Exploring Educator Values Alignment Strategies in an Intervention Context: The Emergence of the Beacon Strategy

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Abstract

Purpose: The purpose of this paper is to explore whether the four value alignment strategies available to educators (Scaffolding, Balancing, Intervention, and Refuge) previously identified in the mathematics education literature comprehensively capture educator value alignment strategies in an intervention context.

Design/Approach/Methods: To this end, we analyse semi-structured interview data with two teacher-leaders involved in the Getting Ready in Numeracy (G.R.I.N.) intervention program through a value alignment lens.

Findings: We ascertain that a fifth strategy, the Beacon strategy, is needed to describe the range of value alignment strategies employed by educators in the G.R.I.N. program. The Beacon strategy involves the educator digging in and reasserting their expectations until the student behaves in a

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manner that aligns with the educator's values. In part it involves the educator being able to recognize their own values and clearly communicating these values to students.

Originality/Value: This article further explores strategies that educators have at their disposal for aligning their values with those of their students. The uncovering of the Beacon strategy is particularly valuable as it suggests that educators could be purposefully pursuing value alignment even when they do not appear to take any active steps to move further towards their students' sets of values.

Introduction

Decisions and actions relating to the learning and teaching of mathematics in schools reflect directly what students and educators[1] value. The notion of decision making by teachers has been part of the values literature since the 1980s drawing on previous work on decision making by Bishop (Bishop & Whitfield, 1972). Although decision making faded a little from the 1990s (Watson, 2018), this thread in the research literature has continued (Borko et al., 2008) and is coming to the fore again (Schoenfeld, 2011, 2015). All of these authors note the importance of values, and although for Bishop this became a central notion for his work, others such as Schoenfeld concentrated on related qualities such as teachers' beliefs. In this article, we explore further the role of values in the decision making by teachers.

It has been proposed that through an understanding of valuing as volitional, the approach of aligning what students and educators value can optimize student learning of mathematics (Seah & Andersson, 2015). Over the last 150 years, mathematics education research has contributed much to our understanding of the learning and teaching of mathematics and to our knowledge of what might be done to support and improve the teaching and learning processes (Kilpatrick, 1992). Despite this, some issues, such as student disengagement in mathematics education, continue to persist (Seah, 2019). A Nuffield Foundation-commissioned review authored by Askew and colleagues asserted that:

> high attainment may be much more closely linked to cultural values than to specific mathematics teaching practices. This may be a bitter pill for those of us in mathematics education who like to think that how the subject is taught is the key to high attainment. But study after study shows that countries ranked highly on international studies—Finland, Flemish Belgium, Singapore, Korea—do not have particularly innovative teaching approaches. (Askew et al., 2010, p. 12)

The implication of the international comparative work undertaken by Askew and colleagues is that educational researchers and other stakeholders need to take the notion of values seriously.

As noted by Seah (2019), values are not always defined explicitly in the literature, likely reflecting the idea that they are commonly understood as a construct. Seah provides the example of Clément (2013), who he notes begins his section titled "definition of values" with the statement, "values guide individual and social actions" (p. 3), indicating what values do rather than explaining what values are. According to DeBellis and Goldin (2006), values, by which they also included morals and ethics, refer to "the deep, personal truths or commitments cherished by individuals. They help motivate long-term choices and shorter-term priorities. They may also be highly structured, forming value systems" (p. 135). Values have been a focus of educational research since at least the second half of the 20th century (e.g., Krathwohl et al., 1964); however, their relevance to mathematics education specifically was not comprehensively considered specifically by the research community until the 1980s.

Research into the roles of values in mathematics education was first proposed by Bishop who put forward three pairs of complementary values for Western mathematics, namely, *rationalism* and *objectism*, *progress* and *control*, *mystery* and *openness* (Bishop, 1988, 2008). Seah and Andersson's (2015) definition of values highlighted that values that are being espoused in mathematics education stem from the sociocultural context and not only from mathematics lessons alone. They further argue that the extent to which a value is embraced and prioritized depends on one's environment. Value priorities continue to be examined and evaluated throughout one's life (Clarkson et al., 2001). Seah (2019) defines values and valuing as "an individual's embracing of convictions in mathematics pedagogy which are of importance and worth personally. It shapes the individual's willpower to embody the convictions in the choice of actions, contributing to the individual's thriveability in ethical mathematics pedagogy" (p. 107).

As a corollary of values being a powerful determinant of behavior, Seah (2019) has also emphasized the importance of values alignment specifically between learners and teachers, arguing that "the ability of effective teachers to align their values with those of the students is instrumental in facilitating mathematics learning" (p. 110).

We are mindful that educators and their respective students come to class with their own aspects of valuing and these are likely to be different. If values alignment helps to maintain a functioning classroom environment, then educators and students will want to see one another's values aligned and in harmony. It has been proposed that educators, and teachers in particular, use their craft to play a leading role in facilitating values alignment (Seah & Andersson, 2015).

Kalogeropoulos and Bishop (2017) suggested four strategies that educators call upon to facilitate the coexistence of different values: *Scaffolding*, *Balancing (or Equilibrium)*, *Intervention,* and *Refuge*. However, it must be acknowledged that classrooms are places with contestations and conflicts; sometimes these can be effectively negotiated, sometimes not, and yet other times can be resolved in the medium-term without any overt attempt at negotiation on the educator's behalf.

