurumsal değerler bağlamında kategoriler elde edilmiştir. Öğretmenlerin sahip olduğu zararlı değerler; kontrol, matematiksel akıl yürütme, öğrenci beklentilerini dikkate alma, eşitlik, ilişkilendirme (günlük hayat), öğretmen beklentileri ve gruba özgü (öğretim yaklaşımı) olarak belirlenmiştir. Özel yetenekli öğrencilerin sahip olduğu zararlı değerler; uygulama, aşinalık, ezberleme, dönüt ve özgüven olarak belirlenmiştir. Diğer öğrencilerin sahip olduğu zararlı değerler; uygulama, aşinalık, ezberleme, somutlaştırma (öğrenme yaklaşımı) olarak belirlenmiştir. Kurumsal değerlerde zararlı değerler; demokrasi ve kaynaştırma eğitimi (öğretim yaklaşımı). Değerlerin kaynaklarındaki çeşitlilik ve bundan doğan değerlerin çatışmaları pozitif değerlerin istenmeyen yansımalarını ortaya çıkarmıştır. Dolayısıyla, değer uyumuna, öğretmenlerin değerleri yönetim becerilerine ve kurumsal değerlerin uygulamadaki yansımalarına ilişkin risk teşkil eden sonuçlar elde edilmiştir. Değerlerin zararlı sonuçlarının ortaya konulmasıyla öğretmenlere, kurumlara ve ileriki araştırmalara çarpıcı öneriler sunulmuştur.

**Anahtar kelimeler:** Zararlı değerler, matematik sınıfları, ortaokul matematik öğretmenleri, özel yetenekli öğrenciler.

* Assoc. Prof. Dr., Kahramanmaras Sutcu Imam University, Kahramanmaras, Türkiye, fatmanuraktas@ksu.edu.tr, https://orcid.org/0000-0002-3804-3650

**Citation Information**
Aktaş, F. N. (2025). Harmful values from the lens of teachers in mathematics classrooms with gifted students. *Kuramsal Eğitimbilim Dergisi [Journal of Theoretical Educational Science],* 18(2), 255-279.


ISSN: 1308-1659

The role of values in mathematics classrooms is widely acknowledged by authorities (MoNE, 2024; NCTM, 2000) and practitioners (Bishop, 1996; Fan, 2021; Seah, 2016) as a fundamental aspect of educational practices. The pivotal issues at the core of this matter are the definition of values and the interpretation of classroom culture. Defining values necessitates the consideration of both personal and cultural dimensions (Seah & Bishop, 2000). Indeed, the formation of values is contingent upon the cultural milieu in which they are embedded, as well as upon individual preferences and cognitive processes (Seah, 2019). Therefore, teacher values, students' values, values of the society, institutional values and the values adopted by the school type are the components of classroom culture (Bishop et al., 2000; Seah, 2008). Thus, the diversity of sources for values reflected in classroom practices situates values at the core of comprehensive examinations of mathematics classrooms and learning environments. It can be argued that the differences between teachers and students within the complex structure of the classroom contribute to the formation of classroom culture, with the values they bring with them to the classroom influencing this process. Therefore, the presence of a student with special educational needs in the classroom is effective in differentiating the classroom culture. This is due to the fact that the classroom or practice components that teachers prioritize in inclusive classrooms vary (Aktaş et al., 2019), as do their preferences and values based on the characteristics of their students (Aktaş, 2023a, 2024a; Aktaş & Dede, 2022). However, the lack of studies on the negative reflections of these values on mathematics learning processes or classroom culture (Aktaş & Dede, 2023; Baldvinsdottir, 2022; Hill et al., 2021; Pang & Seah, 2021) prevents the discussion of the roles of values and the quality of inclusion practices. In this sense, the current research aims to analyze harmful values and to provide suggestions for enhancing inclusion practices.

## Values in Mathematics Classrooms

Valuing is defined as an act of personal commitment to a set of convictions that are perceived as important and worthy of adherence (Seah, 2019). This process has the potential to integrate affective and cognitive aspects with behavioral outcomes. Therefore, Seah (2019) highlighted that values can be conceptualized as a sociocultural phenomenon, a product of individual belief systems. Many factors, such as cultural and social norms, childhood environment, personal experiences and individual personality traits, influence the formation of values. On the other hand, in mathematics education, Bishop (2001) posited that values can be conceptualized as "deep affective qualities which education aims to foster through the school subject of mathematics" (p. 19). In this sense, values are shaped by interaction and social activities, illustrating the dynamic nature of human behavior. The latter research in mathematics education has aligned with this approach, conceptualizing values as a conative variable within socio-cultural contexts that inform and shape student motivation and decision-making (Seah, 2019). Thus, the individual value system is defined by their cognitive understanding of the appropriate behavioral norms and desired end states. This implies that value is a cognitive construct that guides an individual's actions and aspirations (Rokeach, 1973).

As posited by Chia and Zhang (2024), given that values are contextualized within the framework of personal preferences or social identities, an inter-individual relationship that constitutes class culture can be identified. This is the interpretation of

actions in the classroom through the lens of values, which can be understood as "beliefs in action, behavior, choose to engage, positive response, or acted on" (p. 43). Nevertheless, this definition engenders controversy in cases where the individual is required to choose between value alternatives, or where the negative reflections of the value adopted in classroom culture become evident. Consequently, the examination of harmful values, which may emerge by analysing the negative effects of values, is a separate conceptual investigation.

**Harmful Values**

In the literature, values are frequently conceptualized as positive relations, emotions and perceptions (Hill et al., 2021). However, the teaching of mathematics encompasses both positive and negative values, which are adopted and concealed within its framework. It is not the intention here to criticize individuals for adopting negative teaching practices or displaying negative attitudes towards mathematics through emphasizing negative values. As Ernest (2016) asserts, the aim here is "Both positive and negative features and consequences of them can be noted. Rather the point is the pursuit of accuracy and clarity in a naturalistic and philosophically defensible account of mathematics." (p. 45). Therefore, Hermessi (2017) explains harmful values and norms as outputs of a function of cultural elements in the classroom culture where teacher and student values are blended together. In order to make a meaningful contribution to this discussion, it is essential to examine the role of values in the reflection of harmful values on classroom practices and culture through actions. This is because values should not only be defined as underlying 'positive' behavior or decisions. Indeed, Aktaş (2024b) reached the noteworthy conclusion that positive values reveal negative results in the construction of mathematical concepts. On the other hands, Aktaş and Dede (2024) discovered that the values espoused in mathematics education can be classified as either negative or harmful.

Baldvinsdottir (2022), who called anti-values, bad, and harmful values, emphasized that coding for negative values may result in negative feelings and attitudes. On the other hand, codes may also comprise negative effects associated with positive values. Indeed, Baldvinsdottir (2022) explains the scope of harmful values as follows:

> "the distinction between bad and harmful values is clear; the former is viewed as inherently wrong while the latter can have dangerous repercussions. [...] Bad values are those that go against morality or accepted principles of right and wrong - like greed or discrimination – while harmful ones may seem benign yet still lead to negative outcomes; competitiveness is one such example where a desire for self-advancement could come at the cost of others' well-being." (p. 183)

In their study, Pang and Seah (2021) explored the notion of negative emotional traits and affects as indicators of negative values. However, Ceríaco (2012) emphasized that the conceptualization of 'negative values' encompasses statements that evoke negative emotions, are expressed in a negative manner, and exhibit a negative attitude. Therefore, the categorization of values as negative, bad, or harmful values is independent of the values or the meanings they correspond to. In the context of mathematics education, a distinction can be drawn between moral and ethical values, and values that are deemed harmful on the basis of their unintended and deleterious consequences (Hill et al., 2021). In this sense, harmful values encompass values that have a detrimental effect on learning environments, classroom culture, students, or

teachers. This encompasses values that may or may not be perceived as positive or negative. Indeed, in contrast to prevailing expectations, values categorized as positive have been shown to exert harmful effects in practical contexts. Aktaş (2024b) identified mathematical representations, mathematical terms, relevance with daily life, and pre-knowledge as harmful values that lead to misconceptions or difficulties while constructing the concept definitions of pre-service mathematics teachers.

