

Research Article

A comparative study of teachers' values alignment strategies in the classroom: Face-to-face versus distance education

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As the remarkable spread of distance education practices changes the roles of teachers and students in instructional processes, the context of classroom culture needs to be reviewed. In this revision, the importance of teachers' values alignment skills develops as conflicts between teachers' and students' values become more apparent. This case study compares values alignment strategies elementary mathematics teachers use in face-to-face and distance education. The content analysis of the data obtained using video recordings of two elementary mathematics teachers indicated that the participants' values alignment strategies were focusing, reprioritising, equilibrium, redefining, beacon, and ignoring. Face-to-face instruction often employs a strategy that considers students' values, such as the equilibrium strategy. However, in distance education, some strategies emerged in which the teacher's values are dominant, such as the beacon strategy.

Keywords: Values alignment strategies; Mathematics teachers; Distance education; Face-to-face education

Article History: Submitted 22 July 2023; Revised 20 August 2023; Published online 18 September 2023

1. Introduction

Developmental changes in education systems create distance, online, or hybrid learning environments and require revisiting, developing, or redesigning traditional face-to-face instructional practices. The construction of novel mathematics teaching and learning processes, communicating with students, and designing discussion environments are also reinterpreted with digitalization. However, classroom culture is deeply affected by the change in its components (Bishop, 2008; Dede et al., 2021), such as teacher and student roles, preferences, or using training tools such as textbooks, interactive boards, or online charts. Therefore, the interaction of the teacher and students in the classroom promotes discussions in mathematics classes. Accordingly, as a result of the developments in the classroom or virtual environments, along with those in technical tools and discourses, some practical changes take place in social, emotional, and cognitive aspects of education (Albano et al., 2021; Giberti et al., 2022). However, the teacher is the primary decisive factor in designing, maintaining, and terminating instructional practices,

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How to cite: Aktas, F. N. (2023). A comparative study of teachers' values alignment strategies in the classroom: Face-to-face versus distance education. *Journal of Pedagogical Research*, 7(4), 339-355. <https://doi.org/10.33902/JPR.202323210>

particularly for mathematical discussions (Aktaş & Argün, 2018; Bartolini Bussi, 1996). On the other hand, students also assume roles in the communication process by producing mathematical ideas in digital environments (Albano et al., 2021; Giberti et al., 2022). However, although the roles of affective factors such as beliefs, attitudes, or values are known in mathematics instruction (Aktaş & Argün, 2018; Aktaş et al., 2019; Bishop, 2008; Dede, 2006, 2013; Seah, 2018, 2019), studies on the implications of these factors in distance education are insufficient (Albano et al., 2021; Dede et al., 2021). This knowledge gap is closely related to the time and funds allocated to distance education and targeted learners' characteristics. Ultimately, a broader perspective on teacher preferences and the previously listed affective variables influencing these preferences in distance education is needed. Thus, some critical information can be obtained about the resource preferences, plans, practices, and decisions teachers make while managing communication processes. The inclusion of distance and hybrid education practices in education systems has become necessary due to obligations like pandemics and natural disasters. Therefore, in the current transitional period, in which distance education is a more critical item on the agenda, investigating teachers' preferences that affect classroom culture could help pinpoint some key points in prospective educational practices.

1.1. Mathematics Values, Mathematics Teachers, and Classroom Practices

Values can be defined as good and desired actions that guide behaviour (Halstead & Taylor, 2000). Also, they are principles that inform choices and decisions by assessing their importance and worth from a broader perspective (Aktaş, 2014). Therefore, decisions made by teachers through their pedagogical knowledge reflect their personal values (Bishop, 2008). For example, a teacher considering using technological tools in teaching and learning mathematics might think that using interactive boards in the classroom increases student participation (see Bishop et al., 2000; Seah, 2008). Hence, the decisions that mathematics teachers make by evaluating the practices of mathematics instruction reflect teachers' values (Bishop & Whitfield, 1972; Seah, 2019). In particular, decision-making processes regarding why and how to respond involve decisions 'made in the moment' during mathematics instruction (Aktaş et al., 2019). In short, the teacher's values influence the classroom culture and the students' values through classroom practices.

Effective teachers make various decisions to guide productive classroom practices. These include but are not limited to initiating or closing discussions, building discussions, referring to silent students' posts, involving everyone in discussions, motivating students to introduce new issues into discussions, and encouraging divergent assumptions (Giberti et al., 2022). Such teacher decisions can be categorized as the mathematics values indicators in mathematics instruction. Mathematics teachers hold values that vary based on cultural, institutional, and ideological contexts, such as the formalistic view, accessibility, and reasoning (Seah & Bishop, 2000); advanced mathematical processes, democracy, and achievement (Aktaş et al., 2019); socialization, authority/flexibility, and productivity (Dede, 2013); relevance, practice, information and communication technologies (ICT), teaching approach and consolidating (Akyıldız et al., 2021). In addition, students also bring their own values into the classroom, such as relevance, practice, ICT, teaching approach, consolidating (Aktaş et al., 2021), problem-solving, feedback (Barkatsas et al., 2018), connections and fun (Pang & Seah, 2021). Teachers and students might bring similar values into the classroom (e.g., practice and ICT) or different ones (e.g., authority and fun). Among such a diverse set of values, managing conflict or alignment with emerging values is one of the pedagogical roles that teachers have to assume.

1.2. Values Alignment Strategies

Teachers and students perform diverse roles in communication and discussion processes. Therefore, some emerging values should not be expected to be in alignment or negotiable all the time (Kalogeropoulos et al., 2021). However, disagreements and conflict situations might cause one or more values to dominate decisions and, thus, instructional processes. This can sometimes be in favour of teacher values and sometimes student values. Here, the domination of teacher values

should not be considered undemocratic because teachers do what they think is favourable for students. Thus, this could help students get involved in the practice, and the learning process could continue without interruption. However, “if the student’s social and cultural values are encouraged and supported in the mathematics classroom, through the use of context or through an acknowledgment of personal routes and directions, then their learning will have more meaning for them” (Boaler, 1993, p. 17). Therefore, if teachers and educators want to see each other’s values and harmony and facilitate students’ learning processes, they must exhibit their professional skills (Seah & Andersson, 2015a).

