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## **THE ROLE OF TEACHER TO ADDRESS ISSUES OF DISRUPTIVE BEHAVIOUR OF STUDENT LEARNERS IN MATHEMATICS CLASSROOMS: A STUDY IN THE SRI LANKAN CONTEXT**

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### **Abstract**

*Learner's classroom behaviour has become a global concern due to the intense impacts on academic performance. However, the decline in positive behaviour of learners in the Mathematics classroom impacts the Mathematics instruction in the inclusive classroom. Therefore, this study attempts to identify the role of Mathematics teacher to overcome the negative behaviour manifest by the learners during Mathematics instruction. Data for the mixed research design has collected from 25 Mathematics teachers and 330 learners from randomly selected two schools. The structured questionnaire was given for Mathematics teachers mainly to determine the awareness and applicability of different teaching methods and student behaviour during Mathematics instruction. Subsequently, learners were given a structured questionnaire to overview the perspectives of Mathematics instruction towards their learning styles. Sequentially,*

*24 classrooms were observed to identify the learner behaviour during mathematics instruction and how it impacts on the existent teaching-learning environment in the inclusive classroom based on the comprehensive checklist developed. Later, semi-structured interviews with teachers were conducted mainly to explore the perceived differences in their Mathematics instructions and written responses to the teacher questionnaire. Focus group discussions with learners were carried out concurrently to investigate the causes of the manifested behaviour during classroom observation. Data were analysed using descriptive analysis and thematic analysis. According to the perspectives of Mathematics teachers, the disruptive behaviour directs learners to deviate from learning Mathematics which creates distractions in the teaching and learning environment in the inclusive classroom. The learners determined that Mathematics instructions have not catered to all learners in the inclusive classroom. Therefore, the applicability of innovative teaching methods is imperative to motivate the learners for active participation in the teaching-learning process. Hence, the transformation of Mathematics instructions towards the learner styles is essential to attain educational objectives by eliminating the disruptive behaviour of learners in the Mathematics classroom.*

### **Keywords**

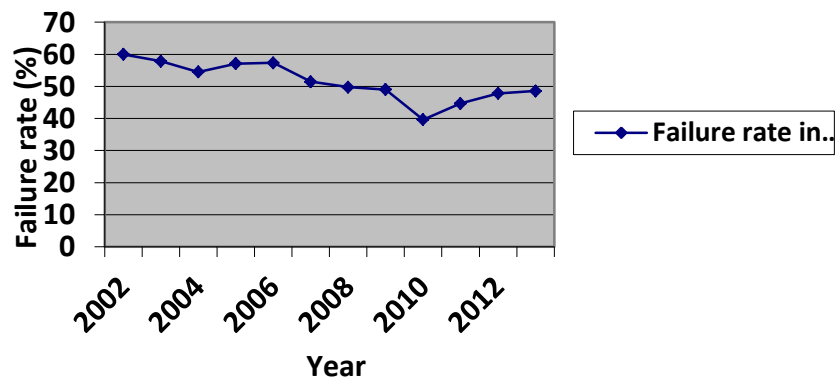
Inclusive Classroom, Disruptive Behavior, Mathematics Teacher, Learner Styles, Teaching Methods

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## **1. Introduction**

The economic and social development of the modern society drives through the knowledge community (Aturupane, Dissanayake, Jayewardene, Shojo, & Sonnadara, 2011). It is apparent that higher quality Mathematics education focuses on developing a person's analytical and problem-solving abilities (Andreason, 2011). Thereby, students develop the skills that are essential for everyday life and workplace apart from science and technology. Mathematics is a compulsory subject in the school curriculum across the world. Identically, it is one of the core subjects taught from year 1 to years 11 in Sri Lankan school curriculum. Hence, to get the qualification in General Certificate of Education (GCE) in Ordinary Level (O/L) Examination, passing Mathematics is essential for students in Sri Lanka. Subsequently, students contemplate Mathematics as one of the difficult subjects in the National Curriculum. In the recent past, the government of Sri Lanka implemented several reforms towards in establishing high-quality

Mathematics education at school level followed by suitable measures to address the shortcomings after implemented (Aturupane et al., 2011). However, in 2007 competency-based teaching and learning assessment model adopted under the revised curriculum to demonstrate acceptable achievement levels in applying their learning to everyday situations (Aturupane et al., 2011). The main aim of the Mathematics curriculum under these reforms was to enhance students' Mathematics thinking ability and knowledge effectively in problem-solving and decision making, Additionally, it was to eliminate previous transmission methods of teaching and to assign a transformational role to the teacher (Aturupane et al., 2011). Even though the government has taken innovative steps to improve the quality of teaching Mathematics at the classroom level, the students' achievement in GCE O/L Mathematics subject needs to improve further. Furthermore, figure 1 highlights about the minor fluctuations in the failure rate within the period and the lowest failure rate of 39.63% reported in 2010. Additionally, it is apparent that the failure rate in 2015 and 2016 are 42.77% and 37.19% respectively which is remarkably high.



**Figure 1 :** Failure rate of GCE Ordinary Level Mathematics from 2002 to 2013

(Source: Ministry of Education Sri Lanka – Reports)

Even though the GCE O/L examination is the first public examination in Sri Lanka which occur at the end of the secondary school cycle, it acts as the form of students' achievement testing in the curriculum evaluation (Aturupane et al., 2011). Thereby, the general performance of students at this examination indicates the students' combined effects of both the junior and senior secondary Mathematics curriculum conjoint with the quality of Mathematics instruction delivered in schools.