Similar to a parent insisting that a child must eat a nutritious meal for health reasons before eating some sweet extras (perhaps insisting the child will "thank them when they're older"), it may be that sometimes educators must also hold their ground for long-term success in mathematics learning. In this article, we analyze interview data from two teachers involved in the Getting Ready in Numeracy (G.R.I.N.) intervention program to identify an additional values alignment strategy that captures this idea. We name this the Beacon strategy, a values alignment strategy that an educator deliberately employs when they are not willing to succumb to students' resistance in mathematics learning. In essence, the Beacon strategy is analogous to "tough love" in mathematics learning.

Revisiting the four values alignment strategies adopted by educators in a classroom teaching context

Before considering our analysis of the G.R.I.N. program data, for context, it is first pertinent to revisit our previous description of the four values alignment strategies described previously, that is, Scaffolding, Balancing, Intervention, and Refuge (Kalogeropoulos & Bishop, 2017). This section will begin by summarizing the importance of values for student engagement in mathematics before briefly describing each of the four established values alignment strategies in turn. At least one example from the first author's PhD thesis (Kalogeropoulos, 2016) will be presented for the purpose of illustrating each of the four strategies.

Educators' values are expressed in their mathematics lessons through their activities and discussions. As students enter these environments, they have their own sets of values that may or may not be the same, similar or different to the educator's values. A study by Attard (2011) suggested that the most powerful influence on student engagement in mathematics appeared to be that of their teachers. This influence can be viewed at two interconnected levels. The first level includes the pedagogical repertoires employed by the teachers. The second is the pedagogical relationship that occurs between the teachers and the students; that is, the connections made between the teachers and the students, and the teachers' recognition of and response to the learning needs of their students (Attard, 2011). Strategies that educators use to resolve critical incidents are based on the extent to which the educator retains their values after negotiation has taken place. The extent to which an educator retains their values can be seen to be on a continuum of the four alignment strategies: In decreasing order of retention they are Scaffolding, Balancing, Intervention, and Refuge. The adoption of these strategies does not indicate that the educator is losing control of their lessons. In fact, it suggests something of the opposite. Specifically, the implication is that an educator is conscious of triggers that lead to student disengagement and is therefore able to use their resourcefulness and creativity to adopt a values alignment strategy in an attempt to avoid disengagement or reengage students once disengagement has occurred.

Scaffolding

When an educator adopts the Scaffolding strategy, they come to the mathematics lesson with some type of preparation to scaffold the learning of the intended lesson objective, including maintaining most of their initial values by having a system organized to avoid states of disengagement. For example, a teacher asked her class to develop a set of rules regarding odd and even numbers. Some students appeared confused at this request. The teacher offered these students cards with questions to complete involving the four operations using odd and even numbers. The purpose of these cards was for students to eventually recognize patterns involving odd and even numbers and the four processes. The teacher maintained her initial valuing of this task but provided the students with some scaffolding to help them begin the task. These could be perceived as enabling prompts (Sullivan et al., 2009). The provision of enabling prompts includes reducing the number of steps for those students who cannot proceed with the task, with the explicit intention that they work on the initial task subsequently (Sullivan et al., 2009).

In another example, a teacher began her mathematics lesson by asking students to complete a complex worded problem. Students soon showed signs of confusion and hesitated to begin the task. The teacher suggested, as she had planned in preparation when this point was reached, that they worked with the person next to them to share ideas and thoughts. Once again, the teacher has maintained her initial values, however put in place a system to scaffold the learning for students, specifically allowing them to work with a partner to receive support for completion of the originally planned task.

The Scaffolding strategy is therefore utilized when educators come into their classrooms with premeditated tasks and teaching strategies that cater to students' needs and when students are provided with an opportunity to work in a peer-group dynamic to help scaffold their learning.

Balancing

The Balancing strategy is adopted by educators when students unexpectedly refer to values that are not being catered for in the mathematics lesson. For example, when working on a set of challenging mathematical tasks requiring some computation, students asked a teacher for a calculator to check their solutions therefore demonstrating a valuing toward *accuracy*. The teacher declined the request and explained that she wanted the students to focus on appropriately articulating and implementing computational procedures. However, at the end of the lesson, the teacher collected all the students' work for correction. This is an example of how the teacher has maintained her initial values of allowing students to demonstrate their working out without focusing on correct or incorrect responses in class. This is commonly noticed in (pre)assessment tasks or when an educator wants to notice misconceptions in mathematical understandings. If students indicate that they value *accuracy* when completing such tasks, feedback provided to the students could be in the

form of correcting their working-out procedure or suggesting a more efficient strategy that is less prone to error.

In another classroom example of the teacher employing the Balancing strategy in response to students valuing *accuracy*, students were placed in groups to solve a mathematical problem that involved forming a three-dimensional structure using blocks. Each child was provided with a clue card that would contribute to the problem being solved (e.g., "Each of the blue blocks shares a face with the green block"). When all individuals had contributed to this group task using their clue cards and the group announced that they had completed the task, they asked for an answer sheet. The teacher explained that she did not have an answer sheet but suggested that they compare their proposed answer (structure) with another group of students who had completed the same task. If they noticed any differences, they would need to argue which structure was correct.

The Balancing strategy involves the educator listening to students' requests and responding to them but without sacrificing the educators' initial values in the learning situation.