Seah (2019) emphasized that “the ability of effective teachers to align their values with those of the students is instrumental in facilitating mathematics learning” (p. 110). Therefore, teachers’ skills to manage value conflicts involve values alignment strategies. Kalogeropoulos and Bishop (2017) listed teachers’ strategies for values alignment as scaffolding, equilibrium, intervention, and refuge. As one moves from scaffolding to refuge in this list, the teacher focuses less on his/her values by being faithful to the teaching design or considering the students’ values without compromising his/her own values. However, when these strategies are placed on a scale with teacher and student values at both ends, for re-categorised, there is a balancing strategy at the balancing point where the values are in harmony. At one end of the scale is beacon, dominated by teacher’s values, while at the other end is a refuge, where students’ values are adopted (Kalogeropoulos et al., 2021). Seah and Andersson’s (2015b) classification involves the teacher making changes or revisions while implementing the instructional design and being aware of his/her own values and the students’ values. Accordingly, if the strategies are placed on a continuum based on the extent to which teachers are willing to practice the students’ values rather than their own values, they are the most inclined in the strategy of redefining and the least willing in the strategy of complementing, and the strategy of reprioritising remains in the middle. Table 1 summarises the values alignment strategies from the literature. Table 2 provides a detailed description of the strategies in the context of current study.

Table 1

Mathematics teachers’ values alignment strategies in the literature

<i>Categorisation for Values Alignment Strategies</i>	<i>Explanation of Categories</i>
Scaffolding, equilibrium, intervention, and refuge (Kalogeropoulos & Bishop, 2017)	There is an ordering from preferences in which teacher values are in the foreground to preferences in which student values are taken more into account. However, this ordering is not hierarchical. It only emphasises the teacher’s preferred teacher/student values in case of conflict or diversity of values.
Scaffolding, equilibrium/balancing, intervention, refuge, beacon (Kalogeropoulos et al., 2021)	It has been suggested to add the beacon strategy to Kalogeropoulos and Bishop’s (2017) classification. The beacon strategy involves the teacher prioritising values that they consider most suitable for learning the concept, particularly those values that they have adopted.
Redefining, reprioritising, and complementing (Seah & Andersson, 2015b)	The most important factor to note in this categorisation is that the values of students are in the foreground. The respective categories refer to modifying the lesson plan based on student values, revising it completely, and incorporating both teacher and student values simultaneously during practice.

1.3. Distance Education and Face-to-face Education for Mathematics Values

Face-to-face education refers to a teacher's being with the students in the same physical environment and delivering the lesson through traditional methods (Edwards, 2011). On the other hand, distance education defies an easy definition, although an operational definition needs to be made. This is partly because it lacks a universal definition, or its definition constantly changes with the continuous development of technology and the design of education that evolves in line with changes in educational environments, instructional objectives, or targeted participants (Moore et al., 2011). The United States Distance Learning Association defines distance learning as "the acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance" (Roblyer & Edwards, 2000, p. 192) without differentiating between temporal and physical distance. Because computers have become involved in distance education, the definition of distance learning consists of using instructional materials with both print and electronic media. Therefore, distance education is described as a pedagogical activity in which temporal or geographical factors promote flexible learning by removing the need for in-person contact between students and instructors (King et al., 2001). Dede (1996) defines distance education by including a comparison between pedagogical methods used in traditional and distance education and describes the latter as a replication of the former in the form of "teaching by telling" (p. 1).

For students, the advantages of distance education include flexibility, timing, and higher tuition, which may outweigh its downsides, such as less community-oriented learning and less social interaction (Witt & Wheelless, 1999). Designing enhanced mathematical discussion practices (Bartolini Bussi, 1996) that support student thinking in technology-supported environments is possible. Therefore, although the classroom is a community comprised of the students and teacher, a hybrid space is a particular environment where teachers attempt to engage students in learning by building bridges between the content and their students' knowledge and backgrounds (Moje et al., 2004). Moreover, being one of the components of communication, textbooks, which are heavily loaded with curriculum values, are also a part of classroom practices, regardless of their being digital or hardcopy (Dede, 2006; Dede et al., 2021; Albano et al., 2021), and the transition from face-to-face to distance education might affect instructors' textbook usage and preferences (Sevimli et al., 2022). Due to differences in communication types and teacher decisions, there might be a decrease in the amount of independent work undertaken by students in distance education (Russell et al., 2009).

Large-scale teacher training seminars and workshops have been held under the management of the Ministry of National Education [MoNE] (2022) in Turkey to integrate technology into face-to-face education, particularly in the last ten years. Although pedagogical support for teachers was insufficient during the unexpected time of the pandemic, it was possible for them to gain experience in online and synchronous instructional practices and to improve their skills by participating in online seminars (Özer, 2022). However, the learning process moved from the physical space of the classrooms to the virtual space, and the reorganization of didactics in the schools was not structured. Therefore, teachers have reorganized their didactics by choosing an online teaching platform with opportunities for communication and collaboration (Albano et al., 2021; Özer, 2022). Likewise, as distance education becomes a more critical part of the educational landscape day by day, teaching practices and teacher decisions will change over time. Therefore, revisions for various parameters related to students, teachers, curricula, textbooks, and tools will be required. To contribute to these studies and developments, the current study examines the values alignment strategies preferred by elementary mathematics teachers in face-to-face and distance learning environments. In line with this aim, the following research question was formulated:

RQ) What are the elementary mathematics teachers' values alignment strategies, and how do these strategies change in face-to-face and distance learning environments?

