

INTERNATIONAL JOURNAL OF SCIENCE ARTS AND COMMERCE

Prepare2Nspire (P2N): A Tutoring and Mentoring Model to Support the Teaching and Learning of Precollege Students

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ABSTRACT

In this paper, we present a tutoring and mentoring model to support the teaching and learning of precollege students; specifically eighth and 11th graders. This framework is based on the idea that tutors function as 'more knowledgeable others' whose function is to guide the learning of others so as they achieve the expertise they possess. Additionally, we view the process of tutoring as involving developing a mentoring relationship where the tutee looks up to the tutor as a person with certain desirable traits worth learning. The mentoring and tutoring model known as Prepare2Nspire (P2N) involves providing mentutors to precollege students who help their mentutees learn standards-related mathematics and homework support. The mentutors also serve as role models to their assigned mentutuees. The model is based upon literature review from three theoretical frameworks namely situated learning, sociocognitive theory, and sociocultural and two conceptual frameworks; learning communities and cooperative learning.

Key words: peer tutoring, mathematics communities, mathematics support, urban students

Introduction

While very few may argue about the importance of mathematics in the 21st century[1]; National Council of Teachers of Mathematics (NCTM), providing access to high quality instruction in mathematics for all students, especially students of color, English Language Learners (ELL), and other minority groups continue to be a mirage. These scholars and many others argue that having

access to study and succeed in mathematics is crucial for all students irrespective of socioeconomic background, learning styles or preferences, or creed. In order to improve educational outcomes for all students, especially underserved and underrepresented, educational policies such as the No Child Left Behind (NCLB) have been introduced to increase accountability on the part of teachers and school authorities and ultimately lead to improved educational outcomes for all groups of students, white and minority groups. NCLB, for instance, has under its supplemental educational services, provisions for schools deemed not to have made adequate yearly progress to receive free afterschool tutoring [2, p.2].

Despite the introduction of NCLB, the so-called achievement gap persists. For instance, [3] noted that African American 12th graders are believed to perform at the level of white eighth graders based on results from the National Assessment of Educational Progress (NAEP) assessing mathematics skills and abilities. The continuous focus on race-based analysis of achievement results in Mathematics, whether national or international assessments, have led to a situation where students from minority groups such as African American and Hispanic students have taken on identities of inferiority [4]. What most of the commentators on achievement-gap analysis fail to forget (or intentional ignore) is the absence of achievement gap at birth [5]. Rather, students learn to identify themselves as either capable or incapable learners of mathematics classrooms through discursive practices prevalent in their mathematics classrooms and in the larger society [6]. Additionally, teachers of these students, through listening to dominant discourse in the media and in the literature, tend to enter the teaching field with beliefs about which groups of students are capable learners of mathematics and those who are not [7]. According to [8], disparities in early childhood education opportunities for students from diverse backgrounds can influence both teachers' perceptions of the potential of less-prepared children and students' own self-confidence and perceived abilities, all of which have cumulative effects on motivation and learning (pp.34-35). [9] identified two related qualifiers used by groups of teachers who view some students as incapable of succeeding namely; if their parents support education and if the students put forth the effort (p.1). These categories of teachers, therefore, believed that external factors such as socioeconomic factors and parental support have more control over students' achievement levels relative to their teaching.

In the face of increasingly diverse mathematics classrooms across states in America, there is an urgent need to prepare more students who are mathematical literate and can compete in a knowledge-based society. Such calls have included making more challenging mathematics content available to all students, mainly previously underserved and underrepresented groups in order to prepare the needed workforce necessary to succeed in a globalized and highly competitive world. However, calls for increasing access to challenging mathematics content is not without some opposition. For instance, [10] argues that the Algebra for All amounts to a travesty of justice. In his paper titled, *The Misplaced Student: Lost in Eighth Grade Algebra* he asserts that by granting universal access to Algebra for all students creates more problems leading to a situation of no learning for those who are adequately prepared and those who are not so well-prepared.