Intervention

With the Intervention strategy, the educator is willing to put their values to one side and respond to the students' values. Students are explicitly and implicitly providing educators with feedback about their learning, including their values. Access to this information should allow these educators to monitor the extent to which values are being negotiated or accepted by students, and/or the extent to which they are being shaped by the students in turn (Seah & Andersson, 2015).

An example of the Intervention strategy involved a teacher returning class work to her students and asking them to repeat the task (independently) by paying attention to her comments and corrections. Some students were confused and unwilling to complete the task independently. The teacher offered to work intensely with these students, explaining her corrections in more detail and asking the students to begin addressing her comments under her supervision. The students were provided with an opportunity to complete their work with the intervention (in the form of guidance) of their teacher.

Although this sounds similar to the Scaffolding strategy, it is different because the teacher has not prepared any particular class tasks to scaffold the learning of the students. Instead, the teacher intervenes by offering intensive, small group assistance to particular students.

Refuge

The Refuge strategy is used when the educator puts most (if not all) of their values to one side and uses their authority in a manner that postpones her proposed learning objectives and allows the values of their students to take precedence. In the case of teachers employing the Refuge strategy, it is common for them to say after such an experience, "I had planned to do something else but the

lesson took me elsewhere," implying that the students' values have dominated because they were perceived as more important than what was initially planned. This does not imply that students have undermined the teacher and hijacked the lesson. Instead, the teacher finds an alternative solution that introduces new, shared values into the lesson.

For example, a classroom environment became chaotic and disruptive when students were generally stumped by a problem-solving task that was planned by the teacher. Even after the teacher attempted to explain what needed to be done to solve the problem on three separate occasions, the students continued to exclaim their confusion and inability to commence the task. During this critical incident, the teacher spontaneously re-prioritized her value of *problem-solving* and made the decision to embrace *fun* in mathematics by playing a known mathematical game with the students, promising to return to the planned problem-solving task in the near future. The teacher and students abandoned their current values and took refuge with a new aligned value, *fun*, which proved a successful strategy in reengaging students with their mathematics learning.

Summary

These four strategies, namely, Scaffolding, Balancing, Intervention, and Refuge represent a continuum of gradual decrease in the number and/or valence of an educator values that are retained, after the values alignment processes. These strategies are used by educators in-the-moment to deal with the value conflicts that become apparent during a lesson. Interactions between educators and students, as well as educators' pedagogical tasks and activities, both bring to the fore what the educators and students value similarly and differently (Seah, 2018). Effective teachers are flexible in their deployment of different values alignment strategies. In some cases, teachers dominate with their strategies, for example, when they use the Scaffolding strategy. At other times, they allow the students' values to intervene and become the driver of the lesson (Refuge). The main focus is to get the students engaged, and to remain engaged, with the mathematics lesson and not create a "tug-of-war" game between individuals with different values. It is suggested that teacher effectiveness can depend on the extent to which teachers are able to negotiate these inevitable value differences (Seah, 2018).

It is questionable whether one of these four strategies is always in play if the teacher is pursuing values alignment, particularly when values alignment is considered in a context broader than a single mathematics lesson (Kalogeropoulos & Clarkson, 2019). For example, consider a lesson when students are asked to complete a challenging mathematics problem. Students may complain and begin to show signs of disengagement but a teacher's valuing of *student perseverance* may dominate and they may decide to continue with the planned lesson, encouraging the students to remain in the zone of confusion for a certain amount of time. The teacher is encouraging the "complaining" students to accept and hopefully adopt the value of *perseverance*, similar to a parent

encouraging a child to try a new food that they may enjoy (Kalogeropoulos & Clarkson, 2019). In this instance, student values are being shaped in the mathematics education process with the teacher, who is playing the role of value agent in mathematics teaching. Across multiple lessons, such an approach by a teacher may be highly strategic and warrants a unique descriptor. The example illustrated here specifically foreshadows what we have decided to term the Beacon strategy, a values alignment strategy that is elaborated in the next section in the context of the G.R.I.N. program.

Reconsidering values alignment strategies through the lens of the G.R.I.N. program: Are four strategies sufficient?

As explored in the first section, our previous research examined critical classroom incidents to identify four values alignment strategies an educator may employ in an effort to reengage students in mathematics in a learning situation. As discussed, these values alignment strategies can be conceptualized as being on a continuum, defined by the extent to which the strategy is designed to move students toward the educator's values vis-à-vis the educator accommodating students' values. To reiterate, at one extreme, we have placed the strategy of Scaffolding, where the educator puts in place mechanisms to lead students toward behavior consistent with the educator's learning objectives. By contrast, at the other extreme, we have Refuge, where the educator effectively abandons the learning focus and embraces students' immediate priorities to salvage what has become, from the educator's perspective, an intolerably chaotic situation. The purpose of this second section is to examine whether these four strategies comprehensively capture educator attempts at values alignment in an intervention context that disproportionally targets disengaged students, G.R.I.N.