2. Method

2.1. Research Design and Participants

This study aims to investigate in detail the values alignment strategies teachers prefer in their classrooms and compare them through a holistic lens (Merriam, 1998). It adopts a case study design to compare face-to-face and distance education practices. Teacher participants were selected using criterion sampling, voluntarily, based on the criteria of having training in both education types, completing a short-term in-service training offered by the MoNE, and providing distance education for two semesters. It was considered important for the participants to complete the in-service training provided by the MoNE (about distance education, institutional online systems, and examples of teaching practices) to get enough experience. Online professional development courses enable teachers to gain experience in distance education procedures (Russell et al., 2009).

The participants Murat and Sila were responsible for the sixth-grade mathematics courses at the same elementary school. Murat was a male teacher with a professional experience of 13 years, and Sila was a female teacher with a professional experience of 11 years. The participants had never offered distance education courses before the pandemic. However, at the time of the study, they had used technological tools, such as interactive boards, for about eight years.

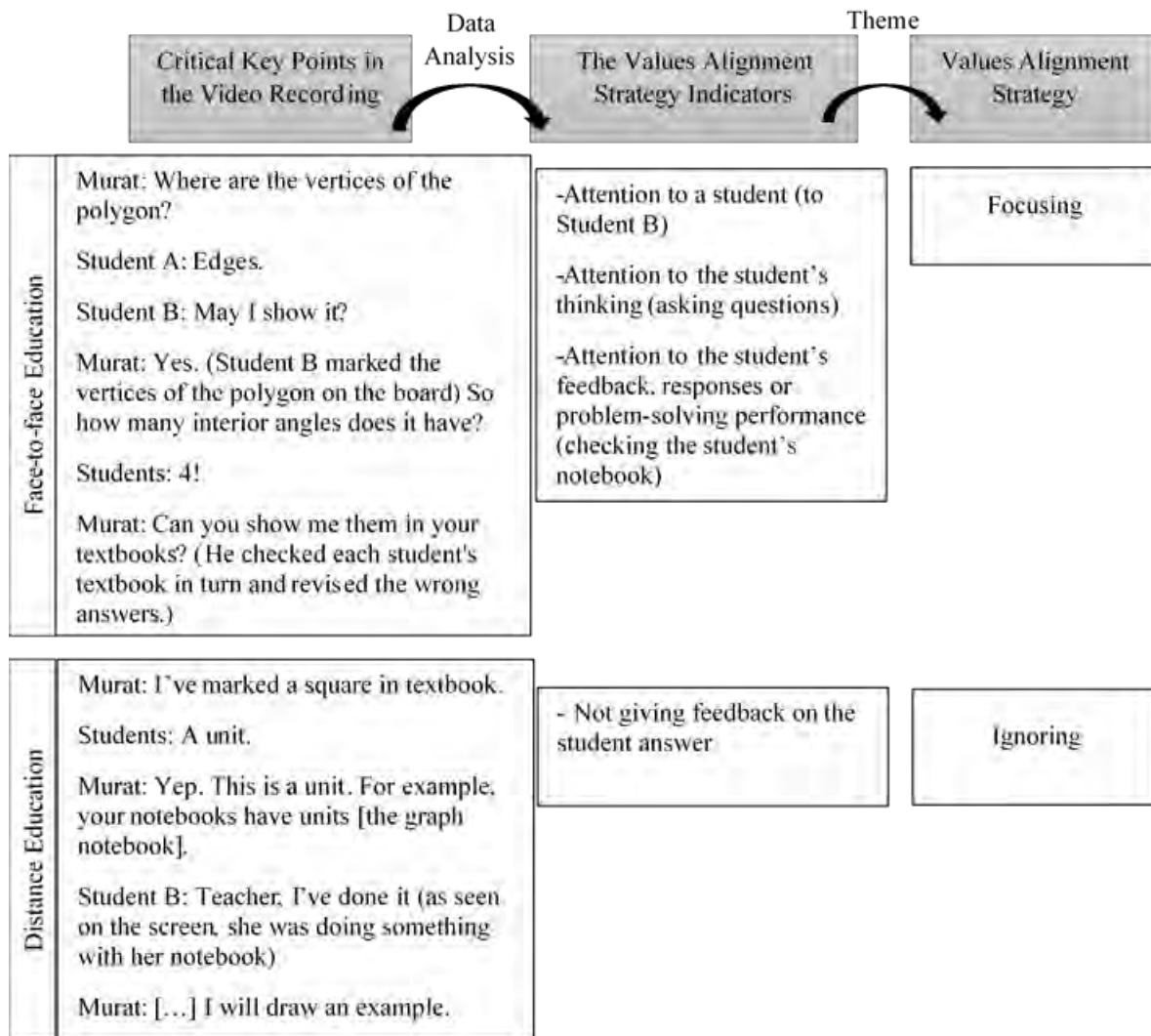
2.2. Data Collection Tools and Procedure

The data collection tools in this study included video recordings of face-to-face classes, screen recordings of distance education classes, and short confirmation interviews carried out with the participating teachers. Four face-to-face and six distance education classes designed by both participants to teach the concepts of angles and polygons were videos recorded by the researcher. The students attended five 30-minute classes (two of them being face-to-face and three of them being distance education classes). Each teacher had a class. Due to the pandemic, the classes were divided into two groups, with 15 students each. The participating teachers offered distance education through online courses at the Education Information Network (EIN, EBA in Turkish) and content videos approved by the MoNE. The EIN is an educational electronic content (such as videos, textbooks, materials, etc.) network established by the MoNE. Both teachers and students can upload their own documents to the EIN. For instance, video recordings of online sessions can be uploaded to it after delivering the classes via Zoom.