While comments such as those expressed by [10] may be regarded as being realistic, it fails to fully articulate the challenges students from minority groups who attend predominantly urban schools face. Again, such arguments miss the larger discussion of how to adequately prepare all students to succeed at the relevant grade level. What is, most often, missing in discussions about the achievement-gap discourse is the level of resources made available to students from various races such as well- prepared teachers, high-quality textbooks and curricular, and allocation of adequate funding to all schools irrespective of population of students being served. Such differences in resource allocation across schools serving students from minority groups and white students is glaring to minority students who are deemed as dumb as the following quote from [8] exemplifies:

If you...put white children in this building in our place, this school would start to shine. No question. The parents would say: This building sucks. It's ugly. Fix it up. They'd fix it fast no question... People on the outside may think that we don't know what it is like for other students, but we visit other schools and we have eyes and we have brains. You cannot hide the differences. You see it and compare. (p.23).

From the foregoing, it is argued that the issue is not about a lack of inherent mathematics genes by African American or Hispanic students nor an opportunity gap but rather an inequality gap. This inequality gap which manifests itself in the form of disproportionate distribution of educational resources, access to well trained and dedicated teaching force, among other factors is what accounts for the differentials in achievement in mathematics and other school subjects for various races. Also, the glaring differences in resource distribution in schools is not lost to students from minority groups as they observe what is made available to students of different races. [11] argue that individuals have special privileges conferred on them based upon, for example race which is exemplified in inequalities of resources and caliber of teachers made available to students from different races.

In order to achieve the objectives of providing quality education for all students, irrespective of race, socioeconomic status, among other at-risk factors, there is a need for policymakers to recognize that quality education is a human rights issue and that teachers have a moral responsibility [12]. It also means that the call for all students to succeed does not amount to mere sloganeering but, instead, a realistic goal which is attainable. It must also be added that ensuring the success of all students does not also mean engaging in dumbing down of mathematics content [13] nor placing students in classrooms based upon ability group [14] which has the tendency of inducing a stereotyping threat [15] and eventually develop. Rather than engaging in labelling of students as those capable and those not capable [16] there is a need to rather focus on how to create learning opportunities for all of them to succeed. Such opportunities should incorporate providing students of color access to learning support, learning in a motivating environment, and learning resources such as textbooks and calculators in order to pay the education debt that is owned students from minority groups and underprivileged backgrounds[17].

Framework Description

To avoid a perpetual cycle of underachievement, there is a need to move away from a deficit-oriented perspective [18] to gap analysis to one of treatment gap [19]. While this is not the first time a shift in approach toward gap analysis is being made, [20; 4], issues about equity and improving achievement levels tend to receive lip service and therefore become normalized. When discourse about achievement gap becomes normalized, there is a likelihood that little progress will be made in improving educational outcomes for all. This is especially the case when discourses about gap analysis are still framed within a deficit orientation. For instance, in an analysis of the kinds teachers deemed to be successful to teach African American students, [21] classified such teachers as either being missionaries or cannibals (p.13). Missionary teachers are described as viewing themselves as embarking on a mission to rescue African American students from themselves and their community's norms while those classified as cannibals are only concerned with the teaching of their subject matter. Such a characterization ensures that when African American students become successful in mathematics, their teachers are seen as being Superhuman instead of students being recognized for their academic achievements and potentials. There is, therefore, a need for a teaching model that respects and values the unique capabilities and builds on them. The overall structure of P2N involves providing two key support systems. The first of these provides role models to the students enrolled in the program. The second is support through tutoring. Figure 1 shows the model for the Prepare2Nspire program. The following sections review literature related to effect of classroom environment on students' learning, a need to provide students with opportunities to learn/respond, importance of social factors on students' learning, and ends with the role of cooperative learning/mentoring on learning.

Attribution Theory

Attribution theorists are of the view that how an individual perceives causality have consequences on the individual's perceptions. This may be with regards to how the individual understands and reacts to personal achievement, whether due to internal or external factors. Furthermore, Webster & Fisher (2003) argued that the social ecological settings within which students participate in has influence on affective domains such as their attitudes and their general sense of well-being.

As such, it is important to ensure that students who come from stereotyped populations and are portrayed as perennial underachievers are helped to overcome such negative characterizations. Instead of students from stereotyped minority groups buying into popular discourse that White students are superior to them academically in the study of mathematics, there is a need for a program which is likely to build their self-confidence, motivates them, and ultimately enables them to view themselves as achievers. It means that instead of students from underrepresented and underserved populations believing that differences in achievement among various subgroups is due to some special genes which they lack [17], they should be enabled to see themselves as achievers and provided with the necessary resources to succeed. This calls for

teachers and other agents of education to understand the culture of students and getting to know them personally so that instructions can be tailored to meet their individual needs.