Overview of the G.R.I.N. program

G.R.I.N. is an intervention program designed to support school students of all ages with their learning of mathematics (Sullivan & Gunningham, 2011). G.R.I.N. primarily targets students who are in the 20th to 40th percentile in terms of their current mathematics performance, and in particular, the subset of students within this group who appear disengaged in mathematics classes due to confusion or a lack of understanding of key ideas (Kalogeropoulos et al., 2020). Students attend at least three G.R.I.N. sessions per week, conducted by a trained G.R.I.N. tutor, the purpose of which are to prepare them for upcoming mathematics learning in their classroom. The G.R.I.N. tutor, who may be, depending on the school context, a mathematics leader, a specialist mathematics teacher, a generalist classroom teacher, or a teaching assistant, withdraws students from other classroom activities in small groups (typically groups of three) for 15–25 min targeted learning sessions. Each session has three components: fluency practice, language development,

and activating prior learning relevant to the upcoming topic. Each of these lesson components are developed specifically with the upcoming sequence of mathematics lessons in mind. Consequently, for the G.R.I.N. program to work effectively, it requires careful coordination and collaborative planning between the students' G.R.I.N. tutor and the classroom mathematics teacher (Kalogeropoulos et al., 2020). Readers wishing to learn more about the G.R.I.N. program may wish to refer to the work of Sullivan and Gunningham (2011).

In-depth interviews were undertaken with two teachers associated with the program at the end of 2017. The original purpose of these interviews was to glean their perceptions of the student experience of participating in the G.R.I.N. program and some of the challenges of implementing the program in their particular school environment. The focus of the current article, however, is to reexamine these interviews with the express purpose of considering evidence whether G.R.I.N. educators used the four values alignment strategies previously identified. Given the original purpose and scope of these interviews, it is of course not reasonable to conclude that the absence of a particular values alignment strategy emerging from our analysis implies that the strategy is not relevant in an intervention context. However, such analysis can still shed light on understanding the suite of strategies that educators may employ to pursue objectives of values alignment. In particular, if an additional strategy, or strategies, can be identified through this analysis, we might conclude that the strategies of Scaffolding, Balancing, Intervention, and Refuge are insufficient for describing the full range of values alignment behaviors educators might demonstrate in a context such as G.R.I.N.

Analysis of G.R.I.N. interview data

Participants. Two teachers were interviewed at the end of the program in 2017. These two teacher-leaders were interviewed as they were the two schools that responded to an invitation to undertake follow-up interviews to explore their school's experience with the G.R.I.N. program in this particular year. Neither teacher were tutors in the G.R.I.N. program, however both were involved in teaching some of the G.R.I.N. participants classroom mathematics and in supporting the program in their capacity as teacher-leaders of mathematics in their respective schools. Sarah worked at an F-12 college, in the roll of Professional Learning Team Leader for intervention, with a focus on the secondary school programs. Specifically, she had responsibility for overseeing the literacy and numeracy intervention programs across Year 7–12. Chris also worked at an F-12 college. He had various responsibilities across the school, with a focus on teaching mathematics and leading mathematics intervention. Specifically, he was employed as a Leading teacher (Mathematics), Maths Teacher (Year 7) and ran the Extending Mathematical Understanding intervention (Year 1) teacher.

Approach to data analysis. At various points during their interviews, both teachers described their own and other educators (e.g., G.R.I.N. tutors, school leadership, and other teachers) involved in the program's attempts to resolve value discrepancies with students through adopting a values alignment strategy. These descriptions were analyzed thematically. This involved bringing together a form of theoretical thematic analysis and inductive analysis to develop a comprehensive description of educator values alignment strategies in the G.R.I.N. context (Braun & Clarke, 2006). Our initial analysis was inductive. Transcripts were read and reread, and critical incidents that highlighted some form of value discrepancy highlighted. Educator actions during these critical incidents were examined. Our analysis became theoretical as we then mapped these various educator actions onto the four values alignment strategies previously identified in the literature (Kalogeropoulos & Bishop, 2017; Kalogeropoulos & Clarkson, 2019). Any teacher actions that remained unattached to any of the four strategies were set aside. These remaining critical incidents and teacher actions were subsequently read and reread until one or more coherent themes emerged.

Through this analysis, we identified six critical incidents that appeared to describe a discrepancy in values between the educators involved in the G.R.I.N. program and respective student participants. Five of these critical incidents pertained to our interview with Sarah, and the remaining critical incident to our interview with Chris. Whereas educator actions in response to three of these critical incidents could be mapped onto preexisting values alignment strategies (Scaffolding, Balancing), analysis of educator actions in response to the remaining three incidents led to the emergence of a fifth values alignment strategy: the Beacon strategy. The next section presents the data analysis organized according to the three relevant value-alignment strategies identified in the G.R.I.N. interview data, specifically Scaffolding, Balancing, and the newly identified Beacon strategy.

It is worth noting a potential limitation of our analysis at the outset. As the primary purpose of conducting the G.R.I.N. interviews was not to explore values alignment but rather gain insight into the structure of the G.R.I.N. program in particular contexts, our interviews in this year were restricted to one potential set of stakeholders in the G.R.I.N. program, teacher-leaders. More targeted interviews, including with other potential stakeholders (e.g., G.R.I.N. tutors and students), and/or using classroom observation methodologies in addition to semi-structured interviews, would have allowed more comprehensive triangulation of potential critical incidents and richer analysis of the use of values alignment strategies. Hence, we freely acknowledge that what we present here is preliminary evidence for extending the original four strategies to five. Nevertheless, we anticipate that this analysis will give the wider community a useful and specific direction for further fruitful research.