Chia and Zhang (2024) clearly stated that "unsurprisingly, the conception of values could be intra- and inter-personal" (p. 44). Although values are the product of individual preferences, students' values may be influenced by the values of teachers and textbooks in the formation of these preferences (Clarkson, 2024). Therefore, the choice of whether to align these values or to allow them to be employed in practice can be attributed to the teacher's preference. Therefore, the current study examined the harmful values that students and teachers bring to practice in mathematics classrooms with gifted students from the teacher's perspective.

**Values in Mathematics Classrooms and Gifted Students**

Values in mathematics classrooms were categorized in early studies by Bishop's (1988, 1996) classification based on pedagogical approaches, the nature of mathematics and culture. As the research on values has become more sophisticated and the cross-cultural dimension has expanded, a number of categories of mathematical values have emerged. Thus, the values that emerged as a product of teachers' and students' cultural preferences and cognitive awareness in mathematics classrooms were identified and classified under various categories (Clarkson, 2024; Dede & Barkatsas, 2019; Seah & Wong, 2012; Zhang, 2019). The individual values espoused by students are shaped by a complex interplay of cultural influences, familial traditions, and past experiences (Bishop, 1988; Seah & Bishop, 2000). Therefore, the values that students contribute to the learning environment are shaped by their unique personal growth, cognitive processes, competencies, and attributes. The distinctive characteristics, specific requirements and exceptional capabilities of students necessitate the formulation of pedagogical practices that are aligned with a set of core values (Aktaş, 2023, 2024a; Aktaş & Dede, 2022; Barkatsas & Seah, 2015; Faragher et al., 2016). Indeed, gifted students have exhibited positive attitudes towards differentiated instructional design practices, including perceptions of enjoyment and learning, such as fun and instructive (Avcu & Yaman, 2022).

The implementation of values in educational settings has been demonstrated to enhance equity and equality of opportunity for gifted students (Tirri, 2007). Accordingly, pedagogical practices that facilitate the development of gifted students' abilities and provide peer support by regulating the classroom atmosphere are founded upon a set of values. It is evident that students demonstrating a high level of mathematical ability are those who can achieve the highest levels of mathematical performance when their potential is fully actualized (McClain & Pfeiffer, 2012). Therefore, it is the responsibility of the educational system to prevent the loss of talent (Milgram & Hong, 2009) by providing gifted children and young people with plentiful opportunities for the advancement of their abilities. Mills (2003) posits that the capacity of teachers to educate gifted students in mathematics is the most significant variable in the educational system. This capacity is contingent upon the teachers' mathematical and

pedagogical knowledge, creativity, motivation, beliefs, personal experiences, and opportunities.

The decision-making responsibility of teachers in classrooms with gifted students has an impact on teaching practices, mathematical activities and students' beliefs (Karp, 2010). Indeed, the design of inclusive education practices in mathematics classrooms, which is shaped by teachers' values, beliefs, and school culture, represents a significant issue that requires further investigation and the formulation of recommendations (Faragher et al., 2016). The individual values of teachers and students, in conjunction with the cultural values of the society to which they belong, give rise to a considerable range of values in practice. Bishop and Kalegeropoulos (2015) argue that although students may choose to be interested in or engage with mathematics due to the influence of these values, teacher expectations can also shape their decisions. Indeed, Seah and Andersson (2015) advocate that it is crucial for educators to possess the capacity to navigate and mediate value-based discrepancies and conflicts that may emerge in culturally diverse learning environments, in order to facilitate effective inclusion. Therefore, it would be a rational evaluation method to examine the values in the classrooms of gifted students with teachers in a pedagogical context with a critical perspective. Thus, it will be possible to obtain detailed information about the values that will nourish the classroom culture in such inclusive classrooms and to take precautions about the values that disrupt the learning environment.

In a series of studies conducted with gifted students and their mathematics classrooms, Aktaş (2023a, 2023b, 2024a) presented categories and developmental models of mathematics teachers' and gifted students' values alignment strategies. Aktaş (2023a) emphasizes that mathematics teachers of a specific gifted student aim to increase student thinking in mathematics teaching by considering the student and peers in the preferences of values congruence strategies. In addition, her study clearly showed that mathematics teachers' critique of students thinking in classroom practice supports their pedagogical development. In analyzing the values alignment strategies of the gifted students, it was discovered that they tended to focus on their individual values and the values of their peers (Aktaş, 2023a). This highlights the importance of analyzing the values of gifted students and their mathematics teachers in their efforts to enrich and differentiate teaching practices. Indeed, Aktaş (2023b) pointed out the importance of mutual interaction and the role of the teacher in reflecting the values of teachers and students in harmony in a classroom with gifted students. In the current study, it is aimed to determine the harmful values emerging in inclusive classrooms with gifted students. Thus, it will be possible for the teacher to interpret the critical values and shape decisions based on these values to design classroom practices in a way that positively supports the thinking of the gifted students and their peers in learning mathematics. Indeed, while the positive roles and reflections of values are well documented, the negative or detrimental roles of values are less frequently emphasised in literature (Aktaş & Dede, 2024; Baldvinsdottir, 2022; Ernest, 2016; Hermessi, 2017). However, the role of values may vary depending on the various classroom cultures and the characteristics of the students in question (Seah & Bishop, 2000). Classrooms comprising gifted students offer an invaluable example for examining the role of values

in such an environment, and for identifying any potentially harmful values. In this sense, the research problem is therefore as follows:

How do mathematics teachers interpret the harmful values reflected in their experiences in mathematics classrooms with gifted students?

## Method

### Research Model

This study aims to identify the values reflected in the classroom practices of mathematics teachers based on their experiences in classrooms with gifted students. The investigation of classroom culture, along with the interpretations of teachers based on their experiences, exemplifies the essence of phenomenological approaches. In accordance with the principles of phenomenology, research endeavours should seek to elucidate the lived experience of individuals, encompassing their thought processes, insights, perspectives, feelings, sensations, and impulses (Smith et al., 2009). Indeed, a phenomenon may be a curriculum, an emotion or a culture (Patton, 2014). Thus, it is possible for teachers to interpret harmful values in classroom culture based on their experiences. The interpretive phenomenological approach is concerned with elucidating the nuances and seemingly inconsequential elements of individuals' experiences, with the objective of deriving meaning and attaining a sense of comprehension (Laverty, 2003). Since this study aims to elucidate harmful values through teachers' experiences and discussions by examining the classroom culture, the interpretative phenomenological design was adopted. Also, it was only through phenomenological approach based on the experiences of the participants that the profound and harmful impact of values initially perceived as positive could be fully elucidated.

The current interpretive research aims to examine the harmful effects of values by exploring the experiences and practices of teachers in their classrooms. Consequently, the study does not merely seek to provide a mere description of teachers' reasoning and practices. So, the present study employs a non-descriptive phenomenological approach. Moreover, it does not adopt a narrative approach by merely recounting participants' stories. Instead, an interpretative approach is adopted, seeking to explore and elucidate the values and practices of teachers through the utilisation of an interpretative lens. The rationale for adopting this approach is that until the meanings of such experiences are coherently revealed through my interpretative engagement with the data, they could remain hidden in the individual teachers' expressions and actions (Oxley, 2016). This approach thus enabled a two-stage interpretation process: firstly, teachers interpreted their experiences, and subsequently, the researcher interpreted their experiences (Smith & Osborn, 2004; Smith et al., 2009). Thus, contrary to the case study, it made it possible to interpret the phenomena beyond determining the situation.

