

Students and Teachers' Perceptions on What Matters in A Primary School Math Class

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Abstract

This study investigates the perceptions of primary school students and their teachers on what practices are deemed important in learning and teaching Math respectively. For this, a survey was developed from Danielson's framework of teaching (2013). Four dimensions of teaching practices have been embraced namely: (1) learning environment, (2) students' role in class, (3) students' activities, and (4) students' progress. This study used descriptive methodology to answer the research questions. Data was gathered from 9 self-selected government schools. A total of 198 randomly selected students and 18 teachers completed the survey. Data analysis revealed that best practices for teachers in the four dimensions are most of the time in accordance with those identified by students.

Keywords: Math Education, Primary Education, Best Practices, Students' perceptions, Teachers' perceptions

1. Introduction

To find out and understand what works in a math classroom, it is often important to get insights from students and teachers on what they perceive as fundamental to quality Math instruction. There are, indeed, many motives why we should particularly consider students' views in education. First, Öqvist and Malmström (2016) argue that valuing students' views of teaching could produce a very positive learning environment in class. Second, if the learning environment is positive, not only the students do well academically (Back et al. 2016, Dorman and Adams, 2004) but they also manage to build good rapport with their teachers (Raufelder et al. 2016; Wubbels et al., 2015). Third, Manca et al. (2016) and Witte and Jansen (2016) assert that being receptive to students' views may well provide teachers with how they could grow as professional teachers. Though students' views appear to have significance in understanding and improving the teaching and learning situations, Raufelder et al. (2016, as cited in Fransson et al. 2018, p. 2156) argues that "...what constitutes 'good' or 'less good' teaching are rarely examined and this calls for additional research". This is even more so when considering views in particular subjects. As argued by the OECD (2009p: 90), "...so far there is little research, for example, on beliefs and practices specific to certain subjects". Therefore, this research attempts to bridge that gap and provide a step forward in gaining more knowledge about what constitutes good Math instruction from both teachers and students in Bahrain primary school environment.

2. Literature Review

The views, attitudes, and expectations of students regarding mathematics have been a very significant factor underlying their school experience and achievement (Borasi, 1990; Schoenfeld, 1985). According to Frank (1988), the role of the student is to receive mathematical knowledge and to be able to demonstrate it and the role of the teacher is to transmit this knowledge and to ascertain that the students have acquired it (Frank, 1988). Such views may prevent students from understanding that there are alternative strategies and approaches to many mathematical problems. Associated with these conceptions are students' expectations of what is legitimate in a mathematics classroom, which may lead them to react negatively if the teacher tries to introduce some innovative activities (Ponte & Carreira, 1992).

This study has embraced Danielson's framework of teaching components (2013). This model categorizes teachers' practices in four areas namely: (1) "Planning and preparation", (2) "classroom environment", (3) "instruction", and (4) "Professional Responsibilities". Only the second and third dimensions have been adopted and adapted in this research.

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These areas of teaching have been considered because these are the most visible to students as they experience them in class. These domains have been studied and further divided into four parts which are: (1) learning environment, (2) students' roles in class, (3) students' activities, and (4) students' progress.

2.1 Learning Environment

The term learning environment refers to the social, physical, psychological and pedagogical context in which learning occurs and which affects student achievement and attitudes (Fraser, 2007, 2012). Results of studies conducted over the past 40 years have provided convincing evidence that the quality of the classroom environment in schools is a significant determinant of students' learning (Fraser, 2007, 2012). That is, students are likely to learn better when they perceive their classroom environment positively (Dorman & Fraser, 2009; Velayutham & Aldridge, 2012).

Research has found that learning is not solely an active personal construction of knowledge but is strongly influenced by the social environment within which it takes place, with social interaction an essential element in supporting the development of understanding (O'Toole & Plummer, 2004).

As well as delivering the curriculum, it is the teacher's role to help construct the classroom social environment by creating norms and rules for student social behavior in the classroom and providing explicit messages regarding students' interactions with their classmates (Ryan & Patrick, 2001). With substantial literature stating that social interaction within the classroom is an important contributor to positive learning outcomes, it appears mathematics classrooms are sometimes regarded as an exception to this. The often-individualistic nature of mathematics lessons seems extremely unusual, causing some students to view mathematics classrooms as 'other-worldly', with no relationship to their own lives and perhaps no connection to other academic areas (Boaler, 2000).