Based a upon a P2N model, this calls for providing students with supportive mentors who provide mentoring and tutoring support necessary for mentutees to see themselves as capable learners of mathematics. Also, it means creating learning environments that provide students with opportunities to learn mathematics with understanding thereby laying a solid foundation necessary for mentutees to be able to take mathematics sequences that are relevant for college admission.

Opportunities to Learn/Opportunities to Respond

According to [23], opportunity to learn requires students to take an active part in the teaching and learning process. Providing students with learning opportunities requires that the teaching and learning process incorporate multimodality approaches so that all learners can gain access to what is being learned. Richard Lesh, for example, argues that for students to develop better understanding of concepts, there is a need for them to acquire representational fluency as captured in the Lesh Translation Model [24].

[25] argue that providing students with opportunities to respond means allowing them to take an active part in the teaching and learning process. This means that students' participation in the teaching and process is not restricted to merely calling upon them to answer low level questions; instead, they should be made to grapple with mathematical tasks which leads to deep conceptual understanding. This means that the traditional classroom teaching approach where students merely listen while teachers do almost all the talking should give way to an environment where students determine the direction of instruction and are able to reveal their thinking. It means giving students greater control over their learning by being giving opportunity to make sense of the learning material and being valued as co-constructors of knowledge [23; 26]. Also, it is important to note that classroom discourse is not unidirectional but multidimensional taking place between teacher and students, students and teacher, and among students and that students do not learn by being told.

A key feature of an opportunity to respond classroom environment or a classroom that creates learning opportunities for all students to succeed is an appreciation that learning is socially mediated and therefore taps into the academic networks students have formed with their peers to ensure academic success for all [27; 28].

In P2N, this means that students get to work in smaller communities, 10 members in each community, thereby increasing the chances for individual talk necessary for self- construction of knowledge. With the smaller community size, each member gets the opportunity to talk, ask questions, explain his/her thought processes, and ask clarifying questions.

Sociocultural Theory/Situated Learning

Situative perspectives about learning is that all learning is social and mediated through cultural artifacts and tools. That is, learning takes place in a social environment with knowledge being

distributed among participants and the tools or artifacts that members of the community use in the learning process [29]. In contrast to behaviorist theorists, situative theorists view students learning as effective when they are active agents in the learning process by constructing knowledge for themselves through their ability to interpret and adapt mathematical representations, concepts, and methods [30].

In accordance with a sociocultural view of learning, the process of learning involves sharing of ideas between a more knowledgeable other and a novice with the aim of helping the novice acquire the knowledge that the more knowledgeable other has. A key feature of situative learning theorists is the idea of Zone of Proximal Development (ZPD) defined as the distance between the actual performance (actual developmental level) of an independent problem solver and the level of potential development [31]. By using a more knowledgeable other to support the learning of a novice, it is expected that novices will undergo what [32] refer to as cognitive apprenticeship (p.32). By participating in the activities of the community of practice, it is expected that newcomers (novices) to the community will learn from the oldtimers (more knowledgeable others or experts) so that they can learn to take up the identities of such communities of practice [33].

As with all social practices, the medium of interaction involves communication or use of language. According to [34], language is first of all externalized (taking place among people) before becoming internalized. As such, there is a need to ensure that the discourse in communities of practice do not lead to the positioning of newcomers as incapable learners which can lead to a situation of learned helplessness [35] and possibly a fixed mindset identity [36]. This is especially important considering that a considerable proportion of students do not view themselves as incapable of learning mathematics. As members of a community of practice, community members should engage in mutually beneficial activities with both newcomers and oldtimers learning from each other. The more knowledgeable other's role therefore, should be to scaffold learning tasks in ways that enable the less experienced member have an entry point to contribute to discussions and not feel intimidated.

Since mathematics classrooms tend to use discourse which create binaries of those who are predestined to succeed in mathematics and those not likely to succeed, there is a need to create learning environments where individuals in the mathematics learning community see themselves as possessing some knowledge to contribute to the learning situation. It also means being conscious of the language used in the learning community so that individuals are not positioned as less capable learners.

From a P2N perspective, mentutors are trained to value the unique contributions of each member of the community. This members giving voice to each member so that everyone feels valued. Rather than have members feel like they are in another remedial program, the learning environment is structured such that members in the same grade in the same community get to share ideas among themselves thereby increasing their chances of contributing to the learning process. It also implies, that mentutors serve as facilitators instead of being positioned as persons who are there to supply answers. By encouraging members to discuss their ideas, talk through

their solutions, the expectation is that community members will develop a different identity to what it means to know and be able to do mathematics which is different from what normally pertains in most classrooms which has disciplinary authority centered around the teacher.