### Participants

In this phenomenological research, participants were selected through the purposive sampling method (Patton, 2014) as the aim is to have mathematics teachers who have experience in teaching practices in classrooms with the gifted student(s) and examine values based on these classroom experiences. In order to gain a comprehensive understanding of the subject matter, it was determined as a criterion that the participants

should have been responsible for mathematics lessons in a classroom with a gifted student for a minimum of two semesters. This would enable them to interpret the classroom culture and gain an insight into the needs of the gifted student. The second criterion for identifying the participants was that they had attended a seminar organized by the Provincial Ministry of National Education on the following topics: (i) classroom culture, (ii) values in mathematics classrooms, and (iii) student thinking. By the specified criteria, the participants were selected from among three teachers who had volunteered to participate in the study according to the criterion sampling method (Patton, 2014). As two of the participating teachers were responsible for teaching mathematics at the 7th-grade level, they were deemed capable of discussing values in the interviews without being influenced by grade-level and concept-related variables (Bishop et al., 2000). The remaining teacher was also included in the pilot study. The participants were referred to by the code names P1 and P2.

P1 had been responsible for the mathematics lessons in the same classroom with a specific gifted student for two years. He had accrued 12 years of professional experience. He had instructed students in mathematics in two other classrooms, distinct from the aforementioned one in the same semester. Also, each classroom was comprised of one gifted student. P2 had 16 years of professional experience and had been entrusted with the responsibility of mathematics lessons in at least five different classrooms with gifted students on multiple occasions. At the time of the research, he had engaged in mathematics lessons in a classroom with two gifted students. Both participants were responsible for mathematics lessons at the 7th- and 8th-grade level.

**Data Collection Tools**

The data collection tools in the study were classroom video recordings and group interview recordings. The mathematics classrooms of the participants were recorded via video for four weeks and two hours per week. Video recordings for classroom observation were made to exemplify classroom practices in the group interviews. These recordings were also used to interpret the reflections of the values of gifted students and their peers on practices. Group interviewing represents an effective technique for identifying cultural reflections, as it provides an appropriate environment and facilitates deeper reflection through increased interaction compared to the structured interview (Patton, 2014). In cases where there are people with similar experiences, it is possible to conduct a deep analysis of these experiences and to enrich the discussion with interactive questions. Thus, the group interview facilitates the interpretive phenomenological approach in examining the phenomenon in detail (de Visser & Smith, 2007; Palmer et al., 2010). The utilization of group interviews is a commendable approach, given its capacity to facilitate the articulation of diverse perspectives within a single session. This method enables the aggregation of a more substantial sample within a reduced number of data collection events (Palmer et al., 2010). Thus, in some cases, it is possible that a group discussion may yield a greater degree of experiential reflection in comparison with an individual interview. However, the presence of multiple voices and the complexity of individual and shared contexts in focus group discussions are considered to make it challenging to develop personal, phenomenological accounts. In such settings, claims and reflections need to be shaped by various factors, such as the researcher's questions, shared experiences among participants, existing relationships, the

sensitivity of the topic, and the evolving dynamics of the discussion (Palmer et al., 2010). Smith (2004) emphasized that analyzing focus groups requires recognizing these complexities in detail, therefore, it is important for the researcher to shape the interview and his/her background for the analyses. Video analysis serves to reinforce the research by facilitating a detailed examination of the phenomenon, thereby enabling the researcher to focus on common experiences, deepen their understanding, and maintain a clear perspective. This approach also allows the researcher to shape the interview and gain mastery over the common experience through observation. Moreover, video analyses and group interviews are essential tools for examining teachers' attentional skills and professional development in identifying values and value alignment strategies, as well as analyzing their classroom practice in this context. (Aktaş et al., 2019; Aktaş, 2024a).

In the group interviews, the participants were initially provided with a concise overview of the research objectives, along with a brief introduction to their professional background, the qualifications of their gifted students, and their past experiences. Thus, it was aimed to enable the participants to realize their common points and express their thoughts comfortably. Then, the participants were asked about their experience of teaching mathematics in a classroom with gifted students. This question is elaborated in the context of problem selection, solution strategies, freedom of expression, small group and whole-class work. The critical situations identified for gifted students were discussed with the participants' classroom video recordings. Video recordings of critical situations were made available for participants to analyze at their convenience, either when focusing on a particular issue or when expressing a differing opinion. Subsequently, the participants were asked questions such as 'What do you think about the gifted student's thinking?', 'Why is it appropriate to make this decision in such cases?', 'Do you find the decision made by P1 correct, why?', 'How do you interpret the students' thinking?'. Following the initial phase of questioning, the participants engaged in an independent discussion on a range of classroom practices and the reflection of the values of gifted students on these practices. Additionally, they considered the implications of the video recordings. The interviews were conducted in the researcher's office in four one-hour sessions.

**Data Analysis**

The data of the research were analyzed by interpretative phenomenological analysis method. Interpretative phenomenological analysis is a detailed method of analysis that is employed to interpret the experiences of individuals and to examine how they interpret the phenomenon (Smith & Osborn, 2004). According to the prescribed methodology, the data was subjected to a series of analytical procedures. This included transcription, a dual reading of the transcripts, the generation of codes in the left and right columns, the formation of categories and themes, and an interpretive analysis of these categories and themes (Biggerstaff & Thompson, 2008). Therefore, the methodological stages of phenomenological analysis were followed: bracketing, intuiting, analyzing and describing (Greening, 2019). Table 1 provides illustrative examples of data analysis.

Table 1

*Examples of Data Analysis*

| Harmful Values | Codes | Explanations | Expressions of Participants |
|---|---|---|---|
| Considering Students Expectations | Students' expectation or prospects | Negative consequences of discourses and behaviors that include students' preferences and wishes in classroom practices | P1: The students wanted to take turns solving problems. I gave everyone a turn, but we did not make any progress. |
| Equality | Freedom of expression | Difficulties in ranking freedom of expression and freedom of voice between gifted and other students in the classroom | P2: All students want to feel special. It's not fair to select students based on question difficulty. |
| Relevance | Daily life examples | Examples related to daily life cannot be perceived by students | P2: Students do not understand profit and loss. We solve problems without knowing this. |
| Familiarity | Pre-knowledge & common knowledge | Students solve problems with basic generalizations or operations in their pre-knowledge and are not open to mathematical progression | P1: They need to set up an equation but keep trying to reach the result by performing operations despite my explanations. |
| Feedback | Correctness & responses | The teacher's checking the students' problem solutions and notebooks and giving feedback to them poses a problem | P2: It is hard to check students' notebooks all the time. It is impossible to be fair. But, it is necessary. |
| Inclusive Education | Inclusive practices & classrooms | Experiencing difficulties of teachers in inclusive practices | P1: I do not know which student to focus on. A democratic environment is hard to provide. It is also hard to choose problems and teaching strategies. |

### The Role of the Researcher

In a phenomenological study, the role of the researcher is to facilitate detailed descriptions of participants' experiences to gain insight into the phenomenon under investigation. Furthermore, the researcher must ensure that the data and subsequent analysis are focused on enabling an in-depth interpretation (Creswell, 2012). The researcher of this study has extensive experience in the analysis and interpretation of participants' experiences, having conducted longitudinal research on values in mathematics classrooms, values alignment, and teacher pedagogical development. Additionally, she conducted case studies with comprehensive analyses of the values and potentially harmful values that affect gifted students. Therefore, the researcher and participants were able to investigate the phenomenon in depth through the utilization of culturally based experiences within the context of mathematics classrooms.