Scaffolding strategy. Sarah described the capacity of the G.R.I.N. tutor to shape positively student conceptions of themselves as mathematics learners and their attitudes toward mathematics in

general. She noted that the G.R.I.N. tutor had firmly embraced the values of students' adopting a growth mindset toward their mathematics learning, moving toward challenges, and viewing struggle as an integral part of learning. She described how the G.R.I.N. tutor was particularly skilled in using language to reframe the student experience to break a cycle of negative thinking and disengagement:

> the tutor that has worked with them has worked on things like growth mindset and has helped these kids who were struggling students in maths, who were often saying, "I just can't do it" . . . She has found great power in using the word "yet" with the kids . . . "I can't do it yet" . . . So they can't do it yet but if they persevere and you know, stick with the task and stick with her, that they will actually get there.

This reframing of language can be in itself construed as a form of scaffolding, irrespective of any other pedagogical action that might be taken by the tutor to support students. Our values are both reflected and constructed in part through the language we use to talk about ourselves in relation to the world around us. Helping students shift the language they use when they describe themselves as learners will thus support attempts to move students further toward the educator's values; in this case, the embracing of challenge and struggle as an important element of learning.

Balancing strategy. At another point in the interview, Sarah instead describes how the pedagogical approach adopted by the tutor during the session helped to support the learning experience for students in a manner designed to orientate them toward the tutor's values (i.e., the tutor's values of persistence and mathematical challenge). However, rather than the tutor adopting the Scaffolding strategy, the specific example explored below appears to be an instance of the tutor employing the Balancing strategy. Consider the quote from Sarah below:

> We are seeing improved confidence. She [the tutor] uses a model of "I do, we do, you do" and builds in growth mindset with it and it's had a very powerful effect [on] the secondary kids.

The "I do, we do, you do" model was implemented by the tutor in recognition of the observation that the mathematical work undertaken in the classroom was often highly demanding for G.R.I.N. students. Their lack of past success with mathematics might mean that shifting student values so that they embrace struggle and value persisting with mathematical problems is unlikely to be immediately achievable. Even if these students are interested in changing their mindset and associated values, their anxiety around taking risks in mathematics and tolerating uncertainty may be overwhelming. It is possible their valuing of self-preservation and protecting their self-identity as learners (e.g., "If I don't try, I don't fail") remains in front of mind. Consequently, it might be inferred that adopting a more explicit instructional approach balances the tutor's valuing of persistence and embracing challenge with the students' need to experience success and retain some control over the learning situation.

Some advocates of learning through problem-solving may claim that the tutor is in fact taking "Refuge" in adopting this more explicit instructional model. However, it is important to note that there is evidence that many students still find lessons focused around challenging problem-solving tasks demanding, even if work on the more challenging tasks is preceded by the teacher working through simpler problems with students collaboratively (Russo & Hopkins, 2017a, 2017b). Moreover, building strong routines around how the learning experience will be structured—that is, effectively minimizing the amount of non-learning-related chaos—appears to allow students to tolerate a higher level of mathematical challenge and supports them to take risks (Russo & Hopkins, 2019). Consequently, the actions of the tutor seem most consistent with the Balancing strategy.

Sarah describes a further example of the Balancing strategy being adopted during the G.R.I.N. program. In this second instance, however, rather than the G.R.I.N. tutor, it was, Sarah, in her role as mathematics teacher-leader working alongside other more senior members of school leadership, adopting a strategy designed to balance unanticipated values of students with the collective values of these educators. As Sarah describes:

> One of the things that we didn't do well, to start off with, was we didn't promote what the program was all about to the kids. So we struggled in the first term because the kids didn't understand what it was [on] about. They thought they were coming out because they were the "dummies" and those sorts of things.

It is clear that the collective values of these educators in providing additional support to students who require it to maximize their learning opportunities was again initially in conflict with the student's need to protect their self-identity as learners (e.g., "If I accept extra help, people will think I am dumb"). It is likely reflective of the fact that these students value acceptance by peers above their own academic progress and were concerned that being associated with the G.R.I.N. program may undermine their social standing.

In terms of the collective response the educators adopted, it was clear that they believed if they could address G.R.I.N.'s image problem and how it was perceived among the whole student body (i.e., not only those students attending), then they could address this conflict in values between student's social and academic priorities. Interestingly, part of this reframing of G.R.I.N. was to get the assistant principal involved to suggest to students that they were privileged to be selected to participate in the program. These middle school students are likely to be very sensitive to peer relationships at this life stage (i.e., Year 7–10; 12–16 year olds). The use of this strategy, however, suggests that messages from adults with high social status within the school (e.g., the assistant principal) still carry considerable weight with students. As Sarah explains:

We got the Maths teachers and the Maths coach and in some instances we got the assistant principal to explain what the program was about. To explain that they weren't the "dummies" and that they were just struggling with some bits of Maths and this was going to help them catch up. We said we weren't choosing, we couldn't choose everyone for the program but we thought they would get the benefit out of it. We made it a bit sort of "you've been selected because we think it will do you good" and so built on it from that aspect.

As explained at another point in the interview by Sarah, overall this strategy of reframing G.R.I.N. among the study body appeared successful:

They thought they were coming out because they were the "dummies" and those sorts of things. So we rectified that and we now are seeing improved confidence in the students who participate in G.R.I.N. We are seeing that occasionally there are other students who are say, who are not on the program who are saying, "Can I come to G.R.I.N.?"... which is a big turn around. In the three terms we have it running G.R.I.N., we've changed from, "What on earth is G.R.I.N." and "I don't think I want to go," to having quite a positive image.