According to Maulana et al. (2015) and Van de Grift et al (2014), a safe learning climate requires mutual respect not only between students and teachers, but also among students, to encourage students' self-confidence and to facilitate good relationships in the classroom. Previous studies have shown that an activating learning environment is related to the quality of teacher-students and peer interactions (Maulana et al. 2015). When these relations improve, students' academic performance tends to improve as well (Furrer and Skinner, 2003).

Students' perceptions of the mathematics classroom can influence their beliefs about themselves and their schoolwork, impacting on their level of engagement in academic tasks (Attard, 2015). In examining 5th-grade students' perceptions of the classroom social environment, motivational beliefs, and engagement, elements of teacher support, peer support, and the promotion of mutual respect were described as having a strong influence on the motivation of students towards academic engagement (Patrick, Ryan, & Kaplan, 2007).

Student interaction and the use of cooperative learning within the mathematics classroom appear to support adolescents' need for social interaction while encouraging the development of mathematical understanding (Attard, 2015). According to Boaler (2000, p.380), "Students do not just learn methods and processes in mathematics classrooms, they learn to *be* mathematics learners and their learning of content knowledge cannot be separated from their interactional engagement in the classroom".

Interactions between students and teachers, and students with students allowed construction of meaning and assisted students in building deeper understandings of mathematical concepts (Blair, 2004). Allowing students to discuss their mathematics and collaborate to solve problems leads to faster progress and the adoption of more flexible strategies than individual work (Attard, 2015). Working with others assists students to view themselves as mathematical learners, providing opportunities for clarification of tasks, to test ideas, make conjectures and engage in mathematical discussions and arguments (Anthony & Walshaw, 2009). Research has indicated that social interaction is an important element in the learning of mathematics that has a direct impact on students' engagement with mathematics. Encouraging positive interaction within the mathematics classroom provides opportunities for students to meet social needs and increase their depth of understanding of mathematical concepts (Attard, 2015).

2.2 Students' role in class:

More and more students' role in class is no longer that of a passive recipient of knowledge. It has taken a more active turn even in primary education. Indeed according to Summer (2019) if the teachers are well trained, they are able to provide learning opportunities for students:

(1) to be independent thinkers where they are able to think for themselves about different topics like finance and have their own ideas that they could express and apply freely in front of a class (2) to be creative in processing and producing new products and (3) to be entrepreneurial where they are active social participants.

Indeed, children in primary schools could develop a sense of price and cost in which their role in a Math class is to assess the price of the products and the services provided as well as find out information about these prices (Bisanz et al., 2019). Such roles for primary school students will also facilitate and reinforce relationship between the students (Tshewang et al. 2017) working together where they exchange ideas, help and explain to each other how to solve an equation or a problem, moving around students in the room, and catering for students' mathematical needs (Wilson et al., 2005).

2.3 Students' activities

It is necessary to connect the learning task to the students in terms of its relevance and task orientation based on their pre-instructional knowhow (Howard et al. 2009). In order to make the learning relevant and meaningful to the students, learning tasks must be related to their real-world experiences and there must be clear expectations of each task. The link between the students and the learning tasks can be known through student perceptions of Personal Relevance and Task Orientation (Tshewang et al. 2017).

Weiss (1990) claims that mathematics teaching must focus on active involvement and that student-centred activities are advantageous when attempting to interest and engage students. Examples of such activities in the mathematics classroom are experiments, workshops and projects. The question remains as to how such activities should be structured and what content matter, they should contain in order to raise the level of interest and to engage students. How can a student-centred approach be combined with a content-centred one? Schafer and Sweeney (2012) argued that there is too much of a push towards cooperative learning. They argued that many things in today's world require someone to be able to do things individually and learning to rely on others in cooperative work may stifle their individual learning.

In the constructivist paradigm, selection of instructional tasks must be based on knowledge of students' mathematics (Steffe & D'Ambrosio, 1995); the choice of tasks should be "grounded in detailed analyses of children's mathematical experiences and the processes by which they construct mathematical knowledge" (Cobb, Wood, & Yackel, 1990, p. 130). According to Bransford et al. (1999, p. 11), "There is a good deal of evidence that learning is enhanced when teachers' pay attention to the knowledge and beliefs that learners bring to a learning task, use this knowledge as a starting point for new instruction, and monitor students' changing conceptions as instruction proceeds".