### Validity and Reliability

To ensure the credibility of the research, the participants and the researcher met in classroom observations and various seminars and developed interaction and communication. In addition, participant confirmations were obtained during the

interviews and following the analyses, and also conversations were held to increase interaction between the participants. To ascertain the transferability, the experiences of the participants identified through the purposive sampling method were examined in detail. The participants were described to facilitate a clear understanding of their roles within the study. To ensure reliability, a comprehensive literature review was conducted, the research method was explained in detail, and the data was coded by a second coder. The second coder recoded a third of the data, and a comparison was subsequently made with the researcher's analyses. After repeated analysis by the coders, a consensus was reached on the various categories to which the values could be assigned. An 83% consensus rate among coders was achieved for this process (Miles & Huberman 1994). Given the limited existing literature on harmful values, differences were identified in the labelling and interpretation of the categories. Nevertheless, these discrepancies were resolved through a consensus process among the coders. For example, the mathematics education values, which are considered as teaching approach and learning approach in the existing literature (Aktaş et al., 2023; Akyıldız et al., 2021), were categorized as esoteric, concretization, and inclusive education in the current study to provide a comprehensive examination of the phenomena. A further point of debate among the coding team was the terminology used to describe the control value. Because control value is categorized as a mathematical value by Bishop (1988). However, in the present study, it was decided to adopt a comprehensive approach to the subject, encompassing the processes of checking, problem solving and examination of notebooks, and situating these within the broader context of mathematical education.

### Ethical Procedures

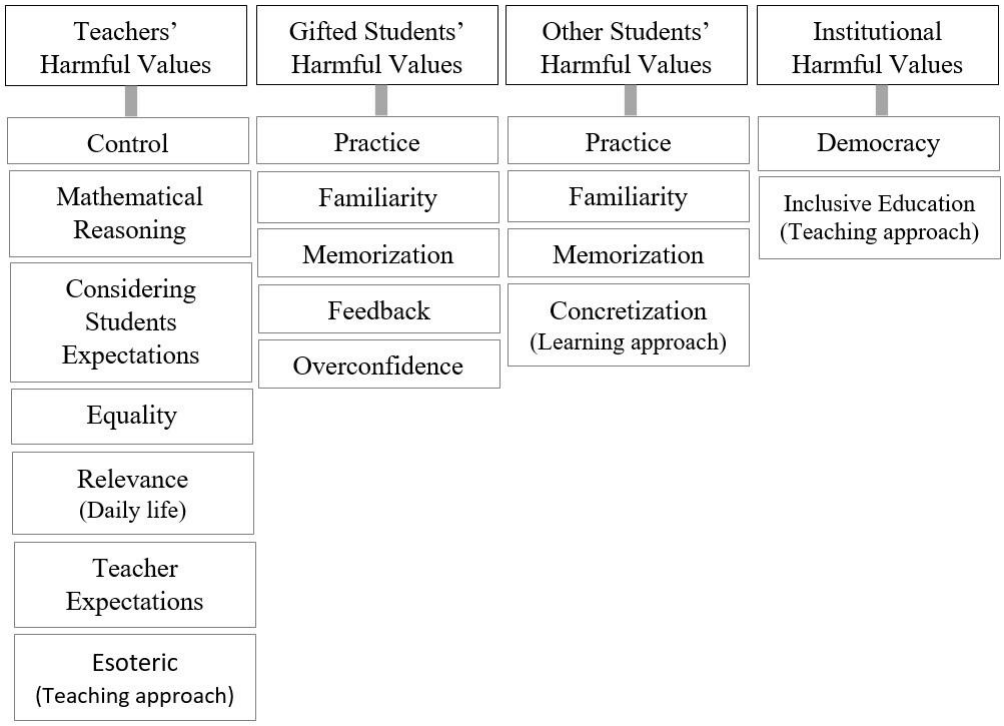
The data of the study were obtained with the approval of the ethics committee and participant consent with the report numbered E-22849 from Kahramanmaras Sutcu Imam University Social and Human Sciences Ethics Committee.

## Results

The harmful values identified by mathematics teachers reflected in the culture of classroom with gifted students varied as teachers' values and students' values. In addition, institutional harmful values also emerged as a theme affecting classroom culture. The results obtained in the context of the investigation into the sources of harmful values are presented in Figure 1.

Figure 1

*Harmful Values*




The comprehensive analysis of the harmful values presented in Figure 1 reveals the existence of a compact and intricate structure. For this reason, values are presented based on teachers' experiences regardless of their sources such as teachers or students. In other words, the phenomena are presented in the context in which they were obtained. Thus, the rationale for considering the emerging values as harmful values and the conflicts of values become clear. Additionally, the values that give rise to the conflict are discernible, although this is not within the purview of the present study.

The following dialogue reveals the harmful values of the students identified by the participants and the values of the teachers when classifying these values:

> P1: For instance, students may encounter challenges when attempting to identify three out of five of a given number. They do not enquire as to the rationale behind the operation.
>
> P2: Yeap, my gifted students cannot make sense of this either. Why do we multiply in division or vice versa?
>
> P1: The fundamental approach of dividing and multiplying, which was first introduced in primary school, remains a constant throughout their elementary levels.
>
> P2: But, it is a challenging endeavor to cultivate this perception. The preferred approach is to invert the process and attempt to solve it.
>
> P1: Exactly, they engage in long mathematical operations. We cannot explain the phenomenon of simplifying.
>
> P2: It is the same with gifted pupils. In fact, I specifically ask them to do operations with five-digit numbers, just to simplify them. They do not do that!
>
> P1: And they do not simplify the answer after they have done the operation and say it is wrong.

The above group interview points to *practice* and *familiarity* as harmful values that gifted students and other students have. It has been posited that students' difficulties in constructing advanced mathematical operations are attributable to two factors: firstly, 'their tendency to rely on pre-existing', 'familiar pre-knowledge'; and secondly, 'their

inclination to perpetuate the use of basic operational techniques'. The fact that the participants considered the difficulty index of the problems with a focus on the student level indicates that the teachers identified harmful values via *esoteric* value (see for further details Aktaş et al., 2019). The detailed components of the harmful values that are evident in this example as phenomena are shown in Table 2.

Table 2

*Practice, Familiarity, and Esoteric*

| Harmful Values | Codes | Explanations |
|---|---|---|
| Practice | -Their inclination to perpetuate the use of basic operational techniques<br>-Focusing on problem solving<br>-Focusing on the result in problem solving | This harmful effect can be interpreted as students placing excessive value on problem-solving skills, the precision of operational outcomes, and problem-solving techniques that rely on fundamental operational methods. This is accompanied by a lack of emphasis on conceptual knowledge and understanding. This phenomenon can be interpreted as indicative of a limited or non-existent value placed on conceptual understanding by students, which is not reflected in their practical activities. |
| Familiarity | -Pre-knowledge<br>-Common knowledge<br>-Their tendency to rely on pre-existing | The phenomenon under scrutiny involves students focusing on prior knowledge rather than utilising new knowledge in problem-solving or conceptual association processes. It is characterised by an overreliance on prior knowledge, manifested in a tendency to rely on commonly employed rules, formulae or procedures. So, students solve problems with basic generalizations or operations in their pre-knowledge and are not open to mathematical progression |
| Esoteric | -Focusing on the student level | The study revealed that teachers engaged in a process of comparison, distinguishing between gifted students and their other students. This comparison was utilised in the identification and rejection of harmful values within the classroom environment. The analysis further elucidated the teachers' approach to inclusive practices, demonstrating a lack of attention to inclusive strategies in their pedagogical activities. In summary, this value functions as a tool in the identification and interpretation of harmful values by teachers. |

Similarly, in the discussion that follows, participants have emphasized the harmful values that hinder the development of students' operational and inquiry skills:

> P2: This applies to all students. Models and proofs are brief, conceptual aids designed to facilitate student comprehension. However, students tend to memorize and then forget these aids, rather than questioning the logic behind them to gain a deeper understanding.
>
> P1: Instead of obtaining the result from the model, they attempt to modify the model by the result. Their operation-oriented thinking prevents their capacity to engage in critical questioning and causal reasoning.

Furthermore, this discussion highlights that the *memorization* value by students impedes their capacity to engage in learning processes and reasoning. The *memorization* is based on the premise that 'strategic information', presented in the form of clues or generalizations, is of paramount importance to students. One of the harmful values emphasized by participants focused on learning and teaching strategies is *relevance*. However, the participants stated *relevance* as a harmful value that teachers have and carry into classroom practice:

> P2: The incorporation of daily life examples is like a key for students to understand. Actually, as in the classroom case, shopping or bills are not situations that they examine in detail in daily life for students. That is why we can make it difficult for them while trying to make it easier for them to understand. In their daily lives, students are no longer accustomed to undertaking activities such as shopping in markets or using public transport.