Sociocognitive Theory/Mindset

Achievement goal theorists suggest that how a learning environment is structured has influence on students' motivation to succeed and their behavior patterns [37; 38]. Achievement goal theorists distinguish between two goals orientations namely performance and mastery orientations [39]. Individuals with performance goal orientation are described as tending to focus on proving that they are the best in a given task relative to others without necessarily aiming for understanding. Such individuals are likely to avoid doing tasks which will make them appear inferior in relation to others. Individuals with mastery goal orientation on the other hand, are described as focusing on the mastery of learning tasks with the aim of understanding so as improve upon performance (40; 39; 36).

[37] argues that the goal structure of a classroom environment is linked to achievement goal of members in this learning environment. In learning environments where emphasis is placed on the importance of learning by understanding and students are encouraged to make mistakes and are rewarded for making the necessary effort, students are more likely to be have mastery-oriented goals. In contrast, learning environments which emphasize doing well on grades relative to other members in the community communicates to learners what is valued in the classroom which can lead to a performance goal orientation.

Mathematics, as a school subject, is most often portrayed as a filter. As such, mathematics classroom goal structure tends to be more performance oriented with the message communicated, explicitly or implicitly, being that you either do survive or perish. In a survive or perish characterization of mathematics students are more likely to have a performance goal orientation in order to save face rather than seek understanding. For those who are unable to meet grade targets or do well on standardized tests, the message communicated to them is that they are failures leading to the avoidance of studying mathematics [41].

Under P2N, this means that the learning environment promotes mastery over exhibition of who is good in mathematics and who is not good in mathematics. It is for this reason that we have six eighth and two eleven graders in each community of 10. As a result, room is created for collaborative learning within groups where peers support each other's learning. Also, in order for mentutees to value the importance of collaborative learning, they are encouraged to seek support from other groups when needed. All these steps are taken to ensure that mentutees and mentors do not feel like they are competing against each, rather, they are learning from each other with every person in the larger community there to provide the needed support.

Cooperative Learning and Peer Tutoring

Cooperative learning and peer tutoring are two forms of peer learning that have received a lot of research, thus they remain the longest established forms of peer learning [42]. The fundamental

principle underpinning these learning strategies can therefore be subsumed in the meaning of peer learning, which is defined by [42] as the acquisition of knowledge and skills through active helping and supporting among status equal or matched companions (p.1). Peer learning, Topping writes, involves people from similar social grouping who are not professional teachers helping each other to learn and learning themselves by so doing. (p.1). From this definition, one can argue that peer learning is quite different from mentoring. In fact, Jacobi (1991) states that mentoring is not the same as peer assistance or peer tutoring. While the literature captures mentoring from different sectors, it appears that peer learning is more centered on helping students learn specific school subjects. According to [44] these learning strategies have been used to improve and sustain the academic performance of different students.

In cooperative learning, the teacher structures the learning activities of small groups of students, in order to ensure equal participation of each member of the group, towards the pursuit of a common learning objective. It is likely that when peers gather without a well-defined assigned roles, the purpose of the meeting could be derailed. Educators, [45] have found that while children are grouped to work together, they work as individuals and that in most cases, the time spent on group interactions is not task related. This means that educators and for that matter teachers need to be vigilant when planning to implement cooperative learning in their classrooms. One suggestion would be to keep the number of students in the group very small in order to ensure efficiency among the students. More so, teachers can adopt the alternative peer learning strategy peer tutoring to support students learning of specific subject matter. Unlike cooperative learning, peer tutoring usually involves two specific roles, the tutor (who offers academic assistance) and the tutee, the student who gets the learning support, usually with a focus on curriculum content and also guided by explicit tutoring procedures and interactions [42].

With the focus on specific curriculum content, peer tutoring can be structured to assist students who struggle in mathematics. The interactive nature and structure of peer tutoring allow peer learners to express themselves freely to their colleagues thereby eliminating undue tension and fear that sometimes affect students during the traditional classroom environment. The fact that peer helpers are intended to support their colleagues in their academic performance, it is essential to ensure a perfect match between the tutor and the tutee, such that the desired learning and objectives could be achieved. The tutoring process also involves some form of mentoring as students who need additional support are paired with more capable learners to enable them gain access to the practices of mathematicians.