Several studies have shown that mathematics instruction that focuses and builds on students' personal sense making, produces powerful mathematical thinkers who not only can compute but also have strong conceptions of mathematics and problem-solving skills (Ben-Chaim, Fey, & Fitzgerald, 1998; Boaler, 1998; Carpenter et al. 1996; Clements & Sarama, 2007).

2.3 Students' progress

Assessment has been used for multiple purposes, such as providing student grades, national accountability, system monitoring, resource allocation within a district, student placement or monitoring, improving teaching and learning, or providing individual feedback to students and their parents/guardians (Newton 2007).

Assessment in the mathematics classroom is a complex issue that requires teachers to plan tasks and procedures that reflect the diverse nature of mathematics, its teaching and its learning (Herrington et al. 1997). Multiple sources of assessment will involve different ways of presenting tasks to students as well as different ways of probing assessment information so that valid inferences about students' progress can be made (Herrington et al. (1997).

According to Swan (1993), tasks can include a variety of formats: written, oral, practical; can be closed or open-ended; real life or abstract; completed individually or as a group. Teachers and students alike will make inferences about learning based on information gained through broad approaches like observing, questioning and testing.

Classroom assessment usually uses a range of teacher-selected or teacher-made assessments that are most effective when closely aligned with what and how the students have been learning (Baird et al. 2014). Current perspectives in classroom assessment encourage the use of a range of assessment strategies, tools, and formats, providing multiple opportunities for students to demonstrate their learning,

making strong use of formative feedback on a timely and regular basis, and including students in the assessment process (Brookhart 2003; Klenowski 2009; National Council of Teachers of Mathematics [NCTM] 2014).

Assessment should reflect the mathematics that is important to learn and the mathematics that is valued. This means that both large-scale and classroom assessment should consider not only content but also mathematical practices, processes, proficiencies, or competencies (NCTM, 2014; Pellegrino et al. 2001; Swan & Burkhardt, 2012).

According to Suurtamm et al. (2016), teachers and students need to know what is expected which implies that tasks need to align with patterns of instruction, tasks need to provide opportunities for students to engage in performance that will activate their knowledge and elicit appropriate evidence of learning. The assessment should represent what is important to know and to learn, and when feedback is provided it needs to contain enough information so that students can improve their knowledge and make forward progress.

3. Methods & Materials

This study is geared towards answering the following main question:

1. What, according to students and teachers, are the most effective Math teaching practices?
2. What, according to teachers, are the most effective Math teaching practices?

As mentioned earlier '*Math teaching practices*' in this research are investigated from four main dimensions namely: (1) learning environment, (2) student's role in class, (3) students' activities and (4) students' progress.

3.1 Approach of this study:

This is a descriptive case study; it has employed a survey that basically relies on the quantitative approach to gather and analyze data. Means and Standard Deviations are the statistical measurements that have been used to interpret the results.

3.2 Sample of this study:

A total of 198 students and 18 Math teachers from 9 self-selected public schools in Bahrain took part in this research. The participating students were a mixture of girls and boys whose age ranges between 10 and 11 years. They are all from the 4th, 5th, and 6th grade levels. The rationale behind the purposeful selection of these grades is to ensure that the participants are able to evaluate the statements in the survey. All Math teachers who taught these students took part in answering the survey. Their age ranges between 25 and 45 and their experience in teaching the target subject (i.e Math) ranges from 3 to 23 years.

3.3 Data gathering tool and its validity & reliability in this research:

The survey used in this research was adopted and adapted from Danielson's (2013) framework for teaching components. This model has already been validated by the Educational Testing Service (ETS.) in USA, then by the Consortium for Policy Research in Education (CPRE) which found minor but reliable positive links between the ratings of the framework and academic achievements of students² (Professional Growth and Effectiveness System, 2014). This study, as previously explained in the introduction, did not use this framework as it is, it has only used 'Learning environment' and 'Instruction' areas of teaching practices from which four dimensions have been extracted and dubbed as 'learning environment', 'student's role in class', 'student's activities' and 'student's progress'. Fifty-four descriptors of teaching practices have been formulated and reworded into simple statements for students. The participating students and teachers were asked to read these statements then evaluate these teaching practices according to what they remember from their classroom experiences using the five likert-type scale approach in which options to choose from are fixed and are developed to measure participants' opinions (Bowling, 1997; Burns, & Grove, 1997, Likert, 1932). The scale of this survey is from 'no effect', 'small effect', 'an average effect', 'a good effect' to 'a large effect'. It is important to highlight that the survey was first written in English then translated in Arabic. To ensure content validity, this survey has been translated by two professional English-Arabic translators. Before implementing the survey, it was piloted on a sample of 50 students and the results showed higher applicability. This was reflected in the calculation of the questionnaire Cronbach's Alpha (0.90) as shown in Table 1 below:

No.	Questionnaire Themes	No. of Items	Cronbach's Alpha
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²(for more details on these validation studies, go to <http://danielsongroup.org/research/>)

1	Learning Environment	11	0.94
2	Students' role in class	19	0.72
3	Students' activities	16	0.99
4	Student's assessment	9	0.70
Overall		55	0.90

3.4 Procedure:

After obtaining consent to conduct this research in public schools, a call to participate has been launched to around 130 primary schools, only nine of these schools expressed interest. The developed survey was, then, administered to the target population.

3.5 Data Analysis:

There are fifty four teaching practices in the developed survey. Only the three top teaching practices from each of the four dimensions obtained from both students and teachers' questionnaires have been considered for analysis as the focus of this paper is mainly to identify those teaching practices that have the largest effect on students' learning of Mathematics.

4. Results

In this section, only the three top ranked means of the teaching practices from both students and Math teachers in the four dimensions are presented.

“Learning Environment”

Students' Views: Math teaching practices in the domain of ‘Learning environment’ that have been found most effective by students are shown in Table 2. Students appear to value the *learning environment when it is safe* with a Mn of 4.40 and SD of 1.11. They also find it important to have *social learning environment* to learn Math with a Mn of 4.36 and SD of 1.18. Last but not least, they consider a classroom where students' *behavior is carefully monitored* to be ideal for learning with a Mn of 4.35 and SD of 1.05.

Teachers' views: Math teachers' perceptions on the most effective teaching practices with regard to “learning environment” are also in Table 2 below. In the top rank, two practices have equally been rated namely: *students interacting with each other respectfully* and *classroom being arranged appropriately for learning* with a Mn of 4.61 and SD .60 & .70 respectively. In the second position, Math teachers valued the *safe environment* with a Mn of 4.50 and SD of 1.04. In the third position comes *classroom routines and procedures when these are set at the beginning of the academic year* with a Mn of 4.40 and SD of 1.10.

Table 2: Students and teacher' perceptions: Best practices as related to the “Learning Environment”				
Respondents	Rank	Teaching Practices	Means	Standard Deviation
Students	1	Safe learning environment	4.40	1.11
	2	Social learning environment	4.36	1.18
	3	Monitoring students' behavior	4.35	1.05
Teachers	1	Students interact with each other respectfully.	4.61	.60
		Classroom is arranged appropriately for learning.	4.61	.60
	2	Safe learning environment	4.50	1.04
	3	Classroom routines and procedures are set from the beginning of the academic year.	4.40	1.10

“Students' role in class”

Students' views: As to students' best practices with regard to their roles in class, the results as displayed in Table 3 show that *helping other students* is in the top of their choices with a Mn of 4.50 and SD of .97, then followed by *being able to choose own learning materials* with a Mn of 4.45 and SD of .98, and last *monitoring own behavior* in class with a Mn of 4.40 and SD 1.16.

Teachers' views: The best teaching practices in the domain of “students' role in class” as perceived by Math teachers, as illustrated in Table 3, were found to first to be *tapping into the prior knowledge of students before teaching a new topic* with a Mn of 4.72 and SD of .57, followed by *making students' monitor each other's' behavior* with a Mn of 4.55 and

SD .78, and last but not least *allowing students to choose their partners when working in groups* with a Mn of 4.50 and SD of .70

Table 3: Students and teachers' perceptions: Best practices as related to 'students' role in class'				
Respondents	Rank	Teaching Practices	Means	Standard Deviation
Students	1	Helping others	4.50	.97
	2	Choosing own materials	4.45	.98
	3	Monitoring own behavior in class	4.40	1.16
Teachers	1	Students share their prior knowledge about the topic before teaching it.	4.72	.57
	2	Students monitor other students' behavior against pre-set standards of conduct.	4.55	.78
	3	Students choose their partners when working in groups.	4.50	.70

"Students' activities"

Students' views: According to students, the best and most effective in-class learning activities, as shown in Table 4, are first the ones that *are not based on memorization but understanding* with a Mn of 4.56 and SD of .95, second the ones which *allow to work with peers collaboratively* with a Mn of 4.54 and SD of .96, and third the ones which *provide opportunities to develop and construct own understanding* with a Mn of 4.46 and SD of 1.01.