P2's statement suggests that the *relevance* value may potentially become a harmful value for students when 'teaching practices involve making associations with daily life'. Therefore, the selection of examples was identified as a crucial aspect in facilitating the establishment of links with everyday contexts. The detailed examination of relevance and memorization values as harmful values is in Table 3.

Table 3

*Memorization and Relevance*

| Harmful Values | Codes | Explanations |
|---|---|---|
| Memorization | -Focusing on strategic information<br>-Focusing on quick notes, clues, or just generalisations | Students focus on cues, generalisations, formulae or quick notes. Also, they value memorisation to the extent that it effectively overshadows conceptual knowledge, reasoning, and critical questioning. |
| Relevance | -Daily life examples<br>-Teaching practices involve making associations with daily life | The harmful nature of this value is evidenced by teachers' emphasis on the depiction of daily life, whilst neglecting to consider the readiness of their students. For instance, examples related to daily life cannot be perceived by students. |

When participants were asked to consider gifted students and other students as discrete categories, they identified a number of values espoused by teachers and students that they perceived as being harmful and associated with one another. In the following dialogue, it is emphasized that the over *teacher expectations* harmful value of teachers negatively affects the 'self-confidence of students':

> P1: We should not expect the same from each student. I may not warn one student, but I will warn the other because he/she has potential.
>
> P2: When we have high expectations for gifted students, it causes great disappointment if they fail. Actually, this is our major mistake. But they should not have the self-confidence that they can do everything. In every lesson, I include questions that they can fail at. They have to think.

Furthermore, the participants highlighted the importance of incorporating a diverse range of problems to foster the development of 'critical thinking and mathematical reasoning skills' in gifted students. Thus, it was emphasized that the

design of ‘deep reasoning processes’, rather than ‘superficial thinking’ based on *overconfidence*, is essential to ensure the well-being of gifted students. Therefore, it was highlighted that the *overconfidence* of gifted students had a detrimental impact on their abilities to engage in critical thinking and reasoning skills.

Table 4

*Teacher Expectations and Overconfidence*

| Harmful Values | Codes | Explanations |
|---|---|---|
| Teacher Expectations | -Teacher’s high expectations<br>-Teacher’s low expectations | One dimension of this harmful value phenomenon is the teacher's focus on the expectations of problem solving, critical thinking, mathematical reasoning and deep reasoning processes for gifted students. On the other hand, teachers focus on superficial thinking process expectations for other students. |
| Overconfidence | -Overconfidence of the gifted student | The scope of this value is the excessive focus of the student on their own skills, well-being, and success in mathematics learning. |

Among the harmful values identified were those that negatively impact classroom culture. Even, these included values that prioritize the relationship between students and those that uphold the principles of ‘democratic environments and equal opportunity’. Accordingly, there is a relationship between supporting students’ learning and the implementation of the principle of equality and democratic practices for gifted students and other students:

> P1: When I check a gifted student’s notebook or ask for her opinion, the class grumbles. Sometimes I want to question the answer with her, but other students react negatively.
>
> P2: We should focus on the classroom, not one student.

In the discussion above, P1 stated that the *control* and *mathematical reasoning* values were reflected in practice using analysis of the responses and thinking of the gifted student. However, it was concluded that these teacher values interfered with ‘freedom of expression and equality’ in the classroom. While analyzing another similar classroom practice, the participants exemplified how the *equality* value can turn into a harmful value:

> P2: While trying to ensure equality of opportunity, we may inadvertently disadvantage some students. I permitted the student with low academic achievement to take the floor because I was confident that the other students could contribute to the discussion.
>
> P1: One student, however, did not participate in the activity by raising their hand. If I were you, I would be curious to ascertain his thinking.
>
> P2: Indeed, I did not afford this student equal opportunity as the others in this case.

This example and Table 5 summarize the ways in which control, mathematical reasoning and equality are reflected in practice as values that are harmful.

Table 5

*Control, Mathematical Reasoning, and Equality*

| Harmful Values | Codes | Explanations |
|---|---|---|
| Control | -Analysis of the responses of the students<br>-Focusing detailed on the student thinking | It is when the teacher focuses on only one student in the class, such as a gifted student, and focuses on checking the correctness of his/her responses, ideas or thinkings, giving feedback or revising them. In other words, reflecting the control value to the classroom practice by focusing on one student reveals the harmful value. |
| Mathematical Reasoning | -Focusing detailed on the mathematical reasoning skill of student | The teacher emphasises problems, mathematical tasks, enquiry questions, etc., considering the mathematical reasoning abilities of only one or a few students in the classroom. In other words, while reflecting the value of mathematical reasoning in classroom practice, focusing on the skills and thoughts of specific students reveals this value as harmful. |
| Equality | -Freedom of expression | It emerges as a harmful value as a result of difficulties in providing fair environments for other students when students express their problem solutions, thinking, reasoning and questions. For instance, difficulties in ranking freedom of expression and freedom of voice between gifted and other students in the classroom |

The distinction between gifted and other students was not only identified during the reflection on the *equality* value in practice but also in the teaching practices. Also, the following discussion illustrates the necessity of considering the values of all students in the classroom when determining teaching practices:

> P2: Conversely, in the inclusive class, there is a greater need for concretization. This is a limitation on the development of thinking skills for gifted students, which in turn reduces their ability to critical thinking. When I provide him with a distinct worksheet, the other students become distressed. Each child desires to be regarded as unique.
>
> P1: I just increase the number of questions on the worksheet, and the gifted students continue with those questions. She can proceed without waiting for her peers.

The learning approach is a comprehensive value that focuses on 'students' preferences in learning mathematics. Accordingly, *concretization* involves the 'manipulation of symbolic and procedural knowledge' through the utilization of comprehensible materials or models for the benefit of the student. In this classroom practice, it was stated that the teacher should implement a process of ranking or aligning student values. The indicators that transform the considering students' expectations and concretization values into harmful values in mathematics classroom practices are given in Table 6.

Table 6

*Concretization and Considering Students' Expectation*

| Harmful Values | Codes | Explanations |
|---|---|---|
| Concretization | -Manipulation of symbolic and procedural knowledge | The concretisation of value preferences of other students, which include the manipulation of symbolic and procedural knowledge as an approach to learning mathematics, may sometimes result in incompatibility with the learning preferences or values of gifted students. |
| Considering Students' Expectation | -Students' preference for learning approach<br>-Students' expectations for freedom of expression<br>-Students' expectation or prospects | This harmful value consists of the students (for instance a gifted student or other student) concentrating on their own values related to preferences for learning approaches and freedom of expression influence their classroom practices. In addition, they ignore the values of their peers and teachers. Another example; negative consequences of discourses and behaviors that include students' preferences and wishes in classroom practices. |

The following discussion reveals that in addition to the values of teachers and students, institutional values also play a role in the process of ranking or aligning student values:

> P1: I did not know what to do in this lesson, really! There was a question where we were discussing the priority of operations with the whole class to reach a generalization. The gifted student was solving questions individually and kept requesting me to check his notebook. By the way, it was the last lesson of the day and some students were distracted. How should I make a decision? Actually, the student on the blackboard was right. I should have focused on him.
>
> P2: The student on the board was important there.
>
> P1: I examined the solution of the gifted student, and because of that, the other students brought their notebooks. In fact, my approach is erroneous.
>
> P2: If we do not do this, we'll lose the students' enthusiasm for learning.
>
> P1: Yeah, they learn better when they understand the context. That is why I look at their notebooks.
>
> P2: Right! Classroom organization is systematic. The focus is maintained. You make them think. It's hard for you, but it is good for the students.
>
> P1: The presence of a gifted student in the same class with others can present challenges for both the students and the teacher.
>
> P2: It would be beneficial to differentiate the curricula for gifted and other students. Unfortunately, such an approach is incompatible with the examination-oriented structure of the institution.
>
> P1: In the presence of gifted students, other students can perform worse. Sometimes they are easily distracted.
>
> P2: They cannot express themselves. They lose confidence. They can take art, music or Turkish together. But, there is no fair competition in mathematics between gifted and other students.
>
> P1: I try not to lose any students. Everyone should have equal opportunities.