The emergence of the Beacon strategy. Both Sarah and Chris described an example of apparent conflict between educator values and student values that did not appear to be negotiated through the four strategies of Scaffolding, Balancing, Intervention, and Refuge. A defining feature of these four strategies is that the educator takes at least some clear action to accommodate the values of students in some way. By contrast, in these instances highlighted by Sarah and Chris, the educators involved did not take any such action. Instead, educators focused on reasserting their own values, attempting to persuade students involved as to the merits of the educators' position, and even being willing to threaten punitive consequences if the students did not align their behavior accordingly. We have termed this the Beacon strategy.

In the context of discussing the challenge of timetabling G.R.I.N., Sarah notes that one of the issues is that students are reluctant to miss their preferred subjects to pursue additional mathematics instruction:

Timetabling is always an issue. Finding the time in a busy secondary program where kids are prepared to come out without kicking up a fuss, to come out three times a week and miss out on perhaps other subjects that they like doing has always been challenging for us. We have played around with that and tried to sort of find ways around it. We have a very supportive administration team here who sort of say, "Well no, bad luck, you've got to go" and that has helped us.

Sarah appears to be describing a clear conflict between students' articulated interests and values, and the educators' beliefs about what they think is in the best long-term interests of the students. At another point in the interview, Sarah describes a similar dynamic. However, in this

second instance, the notion that the educator is actually doing what is in the best interests of the students—despite the protest of the students themselves—is much more explicit:

> For a couple of the more challenging students who the dangling of the carrot didn't work, we had to do the like . . . "No, you're going to go to G.R.I.N., you're going to get better at your Maths and when you get better you can come off the program" [laughs].

Moreover, it is clear that Sarah views this "tough love" approach as successful:

> So it was really a carrot and stick approach but the reality is that the students who have been on G.R.I.N. and who have applied themselves to G.R.I.N. are now starting to say, "It made a difference for me." The word of mouth from the students is worth here like a pot of gold [laughs].

Chris describes a similar dynamic in his school environment, although instead emphasizes how some students who were initially very positive about attending the G.R.I.N. sessions became more negative as the content became more challenging. Again, he describes how the educators, rather than attempting to acknowledge student values and needs, collectively pursued a "tough love" approach using language we might associate with secondary school and university sporting coaches.

> As it started getting harder, sort of after, we were noticing it sort of about the 8-week mark, they were sometimes starting to say, "I don't want to do this anymore. This is too hard." There would be a few weeks where we had to really push them to actually go to the G.R.I.N. sessions and we were saying, "No you can't just give up now that it's getting hard."

These three instances can all be organized under the theme: the Beacon strategy. The Beacon strategy involves the educator digging in and reasserting their expectations until the student behaves in a manner that aligns with the educator's values. Although a superficial reading might lead one to conclude that it is not a strategy for values alignment at all, but rather, the educator being stubborn and/or insensitive to students, from the three examples described previously, it seems clear that the educators are behaving strategically in pursuing this line of action. A precursor to the Beacon strategy being strategic is that educators have some insight into their own system of values. It requires the educators to recognize these values in themselves and clearly communicate them to students. It generally seems to involve persuasion on behalf of the educator, but at times may have some type of punitive aspect.

The revised values alignment strategy continuum. The five values alignment strategies, with the newly included Beacon strategy, are displayed in Figure 1. The Beacon strategy is best understood as the antithesis of the Refuge strategy. That is, rather than the educator moving completely toward the student (Refuge), the educator waits until the student comes to the educator (Beacon), albeit
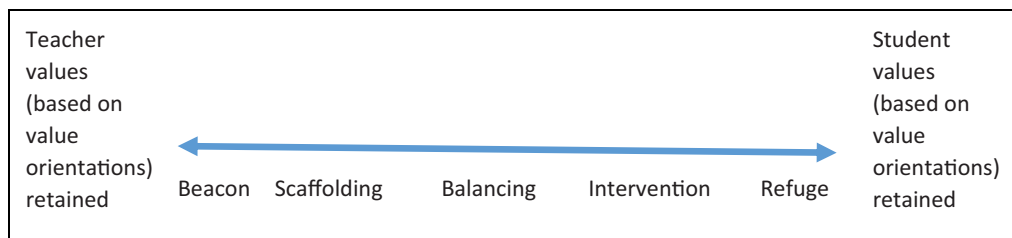
Figure 1. The five values alignment strategies (based on the four-strategy alignment in Kalogeropoulos & Clarkson, 2019).

through some persuasion; "carrots and sticks" as described by Sarah. The Beacon strategy can be conceptualized as tolerating a certain level of value incongruence between the educator and the student in the short term to achieve values alignment in the medium-to-long term.

Additional evidence for the Beacon strategy

Although we have described the Beacon strategy as emerging in an intervention context, there is some evidence to suggest that the strategy may emerge in classroom contexts as well. The second author's description of his experience teaching with challenging tasks is an interesting example to consider (Russo, 2019). Russo taught two units of work involving 28 challenging tasks to three classes of Year 1/2 students (6–8 years old). During the first few lessons of his program, he described how the classroom would frequently become chaotic as students found the level of mathematical demand highly confronting and viewed his expectations as unreasonable. Russo (2019) notes:

> There were certainly occasions, particularly early in the program, where emergent classroom management issues, such as those arising from multiple students verbalising their confusion and frustration with a task, tested my resolve and commitment to maintaining a high level of cognitive demand. For example, I had two particular students in two different groups, who were more than capable mathematically, but would frequently act out (e.g., throw objects around the room, have tantrums) when they perceived a task or concept as too difficult. (p. 19)