Teachers' views: With regard to practices that Math teachers find most effective in the field of "students' activities", as displayed in Table 4, are those which:

- (1) *are authentic with real issues* with a Mn of 4.72 and SD of .57,
- (2) *set the learner to action* with a Mn of 4.72 and .57, and
- (3) *provide students with opportunities to work collaboratively in groups* with a Mn of 4.61 and SSD of .85

Table 4: Students and teachers' perceptions: Best practices as related to 'students' activities'				
	Rank	Teaching Practices	Means	Standard Deviation
Students	1	Teacher provides activities that are based on understanding rather than memorization.	4.56	.95
	2	I work collaboratively.	4.54	.96
	3	Teacher provides activities that help me develop/construct my own understanding.	4.46	1.01
Teachers	1	Students are engaged in difficult activities that target in-depth learning.	4.72	.57
		Activities are authentic and reflect some complexities of the real world.	4.72	.57
	2	Students work in small groups to come up with a common solution to a problem.	4.67	.59
	3	Students work collaboratively.	4.61	.85

"Students' progress":

Students' views: In connection with best teaching practices as perceived by students in the "students' progress" dimension, results in Table 5 below reveal that the top three practices are: *records of students' learning progress when these are kept effectively by the teacher* with a Mn of 4.49 and SD of .93, then *students' learning goals when these are decided and set by the teacher the students and their parents* with a Mn of 4.44 and Sd of 1.05, and *students' results when these are indicative of what has been learnt or achieved* with a Mean of 4.43 and SD of 1.05.

Teachers' views: As to the teachers' top teaching practices in the domain of "students' progress", as displayed in Table 5, they revolve around *using continuously good structured formative assessment throughout the academic year* with a Mn

of 4.72 and SD of .57, *providing students with specific and personalized feedback* with a Mn of 4.50 and SD of 1.04, and aligning students' assessment plan with instructional outcomes with a Mn of 4.38 and SD of 1.09.

Table 5: Students and Teachers' perceptions: Best practices as related to 'Students' progress'				
	Rank	Teaching Practices	Means	Standard Deviation
Students	1	The teacher keeps the records of my progress effectively	4.49	.93
	2	My growth goals are set by me, the teacher and my parents.	4.44	1.05
	3	Results of my assessment tell me what I have learnt.	4.43	1.06
Teachers	1	Well-designed formative assessment used throughout the academic year	4.72	.57
	2	Students receive accurate and individualized feedback by teachers and peers.	4.50	1.04
	3	Assessment plan of students is aligned with the instructional outcomes.	4.38	1.09

5. Discussion

5.1 "Learning Environment" from both students and teachers' points of views:

Students' views on best "learning environment" teaching practices revolve around how important a safe surrounding is to learn Math. This has been echoed by many researchers including Maulana et al (2015) and Van de Grift et al. (2014). With this, they probably wanted to convey the need to feel safe from any threat be it physical, emotional or cognitive. Indeed, students seem to value a learning environment that is positive and comfortable where their potential is maximized without having to worry about a broken chair or a bully. Students have also significantly valued a classroom that is social where learning is taking place through interaction with peers and the teacher. This might as well refer to the nature of tasks students are assigned to do like group-based projects which need to be completed collectively rather than individually. This highlights the fact that an important amount of learning takes place beyond the confines of the individual mind as it has been reported in the literature by Wilson et al. (2005), Shafer and Sweeney (2012). Further to this, students' views appear to consider the fact that when students' behavior is monitored by the teacher in class, it may be conducive to effective learning of Math.