2.3. Data Analysis

After the video recordings were transcribed, the data were analyzed using content analysis. The indicators of values alignment strategies were considered as the units of analysis in the research. The raw data were first read, then the critical points with value conflicts or alignments were identified. Finally, the indicators of values alignment strategies were coded (see Merriam, 1998). The values alignment strategies were obtained by combining the codes for the indicators of strategies into themes. At this point, the strategy in the literature (Kalogeropoulos & Bishop, 2017; Kalogeropoulos et al., 2021; Seah & Andersson, 2015b) was also considered from the perspective of the current study. Including an indicator in a theme must be observed several times in the classes and provide a common perspective for strategy definitions. The critical situations considered in the analyses were explained by Seah and Andersson (2015b) as critical incidents with “differences in valuing between themselves and their respective students” (p. 3125). On the other hand, Aktaş et al. (2019) examined the decision-making moments of teachers and called the moments when the values are observed as “key points.” Therefore, the critical key points were coded as indicators at which teacher and student values conflicted or were in harmony and at which teachers made decisions and put their strategies into action. An analysis example for the strategy and their indicators (see Table 2) is presented in Figure 1.

Figure 1
The process of data analysis



In addition, the codes and themes were discussed with the second coder. A consensus was achieved by discussing the differences between the coding of these two coders. For example, before defining the concept of "polygon," Murat questioned the criteria for a geometric shape to be considered a polygon, took notes of the student's answers, and then wrote a definition of this term using these notes. The researcher coded this key point as an indicator of complementing strategy (Seah & Andersson, 2015b). However, by negotiating with the second coder, it was agreed that although Murat considered the students' values, he eventually wrote a definition with his own values and that this critical point lacked the property of balance in the complementing strategy.

2.4. Validity and Reliability

A face-to-face course was first observed and analyzed as a pilot study to ensure the study's credibility. This course was offered by an elementary mathematics teacher working at the same school as the study participants. The participant confirmation interviews were conducted after the video analysis to increase credibility. Expert opinions about the obtained themes and codes were also sought from a faculty member who had carried out studies on values in mathematics education. The researcher and second coder discussed the coding differences again and reached a consensus.

3. Results

The present study investigated alignment strategies employed by elementary mathematics teachers, focusing on similarities and differences between strategies used in face-to-face and distance education classes.

Focusing. This strategy involves the teacher's keeping student values in the foreground by paying attention to the student, their thinking, or the concept being taught. Accordingly, the teacher who adopts this strategy is expected to do various activities, such as giving the students voices, focusing on their feedback or thinking, asking them to respond, checking their notebooks, and discussing or responding to individual students' ideas.

In face-to-face classes, Murat focused more on the students' thinking and the concept and thus considered the student's values. In the key example below, Murat focused on Student F, who failed to contribute to the class [see Figure 2]:

Murat: The vertices of a triangle?

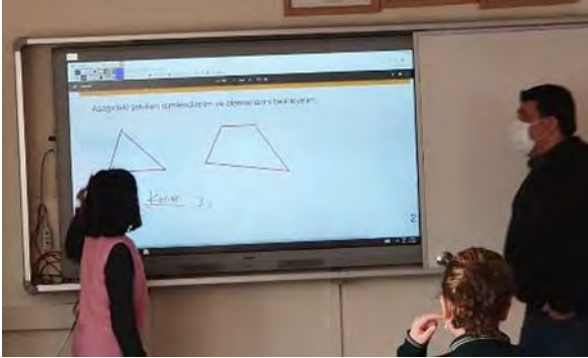
Students: Three!

Student B: Where the sides meet.

Murat: Can you show it to me? (He pointed to Student F) [...]

Figure 2

A photo of Student F while marking the vertices of a triangle



In addition, Murat frequently checked the notebook and textbook of each student in his face-to-face classes:

Murat: What you have marked is one of the polygon's vertices. These are the angles (He showed one in Student D's textbook. See Figure 3). Can you show me another one? (Student D marked another angle.)

Figure 3

Murat is working with Students D



Murat focused on students' answers and performance in distance education classes.

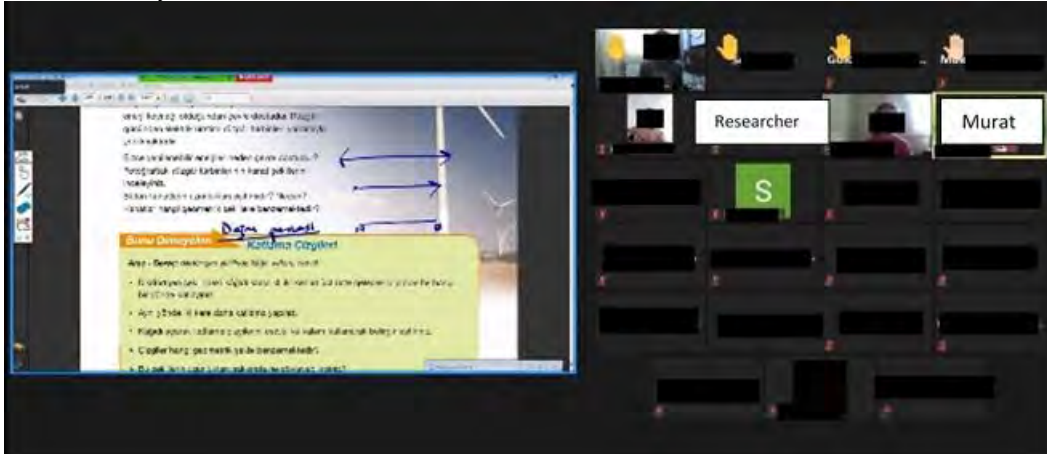
Murat: (Some students responded, "ray or line segment") Just a second, there are students who said "line segment," but this is not a line segment. Well, can I measure its length?

Student B: Teacher, I am confused.

Murat: I cannot measure it because one of its ends is not fixed (see Figure 4).

Figure 4

A screenshot from Murat's distance education class



Both participants employed the strategy of *focusing* by encouraging less active students to speak in the class. Sila mainly focused on the students' thinking, feedback, responses, and problem-solving performance.