This chaos appeared to arise from Russo's commitment to maintaining the level of challenge experienced by students as the mathematical work unfolded and his deliberate decision not to make himself available to support students for the first several minutes of the lesson. These decisions were taken as part of the initial design characteristics of his program, and, as he was implementing the program for research purposes, he did not want to jeopardize the fidelity of the program by providing students with more support than he had originally intended. Consequently, he chose to weather the storm, and found, somewhat to his surprise, that, after half a dozen lessons, almost all students had apparently fully embraced his expectations for engaging with challenging mathematical tasks. Russo (2019) notes:

> Classroom management issues, such as the time students took to transition between activities and general off-task behaviour, were, for the most part, less of a concern as the unit progressed, despite the content of the lessons becoming progressively more challenging. (p. 18)

Although his reflections on his experience delivering the lessons were not framed as an incongruence in values between himself and the students, this seems like a highly relevant analytic frame in retrospect. Elsewhere, Russo has discussed how observing teachers noted that it was the combination of "high teacher expectations, student autonomy and a consistent routine" that supported the development of a "classroom culture that embraced struggle" (Russo & Hopkins, 2019, p. 766). Russo's valuing of student struggle and cognitively demanding work were underpinned by his commitment to implementing his research protocol. He was able to communicate these values to students in the form of "high expectations"; that is, expecting students to engage in, and persist with, challenging mathematical work despite feelings of confusion and, at times, frustration. Although this approach initially generated substantial chaos and pushback from some students, over time, students seemed willing to shift toward the values for mathematical learning communicated by their teacher. It is consistent with the framing of the Beacon strategy as allowing for value incongruence and conflict in the short term, while enabling values alignment to be achieved in the medium-to-long term. The fact that we have found evidence for the Beacon strategy in multiple contexts (i.e., the G.R.I.N. intervention program and classroom-based program of learning focused around challenging tasks) is noteworthy and provides further validity for the Beacon strategy as a fifth values alignment strategy.

What educator actions and dispositions can support the execution of particular values alignment strategies?

With the inclusion of the Beacon strategy, we have now described five strategies potentially at an educator's disposal in response to a critical incident resulting from value misalignment between the educator and the student (see Figure 1). Although we would need to be cautious before organizing these five strategies into any form of hierarchy, it might be that, all else being equal, educators will perhaps prefer strategies further to the left on the continuum displayed in Figure 1, which involve less compromise of their values. Refuge in particular is probably construed as a last resort strategy.

The next step is to consider specific educator actions, orientations, and dispositions that might support the educator using a particular values alignment strategy. It is clear that the same critical incident punctuated by student disengagement arising from a conflict in values could be resolved very differently depending on the skills, knowledge, and experience of the educator, and how much consideration has been put into the design of the learning experience. We speculate that being

sensitive to the educational context and knowing your specific interpersonal and pedagogical strengths might support an educator in employing a strategy other than Refuge.

We postulate that the Beacon strategy is most likely to be successful when the student invests in the relationship with the educator and values this relationship (and/or possibly the school community in which the relationship is embedded). However, we also anticipate that the Beacon strategy is likely to be the highest risk of the five values alignment strategies, particularly if the educator is not cognizant of the level of investment in the relationship on behalf of the student. A miscalculation of the strength of this relationship might result in the student feeling more alienated and disengaged.

It is notable that Russo only pursued the Beacon strategy with the regular classroom teacher present in the room, likely providing some tacit emotional support to students. Moreover, the educators in the G.R.I.N. program only pursued the Beacon strategy in the context of providing a supportive offering to students (i.e., participation in the G.R.I.N. program itself). The metaphor for the Beacon strategy can be appropriately characterized as "tough love," rather than "sink or swim."

The Scaffolding strategy is more likely to be available to educators when they have invested time anticipating how students might respond to the task during the planning process and, in particular, considering the specific difficulties that might arise for students (Stein et al., 2008). Part of navigating these difficulties during planning might involve designing, enabling prompts for students who struggle with the initial task. Enabling prompts are designing to reduce the level of challenge through, for example, changing how the problem is represented, removing a step in the problem, or providing students with a simpler problem focused on the same core mathematical idea (Sullivan et al., 2009). After engaging with the enabling prompt, the expectation is that the student will return to the core task. Therefore, working through the task themselves ahead of time with their particular students in mind and preparing prompts will support educators with adopting the Scaffolding strategy.

The Balancing strategy is about responding to unanticipated values of students that arise during the lesson (Kalogeropoulos & Clarkson, 2019). The first point is that educators who know their students well will be less likely to be surprised when a student value manifests through particular behaviors that will likely be viewed as problematic, such as acting out or refusing to participate in the lesson. Educator knowledge of students supports the accurate anticipation of student values, allowing them to prepare the lesson in such a manner so as to address a potential values gap ahead of time. Effectively, this advanced knowledge and preparation can allow them to employ the Scaffolding strategy rather than the Balancing strategy. The second point is that unanticipated values often only manifest through student behaviors that might directly undermine the educator's plans for the lesson. It is the insightful educator skilled in interpersonal problem-solving, who can identify the values that sit behind the student behavior through gentle questioning and generate an

alternative action (to replace the problematic behavior) that effectively addresses both students and educator values.