Mentoring, Cooperative Learning and Peer Tutoring

The concept of mentoring, although conceptualized differently in many sectors, is considered crucial to professional and academic success, as well as a necessary factor for the psycho-social development of an individual. The concept emanated from the father-like relationship between a young boy and a wise man, called Mentor, in which the old man's advice saved the boy from death. This relationship became the model for other mentoring relationships [46]. The core

element in mentoring is the relationship that exists between the two people involved. In most cases, the relationship is crossed-age [42, p.632] whereby the older person (the mentor), assumed to be more knowledgeable and experienced, guides the younger one (the mentee) in order to shape the growth and development of the latter [46]. The nature of the relationship that exists between the mentor and the mentee cannot be underestimated because of the fact that the relationship is aimed at achieving a desired objective. Consequently, it is imperative that mentoring is not left to chance [47] but rather, it should be orchestrated purposefully to meet the needs of learners [48;49]. Mentoring has been applied in adult development, business, and in the academic sector. According to [50], mentoring should bring about a desired developmental growth, on the part of the mentee, under the tutelage of the mentor. This means that one needs to be cognizant about the type of mentoring relationship to establish. While a good mentoring relationship can lead to a desirable goal, a bad mentor-mentee relationship can be poignant. Therefore, there is the need to match a mentee with someone who is endowed with greater experience, influence and achievement[43, p.513], someone who would be willing to undertake the responsibilities as a mentor. In his study, [50] found that most of the successful men were those who had mentors. Levinson's finding is supported by findings from [51] study about the effect of mentoring on the psychological growth and development of women. The study revealed that those who gained recognition in their career understudied mentors at some point. Again, research studies in the business sector support the view that people who receive mentoring do better than their colleagues who do not [52]. These findings support the view that when mentoring is carefully planned the outcome could be rewarding. On the contrary, Levinson and Sheehy lament that total absence of mentorship can be detrimental.

According to [53], mentoring is the stage in which the mentor guides an apprentice. The mentor in this case serves as the experienced person who draws from experience and knowledge to train the apprentice, or a novice. One thing that needs to be clarified in a mentoring relationship is the type of guidance that is needed from the mentor. Inasmuch as a healthy relationship cannot be compromised, the mentors and mentees roles should be as explicit as possible despite the fact that there exist unique relationships which might warrant possible adaptations on the part of the two parties. [54] defines mentoring as an intense paternalistic relationship whereby the mentor takes the responsibility as a teacher and an advocate. One could infer from this conception of mentoring that the mentor does not only teach, but serve as, more or less, as a parent to the mentee, thereby establishing a deeper relationship between the mentor and the mentee. Considering the support mentors can offer their respective mentees, it could make useful to adopt the mentoring concept in the educational setting.

While mentoring has been widely used to support teaching and learning, it has also been noted that a wrong pairing could result in an unproductive relationship. This is especially the case when the mentor is not adequately prepared or does not possess the necessary attributes and skills needed to offer the needed support to the mentee. As noted earlier, the mentor should be experienced and knowledgeable to be in a better position to guide the mentee towards a desired goal. In view of this, mentoring programs should be carefully planned and implemented to attain

the maximum result. Where necessary, the mentors should be adequately trained on explicit mentoring practices with well-organized mentor programs [55]. Since mentoring involves personal interaction, and teaching and learning, it behooves the organizers of a mentoring program to ensure that the mentors are well prepared since better prepared mentors are likely to have greater impact on their mentees [56]. According to [57], good mentors should possess the following mentoring-related practices and attributes: personal attribute; system requirements; pedagogical knowledge; modeling; and feedback.

In conclusion, the literature reveals that mentoring (however defined) involves a relationship between a mentor (considered as experienced) and a mentee (the novice), in which the former supports (through a variety of activities) the latter to realize learners need goals [58, p.11]. Achieving this ultimate goal of mentoring is contingent upon the kind of relationship that exists between the mentor and the mentee. While a perfect match is likely to yield fruitful mentoring results, a mismatch relationship characterized by lack of motivation from the mentor, or where the mentee is only compensating for unhappy childhood [59] is highly improbable to achieve success. In this regards, [60] warns about the negative and problematic side of mentoring. Therefore, it is imperative to establish a good relationship upon which a vibrant mentoring will thrive.