Focusing differs from *intervention* (Kalogeropoulos & Bishop, 2017) in that the student receives attention even when they do not express an opinion and from the *refuge* strategy (see Kalogeropoulos & Bishop, 2017) as the teacher does not ignore their own values and those of the textbook's values.

Reprioritising. This strategy involves redeciding between the teacher's values and those of the students, noticed by the teacher. The teacher goes on to teach by emphasizing the students' values without imposing his/her own values. He/she can choose between these two values (Seah & Andresson, 2015a). In addition, in the present study, it is essential that the teacher first focus on the students' values and then consider his/her values or the values imposed by the curriculum or textbooks. Repeating or checking readiness are the most common practices in this strategy. On the other hand, examining surprising questions/examples and discussing them are techniques that reflect this strategy in classroom practices.

Murat was first discussing with his students, revealing their thoughts, examining different examples, and then presenting concept definitions:

Murat: We have discussed polygon.

Student B: Closed figures.

Student C: The number of sides should not be fewer than three.

Murat: I should note it (He wrote it on the blackboard).

Students: With the line.

Murat: I think you mean "line segments." This is the correct expression. So, we can define the term polygon as [...].

Murat employed the strategy of *reprioritizing* to identify the students' thinking while examining the examples in distance education. Murat did not employ his ideas, solutions, and values before his students expressed their thoughts.

Student F: May I give an example, too?

Murat: Let us draw an example on the screen! (Student F drew a line segment congruent with the line segment on the screen and a right triangle). You also drew a triangle with 2-by-1-unit

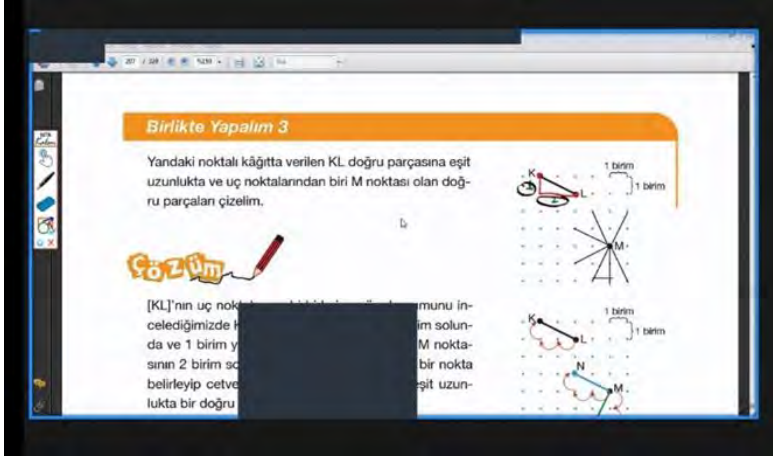
perpendicular sides. Good. Can we draw a congruent line segment other than the one drawn by Student F?

Student E: Can we draw a line segment in the other direction?

Murat: You can draw it (Student E has drawn a line segment). It is not true. Please, draw a perpendicular triangle [see Figure 5].

Figure 5

Reprioritising distance education

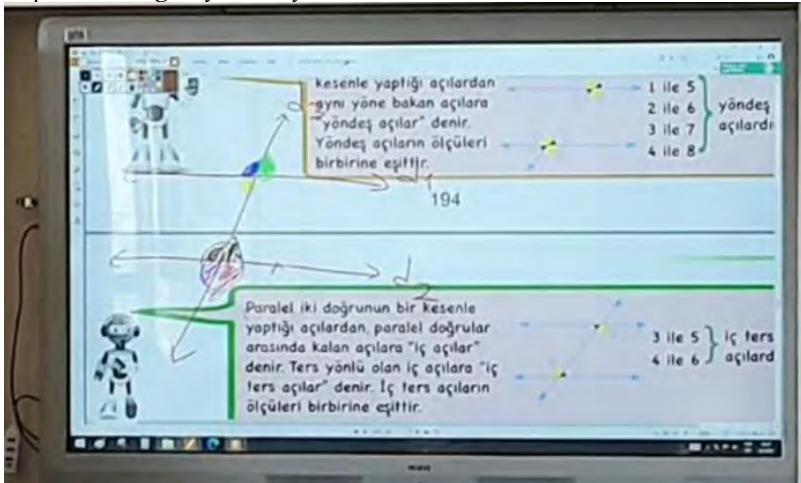


Sıla frequently employed *reprioritising* in her face-to-face classes, especially to check readiness, and the indicators were as follows: focusing on the students' thinking before concept definition and features, relating it to daily life, and working on examples.

Sıla: [...] You determine the angles, and then we will talk about that (She has drawn three intersecting lines and made choices from among the students raising their hands. The students have marked the angles with different colours [...]) (see Figure 6).

Figure 6

Reprioritising in face-to-face classes



In her distance education classes, Sıla only employed the strategy of reprioritising while examining the examples [see Figure 7].

Sıla: Now, we are asked to mark the polygons. Let us number them so that we can refer to them quickly.

Student B: Number 1 is a polygon.

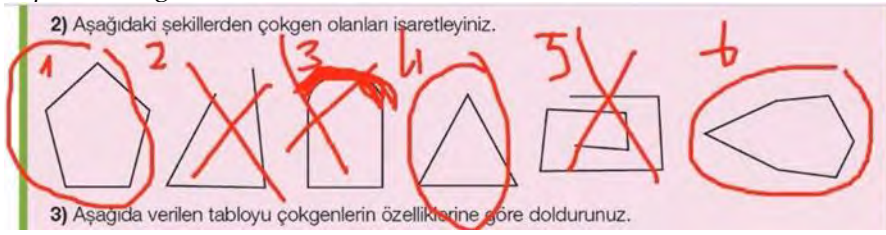
Sıla: Why?

Student B: It is closed.

Sıla: Yep, it has to be a closed figure. Well done. So, Number 2 is not a polygon, then [...]