It is useful to examine Table 7 before interpreting the harmful values indicated by the discussion immediately above.

Table 7

*Feedback, Democracy, and Inclusive Education*

| Harmful Values | Codes | Explanations |
|---|---|---|
| Feedback | -Giving feedback on the correctness of student responses<br>-Responding to students' questions | The endeavor to regulate the responses of each student, to provide feedback, and to address their queries may impede the facilitation of practice in alignment with the values of some students or the establishment of an egalitarian ethos or democratic environment. For instance, the teacher's checking the students' problem solutions and notebooks and giving feedback to them poses a problem |
| Democracy | -Equality in giving feedback<br>-Equality in the freedom of expression | This value, which encompasses the rights to express oneself, to pose questions and to receive feedback, which are indispensable components of democratic environments, transforms into a detrimental value due to its failure to guarantee interpersonal justice. The primary cause of this predicament is the discord between the values of gifted students and their peers, and the discord between the temporal demands and preferences of the gifted students and the utilisation of these rights. |
| Inclusive Education | -Inclusive practices<br>-Inclusive classrooms | This value, which is based on the reflection of the values between gifted students and other students in classroom practice, has the potential to become harmful due to the conflict of student values. This institutional value can lead to the emergence of other harmful values, such as equality, feedback, relevance, etc. It includes the difficulties experienced by teachers in inclusive practices. |

The discussion in this final session delineates the role of gifted students' values, other students' values, teacher values and institutional values as harmful values in the classroom culture. The willingness of the gifted student to have their solutions or thoughts 'verified', and similarly to have 'other students verify their solutions' in their notebooks, demonstrates the value of *feedback*. It was emphasized that *feedback* causes distraction of students' attention or the contravention of the principle of equal opportunity. Participants stated that *feedback* value should be reflected in practice. However, in these cases, the participants concluded that considering students' values resulted in the identification of student expectations as a harmful value. In consideration of the abilities of students, the participants recommended the implementation of teaching practices commensurate with the qualifications of students as a result of the reflecting the *esoteric* value. For this reason, the role of the *democracy* value, which is based on equality of opportunity and freedom of expression in education as institutional values, and the role of *inclusive education* practice as a reflection of this value were discussed. The participants identified *democracy* and *inclusive education* as institutional

harmful values because they lead to the emergence of other values that are harmful to mathematics classrooms.

## Discussion and Conclusion

The most obvious and striking result of the research is that the variety of value sources leads to the diversity of harmful values. The results reveal that the harmful or negative effects of values from different sources, such as teachers, gifted students, other students and institutions, are reflected in classroom practice. Therefore, the negative and detrimental effects resulting from the variety of the sources of the values that constitute the classroom culture and the simultaneous emergence of the values in the same situation make it necessary to classify the values as harmful. These unexpected or unintended negative effects result in distorting or destructive reflections of positive or favorable values. Therefore, it is crucial to identify the factors that define values as harmful and the values that give rise to conflicts to comprehend the nature of harmful values and to eliminate their negative effects.

The conflicts between the values espoused by the teacher, students, and institution have been categorized as harmful values due to their harmful effects have been observed from the teacher's perspective. The harmful values of mathematics teachers have been identified as control, mathematical reasoning, considering students' expectations, equality, relevance (daily life), teacher expectations, and esoteric (teaching approach). The harmful values of gifted students have been identified practice, familiarity, memorization, feedback, and overconfidence. The harmful values of students have been identified as practice, familiarity, memorization, concretization (learning approach). The harmful values of institutions have been identified as democracy and inclusive education (teaching approach). On initial examination, it emerges that these values appear positive, despite the negative consequences that the values have on educational practices in the results. Therefore, it is evident that the destructive or detrimental effects of these values emerge in practice as a consequence of their conflict with values derived from another source. The most notable example is the reflection in practice of the equality value based on freedom of expression, which can result in an inverse correlation between gifted students and other students in terms of reduced democracy or interest in learning mathematics. Similarly, the reflection of institutional values based on the principles of democracy and equality in classroom practice may have negative consequences arising from the diversity of teaching practices in inclusive classrooms. It is important to consider two significant perspectives in this context. Firstly, the alignment of values emerging in practice (Bishop & Kalegeropoulos, 2015; Seah & Andersson, 2015) and the implementation of value alignment strategies by the teacher (Aktaş, 2024) can eliminate the negative reflections of values. On the other hand, the selection of values alignment strategies and the reflection of values in practice as expected require the enhancement of the teacher's pedagogical content knowledge to be developed (Seah & Andersson, 2015). Therefore, it should be considered that the harmful values identified in the current study are derived from the perspective of teachers. Accordingly, the results constitute messages to teachers, educators, and professionals to eliminate the harmful effects of these values or to ensure that they do not manifest in practice.

The harmful values obtained demonstrate similarities between gifted students and other students regardless of the source. Practice, familiarity and memorization values lead to results that are contrary to the progressive, inquiring, and reasoning-based structure of mathematics and interfere with learning processes for both student groups. However, practice (Aktaş et al., 2023; Akyıldız et al., 2021; Seah & Wong, 2012; Zhang, 2019) and familiarity based on pre-knowledge (Aktaş et al., 2019) frequently emerge as students' values in mathematics classrooms irrespective of culture. Indeed, these values are considered as the results of the reflection of institutional values in classroom practices, as evidenced by the values espoused by teachers and students (Bishop, 1988; Fan, 2021; Seah, 2008). Nevertheless, the negative reflections of these values require the modification or alignment of students' values with values that can facilitate anticipated learning opportunities. In other words, the harmful effect of these values arises from their occurrence at an irrelevant moment in classroom practices. Therefore, the values that determine preferences for mathematics learning approaches may conflict with the values which inform teachers' teaching approaches. For example, the value placed on memorization may be at odds with the value placed on critical thinking and problem-solving. Consequently, memorization is regarded as a harmful value by mathematics teachers. Indeed, memorization can be a dangerous barrier to permanent and meaningful learning when it controls the overall learning process in mathematics (Davis et al., 2021).

The qualities of gifted students and their mathematics learning preferences are also among the causes of harmful values reflected in inclusive classrooms. Indeed, gifted students require greater learning opportunities that are based on inquiry, abstract reasoning, and argumentation than their peers (McClain & Pfeiffer, 2012). The values of gifted students emerge as a product of these qualities such as elaborative, estimation, checking, and comparison (Aktaş & Dede, 2022). Thus, while the concretization value is occasionally harmful to gifted students, on the other hand, the feedback value adopted by gifted students is at times manifested in practice as a harmful influence on their peers. Therefore, the values adopted by students may act as a potential barrier to learning for other students in the heterogeneous classrooms. In this sense, inclusive education, which is one of the institutional values, has been classified as a harmful value due to the challenges associated with its implementation, as evidenced by the results and the reasons provided by the teachers.

Additionally, the interaction between gifted students and their mathematics teachers can give rise to harmful values. The advanced self-regulation skills and awareness of gifted students are reflected in their self-confidence levels (Karp, 2010; Mills, 2003). In the results, teachers pointed to overconfidence as a harmful value that impedes the growth of critical thinking and reasoning skills of gifted students. Indeed, overconfidence has been identified as a harmful value in mathematical learning (Aktaş & Dede, 2022; Karp, 2010). Teachers' decisions and expectations based on the qualities of students have a significant impact on the well-being, engagement in learning mathematics, and self-confidence of students. Indeed, the results revealed that esoteric, control, and teacher expectations as teachers values are harmful values when considered in the context of students. Furthermore, the teacher's attempt to simultaneously support the diverse qualities of their students in the classroom practices can result in negative consequences of esoteric and control values. However, the literature indicates that

mathematics teachers frequently espouse the values of practice and consolidating, regardless of the variables affecting classroom culture (Aktaş et al., 2023; Akyıldız et al., 2021).