In P2N, building of lasting relationships which are mutually beneficial to the mentuturs(feeling of wasted time) and to the mentutees, mentuturs undergo periodic training on mentoring and tutoring during the school year (P2N lasts the entire school calendar for college students). Topics treated during such trainings include dealing with stereotypes, building a welcoming community, and how to pose questions. Also, mentuturs who are college students, are encouraged to share their own schooling experiences, both challenges and successes, with the mentutees in the process of building a long lasting relationship. By sharing their experiences with mentutees, it is expected that what mentutees learn by participating in P2N will not be just mathematics. The sharing of personal life stories by mentuturs, it is expected, will encourage mentutees to value the importance of resilience and not give up in studying mathematics since mathematics opens many doors in the world of work.

Program Implementation and Structure Tutoring

Tutoring support involves skills building which enables students to learn benchmark skills they are yet to cover in their respective schools. Homework support and skills practice are provided with the intent of clarifying what students learned in school and revising some fundamental mathematics skills they may have forgotten. The mentoring and tutoring support is therefore necessary in a holistic socio-cognitive framework. In addition, since some of these students lacked school resources such as access to calculators and textbooks, each participant received a free TI Nspire calculator and receives training on how to use it.

The use of a graphing calculator is to enable visual learners be able to see and examine, for example, the nature of a given function and also move across various modes of representations. Textbooks are also supplied to each participant. These resources are meant to bridge the resource

gap between students who come from affluent backgrounds and those from poor backgrounds. Each eighth and eleventh grader is assigned to an undergraduate who serves as a mentor and tutor mentutor creating a community comprising one undergraduate, three eleventh graders, and six eighth graders.

By providing students with tutors, the idea is to provide them with more knowledgeable others [34] who can provide them with the needed instructional and learning support that students do not normally get in their regular classrooms due to class sizes and some teachers inability to tailor instructions to meet the diverse needs of learners [61]. Again, by creating a community of learners, comprising 10 members, an undergraduate, three 11th graders and six eighth graders, the intention is also for students to tap into the rich knowledge that each person of the community possesses and learn from each other. By combining aspects of reciprocal and near peer tutoring in the P2N model since the intention of using the word tutor and not teacher is to avoid a state of community gets to contribute to the learning process similar to the idea of teaching as learning by [62].

Again, as a community of learning, there is a need for members of the community to collaborate in the learning process and through having shared norms, learning goals, and practices [63]. This means that members of the learning community get the opportunity to ask questions, answer questions, clarify statements, share practices in order to get them engaged as active learners and enhanced their opportunities to respond and learn [23; 25]. For effective tutoring, tutors are required to have a positive attitude towards all members of the community, possess deep content knowledge (although they need not know everything), and possess good communication skills in order to reach out to each person and scaffold instructional materials to support their unique learning needs [64].

Mentoring

As part of the Prepare2Nspire (P2N) program structure, these mentutors serve as role models to students leading to a kind of symbolic interaction between members of each community. The interpersonal relationships between these two groups of students are intended to create trust [65]. By having a mix of different learners at different stages of the education ladder, it is anticipated that members of the community will look up to those ahead of them as students and see them as role models. As such, room is created for interactions to take place which may be social in nature or the sharing of coping strategies for those going through particular strategies. This is especially important considering accounts that students interest in mathematics wanes as they progress in their students. Again, the structure of the P2N model incorporates guest speakers who are professionals from diverse fields. These guest speakers share their education experiences with participants teaching them the importance of perseverance and encouraging them to work hard and succeed in mathematics due to its utility value. Messages shared by guest speakers are in line with the program's motto; Math is hard, So is life; We accept the challenge! By encouraging students to persist and sharing with them accounts of persons who have overcome all odds to

succeed, it is anticipated that most of our participants who happen to fall into the at-risk population will be encouraged to work hard and achieve significantly in school [2; 66].

Conclusion

To ensure that all students are prepared to take higher levels of mathematics and science and that no child drops out of school, any hint of stereotyping needs to end. There is a need to go beyond gap-gazing [20] to look for innovative ways of teaching which can serve the purpose of improving learning outcomes for all students and not just some of them. In addition, merely engaging in gap-gazing fetishism without seeking to improve learning outcomes does more harm than good. Such an intervention should be informed by the peculiar challenges that students face and enable them overcome any tendency to believe that they are deficient which can lead to stereotype threat [2].

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