Figure 7

Reprioritising distance education classes



Equilibrium. This strategy is employed when the teacher faces student values that emerge in unexpected situations. The teacher's answers and feedback reveal value alignment in critical key points. In this process, the teacher can consider accepting the students' values to prevent potential conflicts (Kalogeropoulos & Bishop, 2017). The participant teachers employed *equilibrium* only in face-to-face classes.

Student E: Sir, here is our homework. Can you check it?

Murat: You should draw it using a protractor. A visual inspection will not work. Let me bring a protractor to the next session to measure it together.

Redefining. This strategy includes providing the students with feedback in a value-laden activity designed by the teacher due to the student's inability to recognize this value or not adopt it. In other words, *redefining* involves the teacher's changing the previously determined teaching strategy in line with the teaching strategy that the students value without changing the practice itself (Seah & Andersson, 2015b).

Murat changed the examples, elaborated upon them, or provided new examples to promote thinking, prevent misconceptions, and highlight wrong answers in face-to-face classes. When Murat realized the students' mistakes in distance education, he did not change the practice by giving explanations and examples. Sila included materials to develop the students' thinking and tried to introduce examples from daily life in face-to-face classes. In distance education, she did not employ *redefining*.

Sila: [...] Let us name the angles to recognize them easily; a, b, c, d, e, f, g, h. Which are interior angles? (She chooses Student B among the students raising their hands.)

Student B: c, d, e, f.

Sila: Is it right? Do you agree? [Everyone confirms] Why did you say so, Student B?

Student B: These angles are inside the shape.

Sila: Any other ideas?

Student C: h and g can be, too.

Student D: But they are located outside the shape? They have to be among the two parallel lines.

Sila: If my arms were parallel like that, how would I call the angles inside of my arms? [see Figure 8]

Student D: Interior angles.

Sila: The outside angles are called exterior angles, while the interior angles are those between the two parallel lines.

Figure 8

Redefining in face-to-face classes

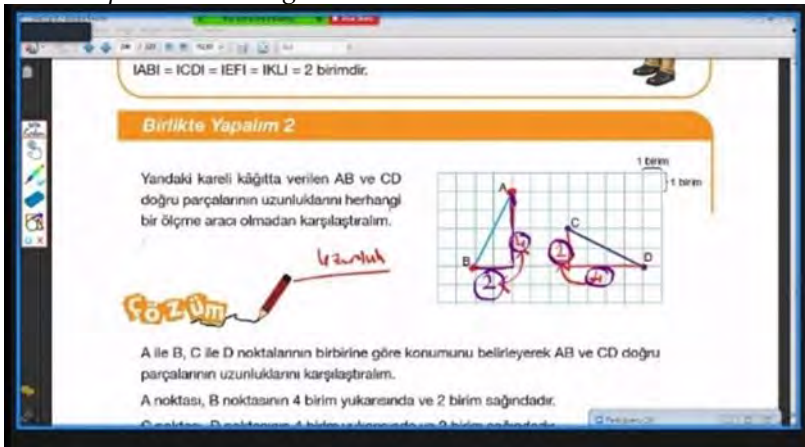


Beacon. This strategy refers to the teacher's coping with chaotic environments to sustain the students' engagement and meet their cognitive demands (Kalogeropoulos et al., 2021). *Beacon* is a strategy in which the teacher reflects their own values to classroom practices the most. The teacher must remain entirely faithful to their own values and instructional design. According to Kalogeropoulos et al. (2021), students tend to accept the teacher's values over time. The participant teachers did not employ the beacon strategy in the face-to-face classes. Murat remained faithful to his lesson plans in distance education classes, followed his own solutions for the examples, and did not employ student values. Sıla employed this strategy in her classes while revising the subject matter, checking the student's pre-existing knowledge, providing explanations and definitions for concepts, and working on examples.

Murat: Listen to me, please. In our previous example, the line segments were drawn on the sides of these square units, right? However, now, the line segments are drawn diagonally. What should we do this time? Everyone, please mark the endpoints of the line segment [AB]. I have marked them. Have you marked them, too? [see Figure 9]

Figure 9

Murat's problem solving in distance education



Ignoring. This strategy, which emerged as a theme in the current research, involves the teacher's ignoring a specific student's values, not focusing on student thinking, or not considering their own values or those of the students. When Murat sought feedback from the students in face-to-face classes, he ignored those who raised their hands. In distance education, he missed the students who raised their hands and expressed their thoughts. While he often employed the strategy of *ignoring* distance education, he only used it to get feedback from every student in the class to assess their readiness for face-to-face classes. In distance education, he ignored the answers of the students who found the solution to ensure that all the students were involved in thinking. Sıla did not employ this strategy in her classes. Since Murat wanted to examine the example himself, he ignored Student B. When the explanation was completed, he wanted the students to provide examples and offer explanations (see Figure 9).

Murat: [...] We will draw a triangle.

Student B: May I explain?

Murat: The segment with B and A points (He has drawn it)

Student B: But [AB] has to be straight.

Murat: A triangle like that (He drew it). Has everyone drawn it? [...]

Student B: May I say something?

Murat: Just a second, Student B, don't you think you have interrupted the lesson many times? [...] Now, can you draw congruent segments.

4. Discussion and Conclusion

Table 2 summarizes the values alignment strategies and their indicators based on the similarities and differences between face-to-face and distance education classes.