The Intervention strategy requires the educator to be in a pastoral role, at least for the duration of the exchange with the student. It is likely that emotionally intelligent educators with well-developed interpersonal skills, who are skilled in counselling children and young people and who have developed good relationships with their students, will be able to effectively harness the Intervention strategy when implementing it as deemed necessary. Ironically, however, it might be these same strong relationships that could allow the same educator to consider the Beacon or Scaffolding strategy instead.

And that leaves the Refuge strategy. As we have noted earlier, in some ways this can be regarded as a strategy of last resort, although we also recognize particularly for less experienced teachers, it may need to be employed from time to time. However, we would hope as they get to know their students and become more adept in the craft of teaching, this strategy will become for them too, a strategy of last resort.

Conclusions, limitations, and implications

A lack of student engagement in mathematics is a widely acknowledged issue in the Australian educational context. One potential cause of this disengagement is a lack of alignment between student and educator values (Seah & Andersson, 2015). Consequently, it is clear that educators may need to take active steps to minimize the dissonance in values between themselves and their students.

Our previous research examined critical classroom incidents to identify at least four values alignment strategies an educator may employ in an effort to reengage students in mathematics in a learning situation. These four strategies were Scaffolding, Balancing, Intervention, and Refuge (Kalogeropoulos & Clarkson, 2019). The primary purpose of this article was to examine whether these four strategies comprehensively capture educator attempts at values alignment in an intervention context (the G.R.I.N. program) that disproportionally targets disengaged students. Our preliminary findings suggest that when viewing the G.R.I.N. intervention through the lens of educators' use of values alignment strategies, a fifth strategy emerges. We tentatively refer to this strategy as the Beacon strategy. The Beacon strategy involves the educator digging in and reasserting their expectations until the student behaves in a manner that aligns with the educator's values. In part, it involves the educator being able to recognize their own values and clearly communicating these values to students.

This article represents a tentative thrust that has so far yielded a number of insights that we believe warrant the mathematics education community, and the education community more broadly, pursuing. Although different interpretations of the data are possible (e.g., we could look

at student rebellion or peer pressure as significant issues in their own right), we believe that examining these issues through the lens of values alignment provides important insights and, importantly, provides a practical pathway forward as students and teachers can take actions to align their values. The basic premise of the aligning of values between educator and students seems to be self-evident. But once one goes beyond that, as we have undertaken to do, then the ground becomes more contested. We believe, however, that our five values alignment strategies provide a pathway forward that can be fruitful.

We have placed the five strategies on a continuum, which implies that there is some overlap between any two neighboring strategies. To some extent, this overlap can be seen in some of the abovementioned description when we suggest that the educator was using a particular strategy but could have in fact used one or another of the five strategies. Hence, our demarcation is somewhat tentative; further research with more pertinent exemplars may allow more definitive distinctions to be drawn. However, we suggest 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. This type of continuum should always encompass a certain fluidity.

In the abovementioned descriptions, we suggest that all the strategies to varying degrees assume that an educator knows their students well and that this involves far more than just who is good at mathematics and who struggles with these ideas. For less experienced educators, the notion that getting to know your students is in fact vital for mathematics teaching may be quite a novel idea, particularly for secondary mathematics teachers. Mathematics for so long has been portrayed as a subject that is divorced from people, and in some way, an aspect of the school curriculum that is value free. Our starting position in this article instead assumes that values are fundamental to the teaching and learning of mathematics. Hence, to take the notion of values of mathematics seriously should be part and parcel of preservice education for teachers of mathematics. Sadly, this has not proven to be the case (Clarkson et al., 2010). Consequently, there is a real need to offer the ideas that have given rise to this article in the continuing professional learning that mathematics teachers engage in once they are in schools. These notions of values alignment and students' engagement would seem to us to be not only a fruitful area to continue to explore in that context but indeed a vital one for many less experienced educators as they battle to make sense of just how to go about learning the craft of teaching.

Much of the initial work around values described in the mathematics research literature has focused on the teacher. More recently, survey studies (e.g., Hill et al., 2019; Seah et al., 2017) have been exploring the values that students bring to class. But what strategies, if any, do students use in values alignment? Do they see any need to align their values with that of their teacher? They appear to, at least to some degree as we have explored in this article, albeit from the teacher's viewpoint. Would we see the same alignment(s) if we asked students or if students were the key focus of our

classroom observation? Do the same alignments play out in student-to-student interactions as they do in student(s)-to-teacher interactions? These are issues that need to be taken up in future research.

Contributorship

Penelope Kalogeropoulos and James Russo were involved in conceptualizing, writing, and editing the paper. The four value alignment strategies previously identified in the mathematics education literature were re-evaluated and a fifth strategy was ascertained. The Beacon strategy suggests that educators could be purposefully pursuing value alignment even when they do not appear to take any active steps to move further towards their students' sets of values. Philip Clarkson supported Penelope in conceptualizing the broader research project and undertaking the actual research, whilst providing critical input and feedback into the paper, particularly in relation to the conclusions. The notions of values alignment and students' engagement is a vital area for educators as they continue to explore the craft of effective teaching.

Declaration of conflicting interests

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Note

1. For the purpose of this article, an educator is defined as someone employed in a school setting in the role of either a teacher, educational support staff, tutor, or educational leader. Although previous research in the values space has generally only considered educators employed as teachers, this broader description is necessary in this article to support our analysis of the G.R.I.N. program data (which involved students interacting with educators in a range of roles).

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