The teaching approach, which is one of the values adopted by mathematics teachers and emphasized in the literature (Aktaş et al., 2023; Akyıldız et al., 2021), has been specified with the category of mathematical reasoning and relevance in the current study. When pre-knowledge and readiness were considered, a notable result emerged regarding the skill of students to associate mathematics with daily life regardless of their qualifications. The results indicate that mathematical content should be based on students' lives and experiences while relating mathematical content to daily life. In the context of values, it can be stated that activities which are based on relevance value but do not serve the purpose of preparing the students adequately for the subject matter in question do not facilitate the learning of mathematics in a positive manner. Therefore, it is of the greatest importance to select illustrative examples when reflecting relevance value on classroom practice.

One of the most noteworthy results of the conflict between the values espoused by teachers and those held by their students is the challenge of establishing democratic classroom environments. Indeed, the teacher's value of equality can be attributed to negative roles in the context of gifted and other students. In this sense, the values of equality, freedom of expression, and democracy (Aktaş et al., 2019; Aktaş et al., 2023; Akyıldız et al., 2021; Davis et al., 2021; Seah & Wong, 2012; Zhang, 2019), which are emphasized as important for mathematics learning, present challenges to learning when students' learning processes and differences are not considered. Consequently, democracy is perceived as a harmful institutional value due to the challenges associated with ensuring the principle of equality in heterogeneous inclusive classrooms. Thus, the current study places an emphasis on the necessity for mathematics teachers to develop their pedagogical content knowledge and skills in values alignment and ensuring diversity in teaching opportunities within heterogeneous classrooms. Thus, it will be possible to prevent unexpected and undesirable reflections of values from the teacher's perspective to some extent. In other words, lessons can be presented in a manner that considers the time available, the content to be covered, and the learning preferences of the students, with a view to aligning with values-based teaching practices. This can be achieved through the application of processes that ensure alignment between the values espoused by the teacher and those of the students (see for detail Aktaş, 2024a; Bishop & Kalegeropoulos, 2015; Seah & Andersson, 2015).

## Limitations and Further Research

The variety in the sources of the values extracted in the current study should not be pointed out as a limitation of the study, given that it examined the phenomenon only from the perspective of mathematics teachers. Indeed, analyzing phenomena from the perspective of teachers and students who experience and shape classroom culture makes it possible to identify detailed harmful values. Nevertheless, examining harmful values from the perspective of gifted students and other students in future research will enhance the interpretative power of classroom culture. Furthermore, analyzing the perspective of students will provide guiding value pairs about value conflicts in the preference of value alignment strategies in teacher and student contexts. In addition,

further examination of mathematics teachers' experiences and results in the contexts of school culture and classroom diversity will provide detailed clues about critical situations to reveal the positive role of values in designing effective mathematics teaching practices. Moreover, analyzing the perspectives of teachers from different disciplines can provide insights that yield disparate results.

The results indicate the inadequacy of mathematics teachers in their skill to employ individual values and students' values in their classroom practices. Thus, harmful effects of values arise unexpectedly. Therefore, the teachers who encounter difficulties in employing institutional values in their classroom practice would necessary for them about training support and improvements in their practical conditions. It is recommended that the existing institutional criteria for the reflection of democracy and inclusive education values in practice be reviewed. This should be done by considering the school and classroom cultures and by providing support services to mathematics teachers in inclusive classrooms as urgent plans. In this context, there are need for research on practices and value education in collaboration with academics specializing in mathematics education and special education.

## References

Aktaş, F. N. (2023a). Özel yetenekli bir öğrencinin kaynaştırma eğitiminde matematik sınıflarındaki değerleri hizalama stratejileri. *Edutech Research Dergisi*, *1*(1), 14-25.

Aktaş, F. N. (2023b). Özel yetenekli öğrencilerin yer aldığı matematik sınıfında değerlerin hizalanması. *Proceeding in International Education Congress* (pp.100-108), 20-23 September, Ankara, Türkiye.

Aktaş, F. N. (2024a). Designing a professional development model for values alignment strategies in inclusive mathematics instruction. In Y., Dede, G., Marschall, P., Clarkson (Eds.), *Values and valuing in mathematics education* (pp. 101-124). Springer, Singapore. https://doi.org/10.1007/978-981-99-9454-0_6

Aktaş, F. N. (2024b). The harmful values framing mathematical concept definitions. Proceeding in *3rd International Conference on Frontiers in Academic Research* (pp. 94-97), 15-16 June, Konya, Türkiye. All Sciences Academy.

Aktaş, F. N., & Dede, Y. (2022). Gifted students' mathematics educational and socio-cultural values in the decision-making process through STEM tasks. In T. Barkatsas (Ed.), *Educating gifted, talented, creative and dissimilar learners* (pp. 36-63). Brill. https://doi.org/10.1163/9789004532571_003

Aktaş, F. N., & Dede, Y. (2023). Re-imagining mathematics teacher education for 21st century skills in the context of harmful mathematics educational values. In T. Barkatsas, P., McLaughlin, & W., Goff (Eds.), *Reimagining education for the second quarter of the 21st century and beyond* (pp. 40-60). Brill. https://doi.org/10.1163/9789004688490_003

Aktaş, F. N., Akyıldız, P., & Dede, Y. (2023). Students' mathematics educational values at religious vocational middle schools: A cross-sectional study. *Education 3-13*, *51*(3), 480-492. https://doi.org/10.1080/03004279.2021.1981421

Aktaş, F. N., Yakıcı-Topbas, E. S., & Dede, Y. (2019). The elementary mathematics teacher's values underlying teacher noticing: The context of polygons. In P. Clarkson, W. T. Seah, & J. S. Pang (Eds.), *Values and valuing in mathematics*

*education: Scanning and scoping the territory* (pp. 209–222). Springer. https://doi.org/10.1007/978-3-030-16892-6_15

Akyıldız, P., Aktaş, F. N., Dede, Y., & Hacıömeroğlu, G. (2021). Mathematics teachers' values about teaching mathematics. *Studies in Educational Evaluation, 68*, 100954. https://doi.org/10.1016/j.stueduc.2020.100954

Avcu, Y. E., & Yaman, Y. (2022). Effectiveness of the differentiated instructional design for value education of gifted: A mixed study. *Journal of Gifted Education and Creativity, 9*(1), 1-23.

Baldvinsdottir, G. (2022). The language game of values and un-values. *Journal of Pragmatic Constructivism, 12*(1), 180-186.

Barkatsas, A., & Seah, W. (2015). Learners' preferred mathematical task types: The values perspective. In A. Bishop, H. Tan, & T. Barkatsas (Eds.), *Diversity in mathematics education: Towards inclusive practices* (pp. 63-79). Springer. https://doi.org/10.1007/978-3-319-05978-5_4

Biggerstaff, D., & Thompson, A. R. (2008). Interpretative phenomenological analysis (IPA): A qualitative methodology of choice in healthcare research. *Qualitative Research in Psychology, 5*(3), 214-224. https://doi.org/10.1080/14780880802314304

Bishop, A. (1988). *Mathematics enculturation*. Kluwer.

Bishop, A. J. (1996). How should mathematics teaching in modern societies relate to cultural values: Some preliminary questions. In *7th Southeast Asian Conference on Mathematics Education* (vol. 32, June 3–7).

Bishop, A. J. (2001). Educating student teachers about values in mathematics education. In F.-L. Lin & T. J. Cooney (Eds.), *Making sense of mathematics teacher education* (pp. 233–246). Kluwer Academic Publishers. https://doi.org/10.1007/978-94-010-0828-0_11

Bishop, A., & Kalegeropoulos, P. (2015). (Dis)engagement and exclusion in mathematics classrooms—Values, labelling and stereotyping. In A. Bishop, H. Tan, & T. N. Barkatsas (Eds.), *Diversity in mathematics education: Towards inclusive practices* (pp. 193–218). Heidelberg, Germany: Springer.