Table 2
Mathematics teachers' values alignment strategies

Values Alignment Strategies	Indicators in Face-to-Face Classes	Indicators in Distance Education Classes
Focusing	<ul style="list-style-type: none"> -Attention to a student -Attention to the student's thinking -Attention to the student's value(s) -Attention to a concept or the context -Attention to the student's feedback, responses, or problem-solving performance 	<ul style="list-style-type: none"> -Attention to a student -Attention to the student's thinking -Attention to the student's feedback, responses, or problem-solving performance
Reprioritising	<ul style="list-style-type: none"> -Determining the students' values -Determining the students' thinking - Continuing to teach after determining the students' values and thinking 	<ul style="list-style-type: none"> -Determining the students' thinking
Equilibrium	<ul style="list-style-type: none"> - Adoption of unexpected student thinking or values - Encountering unexpected situations regarding the concepts or examples (noticing a solution different from the one suggested in the lesson plan etc.) 	-
Redefining	<ul style="list-style-type: none"> - Changing the instructional strategy - Changing or adding examples - Providing explanations - Including materials or citing examples from daily life 	<ul style="list-style-type: none"> - Changing or adding examples - Providing explanations
Beacon	-	<ul style="list-style-type: none"> - Being faithful to the teaching plan - Focusing on the teacher's own statements, thinking, and values - Disregarding the students' values
Ignoring	Not allowing the students to speak, although they raise their hands	Not giving feedback on the student's response

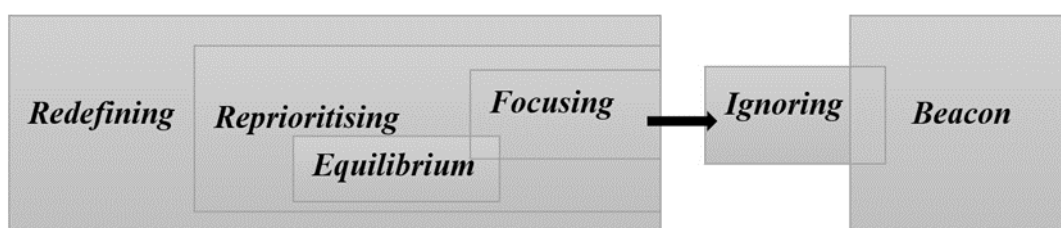
As can be understood from the value indicators, the teacher should notice the students' values so that he/she can employ *focusing*. Therefore, the teacher should have pedagogical competence in dealing with student values and thinking (Aktaş & Argün, 2018; Aktaş et al., 2019; Kalogeropoulos et al., 2021; Seah & Andersson, 2015a). The teacher's focus on the subject or concept as a strategy indicator is limited in the current research. Of course, textbooks and curricula are essentially value-laden tools (Dede, 2006; Dede et al., 2021; Seah, 2019). In the present study, instrumental values are discussed with reference to the review dimension by considering student thinking. Therefore, the teachers' continuing classroom practices by using the textbook in distance education were not considered as focusing on the concept. These practices are based on the teacher's ignoring student values through a resource/activity compatible with his/her own values. The difference in the use of textbooks by the medium of education is not surprising. Indeed, the frequency of textbook usage is decreased according to teaching experience. Also, in face-to-face classrooms, the frequency of textbook usage depends on the school culture, whereas in distance education, the frequency of textbook usage is not (see Sevimli et al., 2022). Indeed, a major finding from the present study is that the teachers focus more on student thinking in face-to-face practices and even provide concept definitions upon recognizing student thinking. This result points to the more comprehensive strategy of *reprioritising*, which considers the whole class, beginning with the *focusing* strategy.

A critical difference between the indicators of *reprioritising* in face-to-face and distance education is whether the teacher considers his/her students' values. In *reprioritising*, as in the *focusing* strategy, the teacher does more than deal with an individual student's thinking and tries to reach the thought of all the students as much as possible during the practice. Thus, the teacher can identify the students' values and, accordingly, guide the practice with the help of the values he/she adopts (Bishop, 2008; Dede, 2013). However, while guiding the practice, the teacher can continue focusing on his/her values. In distance education, teachers do not consider thinking to reveal students' values, and this points to their perception of distance instruction as "teaching by telling" (Dede, 1996) or possibly indicates a lack of experience and inadequate distance teaching practices (Albano et al., 2021; Özer, 2022). Moreover, the strategy choices in face-to-face education help the teacher use the equilibrium strategy, providing opportunities to consider student values and promote student thinking. Thus, the teacher faces student thinking and values that he/she cannot foresee in the course design. This is the main reason why *equilibrium* is not employed in distance education.

Another outcome of the differences between the frequency and indicators of *focusing* and *reprioritizing* strategies is the employment of the *redefining* strategy. *Redefining* involves the teacher's directing the in-class practices based on the students' values. Therefore, the more frequently *focusing* and *reprioritizing* strategies are employed and the higher the reflection of these strategies on the teacher's awareness of values, the more often the students' values are included in the classroom practices. Indeed, only explanations and additional examples are included as indicators of redefining distance education because limited indicators of *focusing* and *reprioritising* strategies are employed. Thus, initially dealing with an individual student, the teacher becomes more aware of the students' values as he/she places the students' values in the foreground more than his/her own values. In other words, an essential relationship exists between *focusing*, *reprioritizing*, and *redefining* strategies (see Figure 10).

The *beacon* strategy emerged in distance education practices in which the teacher attached less importance to student engagement. The indicators of this strategy should not create a negative perception of teacher authority. Conversely, Kalogeropoulos et al. (2021) consider the teacher's effectiveness as the ability to manage in-class practices through the most appropriate values alignment processes (see Seah, 2018) to ensure better student learning. Therefore, they advocate the enlightenment of learning experiences by the teacher depending on skills, knowledge, and experience. In distance education, teachers can explore their students' values, thanks to their

Figure 10
Values alignment strategies



ability to unearth student thinking and focus on these thoughts (see Aktaş et al., 2019). They can also realize their own values that guide instructional practices (Kalogeropoulos et al., 2021). Therefore, using this strategy frequently in distance education can be explained by the need to improve teachers' skills in technology-supported instructional practices.