As to teachers' views, mutual respect between students appears to be vital to learn Math in class. Indeed, Math teachers tend to believe if students disrespect each other; this misconduct permeates into students' interaction while working together on in-class activities which would lead to poor bonding, conflict and disengagement all of which are detrimental to effective learning. Indeed this has also been found in studies done by Attard (2015), Blair (2004) and Boaler (2000). The second valued teaching practice by Math teachers is the appropriate setup of the classroom. With this, they probably believe that classroom setup can radically affect the attitude and learning habits of students. This entails that it is paramount for students to have an environment that is organized, motivating and comfortable in order to learn. Creating such learning environments means arranging a practical physical layout, providing diverse materials and encouraging students to have a sense of belonging and ownership. This has also been mentioned by many researchers including Fraser (2007, 2012). As to the third top valued teaching practice, it exposes the significance of providing students with a safe learning environment that is physically secure where students can take risks in asking questions and expressing their views. These risks, according to them, are important because they are part of exploration and constructivism that have tremendous effects on learning.

Students versus teachers' views: The above presentation and discussion of findings from teachers and students on the best teaching practices in the "learning environment" dimension shows to a great extent an alignment especially with regard to "ensuring a social, safe and trouble-free learning setting" for an effective learning of Math.

5.2 "Students' role in class" from both students and teachers' points of view:

Students' views regarding their roles in class that are conducive to learn Math effectively are: first, students with opportunities to help others as found in Wilson et al. (2005) research. Helping fellow classmates most probably had more internal-felt reward that is more valuable than any other role they play in class. Helping others has the effect of finding more purpose to one's learning as it leads not only to being more compassionate and understanding but also to work hard and persevere. This also reflects that by helping others, the one is learning better. Second, students also believe that when they are involved in choosing their learning materials, they tend to learn Math better.

Third, students' roles in monitoring their own behavior appear to gain preference in learning effectively this subject. They perceive that it is important to keep out of trouble to learn. They think that effective Math instruction principally takes place if students are empowered in class and are given opportunities to contribute to the success of the class as it has been advanced by Summer (2019).

As to **teachers' views**, the findings reveal that it is paramount for students to share their prior knowledge of the target topic to ensure an effective Math class. This, according to them, sets the foundation in relating real life experiences to the intended content of Math lessons. This has also been highlighted by Summer (2019), Howard et al. (2009) and Bransford et al. (1999) where they emphasized the active participation of students in constructing their own understanding of the matter from their pre-instructional know how or real world experiences. The other most important teaching practice is students' monitoring other students' behavior. Such a role helps students to increase their awareness of desirable and less desirable expected classroom behaviors. Being able to have a defined behavior management plan can be conducive to better classroom outcomes including ensuring trouble-free delivery of lessons, identifying students' behavioral problems and attending to them quickly, and also making sure students are working well together. The fourth important students' role in class is for students to be able to choose their partners in group work. Being able to choose group members is crucial for students. Math teachers believe that using self-chosen methodology in grouping students makes students approach the task with confidence and trust. Knowing with whom they are going to work makes students feel comfortable and more committed to the assigned task.

Students versus Teachers' views: The findings from students and teachers related to students' role in class appear to be aligned mostly with "*monitoring behavior*" in class and maybe "*helping each other and choosing partners during group work*" but not that much with "*sharing prior knowledge*".

5.3 "Students' activities"

Students' top rated views regarding the 3rd dimension, "classroom activities", highlighted Math activities that are based on comprehension rather than memorization. With this, students' quality instruction lies within their ability to understand how to process mathematical calculations rather than learning by formulas by rote and applying these mechanically. At the core of this, of course, is the nature of the designed activities that students are assigned to do in class as it has been advanced by Steffe & D'Ambrosio (1995), and Cobb, Wood, & Yackel (1990). The second top rated activity is collaborative work. Students appear to value the importance of working with peers in learning Math. They believe that when working on solving problems with other students, they tend to learn Math better. Each group member is unique and has the ability to look at the task and how to solve it in a different perspective. The opportunity to collectively brainstorm and combine strengths permits to finish off difficult tasks in a creative manner.