Bishop, A. J., Clarkson, P., Fitzsimons, G., & Seah, W. T. (2000). Why study values in mathematics teaching: Contextualising the VAMP project? In W. S. Horng & F.-L. Lin (Eds.), *Proceedings of the HPM 2000 conference on history in mathematics education* (Vol. 2, pp. 147–154). Taipei, Taiwan: National Taiwan Normal University.

Ceríaco, L. M. (2012). Human attitudes towards herpetofauna: The influence of folklore and negative values on the conservation of amphibians and reptiles in Portugal. *Journal of Ethnobiology and Ethnomedicine, 8*(1), 1-13. https://doi.org/10.1186/1746-4269-8-8

Chia, H. M., & Zhang, Q. (2024). Towards a reconceptualisation of values research in mathematics education: A systematic review. In Y., Dede, G., Marschall, P., Clarkson (Eds.), *Values and valuing in mathematics education* (pp. 37-56). Springer. https://doi.org/10.1007/978-981-99-9454-0_3

Clarkson, P. (2024). Mystery: One of six mathematics values. In Y., Dede, G., Marschall, & P., Clarkson (Eds.), *Values and valuing in mathematics education*. Springer. https://doi.org/10.1007/978-981-99-9454-0_2

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson.

Davis, E., Seah, W., Howard, N., & Wilmot, E. (2021). The attributes of mathematics learning which Ghanaian senior high school students value. *Journal of Global Education and Research, 5*(1), 1-14. https://www.doi.org/10.5038/2577-509X.5.1.1096

Dede, Y., & Barkatsas, T. (2019). Developing a questionnaire to evaluate Turkish students' mathematics values and preferences. *Journal of Theoretical Educational Science, 12*(4), 1142-1163. https://doi.org/10.30831/akukeg.529092

de Visser, R. O., & Smith, J. A. (2007). Alcohol consumption and masculine identity among young men. *Psychology & Health, 22*(5), 595–614. https://doi.org/10.1080/14768320600941772

Ernest, P. (2016) Values and mathematics: Overt and covert. *Culture and Dialogue, 4*(1), 48–82. http://dx.doi.org/10.1163/24683949-12340004

Fan, L. (2021). Exploring issues about values in mathematics education. *ECNU Review of Education, 4*(2), 388-395. https://doi.org/10.1177/20965311211016002

Faragher, R., Hill, J., Clarke, B. (2016). Inclusive Practices in Mathematics Education. In K. Makar, S. Dole, J. Visnovska, M. Goos, A. Bennison, & K. Fry (Eds.) *Research in mathematics education in Australasia 2012-2015*. Springer. https://doi.org/10.1007/978-981-10-1419-2_7

Greening, N. (2019). Phenomenological research methodology. *Scientific Research Journal, 7*(5), 88-92.

Hermessi, T. (2017). Teacher perception of cultural difference in L2 materials: Is filtering culture the right approach?. *Tesl-Ej, 21*(2), 1-19.

Hill, J. L., Kern, M. L., Seah, W. T., & van Driel, J. (2021). Feeling good and functioning well in mathematics education: Exploring students' conceptions of mathematical well-being and values. *ECNU Review of Education, 4*(2), 349-375. http/doi.org/10.1177/2096531120928084

Karp, A. (2010). Teachers of the mathematically gifted tell about themselves and their profession. *Roeper Review, 32*(4), 272-280. https://doi.org/10.1080/02783193.2010.485306

Laverty, S. M. (2003). Hermeneutic phenomenology and phenomenology: A comparison of historical and methodological considerations. *International Journal of Qualitative Methods, 2*(3), 21-35.

McClain, M. C., & Pfeiffer, S. (2012). Identification of gifted students in the United States today: A look at state definitions, policies, and practices. *Journal of Applied School Psychology, 28*(1), 59-88.

Miles, M. B., & Huberman, A. M. (1994). *An expanded sourcebook qualitative data analysis* (2nd ed.). Sage Publications.

Milgram, R., & Hong, E. (2009). Talent loss in mathematics: Causes and solutions. In R. Leikin, A. Berman, & B. Koichu (Eds.), *Creativity in mathematics and the education of gifted students* (pp. 149–163). Sense Publishers.

Mills, C. J. (2003). Characteristics of effective teachers of gifted students: Teacher background and personality styles of students. *Gifted Child Quarterly*, *47*(4), 272-281. https://doi.org/10.1177/001698620304700404

Ministry of National Education. (2024). *Common text of curricula.* MEB.

National Council of the Teachers of Mathematics [NCTM] (2000). *Principles standards and for school mathematics*. NCTM.

Oxley, L. (2016). An examination of interpretative phenomenological analysis. *Educational and Child Psychology*, *33*(3), 55-62. https://doi.org/10.53841/bpsecp.2016.33.3.55

Palmer, M., Larkin, M., de Visser, R. & Fadden, G. (2010). Developing an interpretative phenomenological approach to focus group data. *Qualitative Research in Psychology*, *7*(2), 99-121. https://doi.org/10.1080/14780880802513194

Pang, J., & Seah, W. T. (2021). Excellent mathematical performance despite "negative" affect of students in Korea: The values perspective. *ECNU Review of Education*, *4*(2), 285-306. https://doi.org/10.1177/2096531120930726

Patton, M. Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice*. Sage.

Rokeach, M. (1973). *The nature of human values*. The Free Press.

Seah, W. T. (2008). Valuing values in mathematics education. In Clarkson, P., Presmeg, N. (Eds), *Critical issues in mathematics education: Major contributions of Alan Bishop* (pp. 239-253). Springer US. https://doi.org/10.1007/978-0-387-09673-5_17

Seah, W. T. (2016). Values in the mathematics classroom: Supporting cognitive and affective pedagogical ideas. *Pedagogical Research*, *1*(2), 53. http://dx.doi.org/10.20897/lectito.201653

Seah, W. T. (2019). Values in mathematics education: Its conative nature, and how it can be developed. *Research in Mathematical Education*, *22*(2), 99-121. http://doi.org/10.7468/jksmed.2019.22.2.99

Seah, W. T., & Bishop, A. J. (2000). Values in mathematics textbooks: A view through two Australasian regions. Paper presented at the 81st annual meeting of the American Educational Research Association, New Orleans, LA.

Seah, W. T., & Andersson, A. (2015). Valuing diversity in mathematics pedagogy through the volitional nature and alignment of values. In A. Bishop, H. Tan, & T. N. Barkatsas (Eds.), *Diversity in mathematics education: Towards inclusive practices* (pp. 167–183). Springer.

Seah, W. T., & Wong, N. Y. (2012). What students value in effective mathematics learning: A 'Third Wave Project' research study. *ZDM Mathematics Education*, *44*, 33-43. https://doi.org/10.1007/s11858-012-0391-4

Smith, J. A. (2004). Reflecting on the development of interpretative phenomenological analysis and its con tribution to qualitative research in psychology. *Qualitative Research in Psychology*, *1*(1), 39–54.

Smith, J. A., & Osborn, M. (2004). Interpretative phenomenological analysis. In G. M. Breakwell (Ed.), *Doing social psychology research* (pp. 229–254). British Psychological Society. https://doi.org/10.1002/9780470776278.ch10

Smith, J.A., Flowers, P., & Larkin, M. (2009). *Interpretative phenomenological analysis: Theory method and research*. Sage.

Tirri, K. (Ed.). (2007). *Values and foundations in gifted education*. Peter Lang.

Zhang, Q. (2019). Values in mathematics learning: Perspectives of Chinese mainland primary and secondary students. In P., Clarkson, W. T., Seah, J., Pang (Eds.), *Values and valuing in mathematics education: Scanning and scoping the territory*, 185-196. https://doi.org/10.1007/978-3-030-16892-6_13