On the other hand, the teacher also focuses on their values in face-to-face classes. He/she can exercise his/her decision-making authority by considering various pedagogical variables, such as the nature of the concept, student misconceptions, and curriculum values (Aktaş et al., 2018; Bishop et al., 2000; Dede, 2013; Seah, 2008). These decisions are the outcomes of the teacher's values (Aktaş et al., 2019) and the indicators of teacher competency that form the basis of values alignment strategies (Aktaş & Argün, 2018; Seah, 2018). Focusing on the teaching sequence he/she designed, the teacher may not try to determine the students' values and can ignore their thinking. At times, these intentional acts of ignoring may be the result of a focus on an individual student's thinking or that of students in general rather than a focus on concept or the students' values. Also, the teacher can focus on students who do not speak during the lesson or on those with misconceptions. Therefore, the teacher does not allow other students to speak or may not give feedback to the student who has a misconception or who asks a question that will be answered by the teacher later (Giberti et al., 2022; Witt & Wheelless, 1999). These choices depend on the teacher's skill to manage values in mathematics education (Seah & Andersson, 2015b). However, the listed indicators differ from those of the *beacon* strategy. Although the strategy of *ignoring* is similar to the *beacon* in that the teacher intentionally does not offer the students opportunities for employing their values, it also involves reactions of ignoring or not responding to the students' values and thinking. Indeed, although the teacher often prioritizes his/her own values or the nature of the content, he/she may later employ practices, such as allowing the student to speak, giving feedback, or explaining an earlier question posed by a student. Therefore, as shown in Figure 10, *ignoring* emerges due to the *focusing* or *redefining* strategies. However, *ignoring* neither focuses on individual values (unlike focusing) nor involves sudden changes in practice (unlike redefining). Ignoring emerges as a different strategy based on these indicators.

The intersection relationship in Figure 10 does not imply that *focusing*, *reprioritising*, and *equilibrium* are not distinct from *redefining*. This relationship involves the emergence of values alignment strategies in classroom practices and shaping the teacher's decisions based on student values. In the present study, the classification was made based on to what extent the teachers reflected the students' values in practice rather than based on the teacher's retaining his/her own values, just as it was done by Kalogeropoulos et al. (2019). Here, neither the values of the teacher nor those of the student are more valuable or critical. This context should be interpreted as an effective teacher maintaining the interaction between the educator and students through pedagogical tasks and activities and considering both groups' values -by directing student value if it is not pedagogically proper to reflect it in practice- to overcome potential value conflicts.

Kalogeropoulos et al. (2021) state that although they list the strategies linearly, there is an overlap between them and that "there will not come a stage, and nor should there, when hard boundaries are drawn, and the strategies become cells with impervious walls around each" (p. 19). These intersecting and encompassing relationships in Figure 10 imply a critical point in shaping values alignment strategies and their emergence in classroom practices. The values of teachers and

students in classroom practices are often fluid, and the teacher's decisions shape the extent to which these values are harmonious. However, the teacher's and students' values can cause values alignment strategies to add up one after the other or appear together. For example, the fact that *focusing* causes *redefining* to take effect or that the teacher's response involves *ignoring* explains this causality. Also, this causality results from reflecting students' values to classroom practices based on student thinking. Therefore, critical points for shaping values alignment strategies include (i) the teacher's awareness of student thinking and values, (ii) the mathematics teacher's educational values, and (iii) student-teacher communication, which is a weakness of distance education, particularly for teachers who are not experienced enough (Albano et al., 2021). Indeed, the extent to which values are embraced and prioritized is responsive to the environment (Seah & Andersson, 2015a). Thus, the intricate structure of values alignment processes emerged based on projecting student values in teaching practices, as illustrated in Figure 10.

The role of distance education concerning strategy indicators is quite evident in identifying and relating strategies (see Table 2). In addition, it is remarkable that there is an obvious difference between the strategies of *equilibrium* and *beacon* in face-to-face and distance education. The main factors that lead to this difference are the teacher's shaping the practice for the students' active learning and the teacher's competencies in distance teaching (Albano et al., 2021; Moore et al., 2011). While teachers endeavor to focus on each student's thinking in face-to-face education, they prioritize their own values in distance education. This is the outcome of the "telling and showing" method (Dede, 1996), developed by teachers to avoid the difficulty of giving feedback on students' thinking in distance education.

5. Limitations and Further Research

This study investigated mathematics teachers' preferences for values alignment strategies in face-to-face and distance education. The data were obtained through video recordings. Prospective studies could provide insight into the reasons for teachers' strategy preferences and educational values behind these decisions. Other possible avenues for further research could include the examination of video recordings of lessons in collaboration with teachers to investigate the relationships between values alignment strategies in detail or the investigation of critical issues in classroom practices. Further video analyses could provide detailed categories in examining the values underlying teacher decisions (see Aktaş et al., 2019).

The results revealed that, in distance education, teachers included values alignment strategies with limited indicators, did not reflect on practice, or did not focus on student values. These results may be because teachers' distance education experiences and competencies are limited to in-service training seminars and two-term practice experiences, which is a limitation of the present study (see Albano et al., 2021; Moore et al., 2011). Therefore, it is necessary to present models for developing teachers' awareness of values, particularly student values, their acquisition of competencies in distance education practices, and skills of employing or diversifying values alignment strategies. Thus, comparative studies can be conducted to investigate cultural differences by presenting a comprehensive perspective on the generality and indicators of the strategy set forth in the current research.

It is important to investigate students' values alignment strategies in digital environments as they are involved in communication for effective mathematical discussion activities (Albano et al., 2021; Giberti et al., 2022). In fact, discovering students' strategy preferences compared to their teacher's values alignment strategies will contribute to designing effective instructional practices. In addition, it will be possible for teachers to design mathematical discussion activities that promote student thinking in digital environments (Bartolini Bussi, 1996). Values alignment strategies can be determined by considering both teachers' and students' values and those imposed by institutions and textbooks. In this regard, extensive further research on this topic could help shape and develop distance education practices by harmonizing institutional, educational, and individual values.

Ethics declaration: Author declared that the study was approved by Kahramanmaraş Sutcu Imam University Social and Human Sciences Research and Ethics Committee on 04.01.2021 with approval code: 2021-19.

Funding information: No funding source is reported for this study.

Declaration of interest: No conflict of interest is declared by the author.

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