As to teachers' top rated views on "classroom activities", they were found to focus on tasks that are authentic, experiential and problem-based. Regarding tasks that are authentic, teachers believe that students use skills, strategies and knowledge that are meaningful and that resonate well with their outside world. Indeed, when students are provided with real world issues and examples, the latter have the potential to engage them better in the tasks at hand which leads to effective learning. They also highlighted the importance of hands on activities as they enable them to reflect, critically analyze and synthesize knowledge. And the fact that these tasks or activities are problem-based, students are being provided with opportunities to identify/ define well the problems, determine their causes, prioritize/ select and implement the best solution to those problems all of which are essential for effective Math learning. Teachers' findings here are in accordance with what was reported in studies by Ben-Chaim, Fey, & Fitzgerald (1998), Boaler (1998), Carpenter et al. (1996), and Clements & Sarama, (2007).

Students versus teachers' views: It is interesting to find out that teachers and students' views on the types of activities that bear potential in learning Math effectively are almost all aligned. Indeed, they both appear to agree on the fact that students in class should have tasks that are geared towards constructing own knowledge through problem solving and through group work.

5.4 “Students’ progress”

Students’ views on the 4th dimension, “students’ progress”, data reveals that students perceive keeping the records of their learning effectively is a teaching practice that helps in providing insightful information about their progress and about setting their future learning goals. Indeed, the latter has also been rated highly by students who believe that when learning goals are set by their teachers, themselves and their parents, this practice has the power to better monitor their progress. This has also been found in studies by Herrington et al. (1997).

The third top ranked assessment practice is when students' results are indicative to their learning of the knowledge covered in class as previously found in studies by Suurtamm et al. (2016) and Baird et al. (2014).

Teachers’ views on effective assessment classroom practices highlighted three main areas. The first is the importance of using formative assessments throughout the academic year as it has been reported in studies by Brookhart (2003), Klenowski (2009) and Swan (1993). The second highly rated assessment classroom practice revolves around students' receiving accurate individualized feedback. This finding correlates with the results reported by Newton (2007). As to the third assessment classroom practice, teachers opted for having an assessment plan that is aligned with Math instructional outcomes. This is another finding that is similar to the research reports done by Suurtamm et al. (2016), and Baird et al. (2014).

Students versus teachers’ views: In the students' progress dimension; it is clear that students and teachers views on two effective assessment practices are not aligned with each other. When students highlighted the importance of keeping records and setting learning plans, teachers top rated the design and implementation of formative assessment and provision of feedback. They, however, tend to agree that the assessment plan or assessments should reflect/ cover what has been covered in class and hence be aligned with classroom instructional outcomes.

6. Conclusion

Summary: This study investigated students and teachers' perceptions on what matters in a primary school Math class. It also looked at the differences between teachers and students' views. Danielson's (2013) model of teaching has been adopted and used as a data gathering tool to answer this study research questions. Two teaching domains of this model have been considered namely: *Classroom environment* and *Instruction* from which four dimensions of best Math teaching practices have been drawn. They are: (1) Learning environment, (2) students' roles in class, (3) students' activities, and (4) students' progress. Findings from both the quantitative analysis of data have revealed that students and teachers views on Math effective strategies are somehow aligned with each other. Indeed, Math teachers and their students are found to agree in most of the teaching practices of the 4 dimensions that tend to have positive effects on learning. Regarding the *learning environment*, Math teachers and students' views are to a great extent aligned with each in terms of *ensuring a social, safe and trouble-free learning setting* for an effective learning of Math. As to *students' roles in class*, Math teachers and students agreed that the most effective strategies are those related to students' *monitoring behavior*, *helping each other* and *choosing partners during group work*. Vis-à-vis *students' activities*, they also both agreed that on the fact that students in class should have tasks that are geared towards *constructing own knowledge* through *problem solving* and through *group work*. With regard to the last dimension *students' progress*, Math teachers and students tend to agree that the *assessment plan* or assessments should reflect what has been covered in class and hence be aligned with classroom instructional outcomes.

Limitations of the study:

This study is an exploratory research which underpins for a more comprehensive study in the future. The findings reflect only the perceptions of the students and Math teachers in the self-selected schools; hence they cannot be generalized or transferred unless if this study is being replicated in all primary schools in Bahrain. It would have also been very insightful if the current study used qualitative approach in gathering data to substantiate and make better sense of the findings obtained from the quantitative data collection approach.

Recommendations: Findings from this research suggest that further investigations are needed regarding other Bahrain primary schools practices in Math classes. It would also have been more informative if interviews or focus groups are being used to interpret the quantifiable data.

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