There is no underlying improvement in GCE O/L Mathematics pass rates in recent years although there have been minor oscillations in the failure rates within the period from 2002-2015. Consequently, the influential factors lead to the poor performance in the GCE O/L Mathematics examination has been widely discussed in various platforms in the educational sector. Indeed, most of the Mathematics teachers highlights that the students' Mathematics knowledge and skills gained in previous grades are inadequate and lack of internalising that knowledge into problem-solving in higher grades. Therefore, subject knowledge of Mathematics teachers and teacher instructions during Mathematics lessons are remarkable to resolve this issue. Additionally, it is apparent that the time allocated for the Mathematics subject at school timetable is insufficient to cover the given syllabus. Thereby, teachers are compelled to teach in an accelerated speed in the inclusive classroom where slow learners and weak students are negatively affected.

Mathematics is an abstract subject since it develops using abstract concepts which is a mental label given for the similarities of a set of objects. Furthermore, Mathematics concepts develop through primary to secondary schools in a hierarchical order and bound with logical thinking. Moreover, students develop their Mathematics knowledge through concept formation. However, students apply deductive reasoning mostly in developing Mathematics skills than inductive reasoning. Therefore, Mathematics teacher should use inductive reasoning mostly when developing new concepts or theories with students' active participation in the classroom. Alternatively, teachers can use deductive reasoning during Mathematics instruction especially when applying previously learnt concepts to the development of another lesson.

Mathematics teacher must experiment with a variety of methods to understand which approach needs to apply for learners in the inclusive classroom to create Mathematics concepts (Clement, 2002). Furthermore, effective teaching depends on how the teacher manages the inclusive classroom to achieve the objectives of the lesson (Stewart, 2004). It is apparent that Mathematics teachers' adaptation of proper teaching methodologies in developing knowledge, skills and attitudes enable learners to achieve self-direction and determination (Traynor, 2003). Consequently, teacher readiness to engage in teaching using various techniques and her commitment to developing abstract concepts drive learners to engage in learning Mathematics effectively (Traynor, 2003). However, it is in challenging nature for teachers to restructure their Mathematics instruction to assist learners in the inclusive classroom to obtain a general

education while preparing them for a competitive examination. Even though the content of the curriculum indicates in the course guides and textbooks, the specific methodology of implementing the curriculum depends only on the teacher (Stewart, 2004). According to Clement (2002), teacher's educational background with subject majors, teacher's knowledge about classroom teaching, experience and quality of professional development are significant to implement effective teaching. However, according to the learners, most of the teachers in the inclusive classroom are stereotyped, repetitive and their teaching is more focus into few learners.

Learning is the process of acquiring new knowledge, skills or value that would result in some form of behavioural change on learners (Zikhali, 2006). Consequently, student learning through effective teaching inculcates positive behavioural change of learners in the inclusive classroom (Mkhize, 2002). The inclusive classroom comprised of highly motivated learners who work hard on the task to attain vital goals of instructions while less motivated learners' attention may divide between the lesson at hand and the distraction in the classroom (Stewart, 2004).. Therefore, negative behaviour of some students creates the problematic situation in teaching-learning environment in the inclusive classroom where students may deviate from their studies (Mkhize, 2002). Indeed, Mathematics teachers opine that the disruptive behaviour in the Mathematics classroom is not tolerable and it is stressful in teaching abstract concepts of Mathematics in an inclusive classroom (Zikhali, 2006).

Mathematics instruction for learners in grade 9-11 inclusive classroom is imperative to achieve the expected learner achievement in Mathematics subject at the GCE O/L Examination. Indeed, the Mathematics teacher's role in succeeding towards the positive behavioural change of learner in the inclusive classroom is essential. Therefore this study attempts to investigate the intensity of Mathematics teachers' role in addressing the disruptive behaviour manifest by learners during Mathematics instructions to establish effective teaching-learning in the Mathematics classroom. Apart from that, the findings of the study would provide valuable feedback for policymakers and trainers in redesigning teacher training programs, identifying effective teaching methodologies for different content areas in the curriculum. Indeed, this entire study would be beneficial for different institutes involve in national educational policymaking such as the National Institute of Education (NIE) and Ministry of Education (MOE) for further developments in the Mathematics curriculum.

However, information gathered across the study will create a platform about the importance of effective teaching in an inclusive classroom and will encourage school principals as implementation managers to establish some procedures to monitor effective teaching-learning process at the school level. Moreover, Mathematics teachers would be able to monitor and evaluate their skills in Mathematics teaching and to modify their teaching methodologies according to the behavioural patterns they depict during instruction.

## **2. Objectives of the study**

The following are the objectives to attain the aim of the present study:

- (1) To identify predominant types of disruptive behaviour of grade 9-11 learners possibly manifested during Mathematics lessons based on teacher's perception
- (2) To determine the perceptions of learners' about the misbehaviour displayed during Mathematics instruction.
- (3) To inquire into the classroom related causes for such behavioural patterns
- (4) To suggest different approaches to overcome the disruptive behaviour of learners during Mathematics instruction.

## **3. Literature Review**

### **3.1 Theoretical Framework**

The subject Mathematics is an abstract, strategic and conceptual subject (Hagoramagara, 2015). The process of concept building is the prime task in teaching Mathematics. The psychology of learning Mathematics explains mainly about the formation of mental structures called schema and functions of those. The schematic learning continues through 3 activities simultaneously. (1) revising the part of one's existing knowledge which is embodied in the schema (2) learning new material (3) enlarge the schema as a tool for future learning. However, it is apparent that the perceived teaching methodologies of Mathematics teachers facilitate learners to understand Mathematics concepts to inculcate schematic learning. Jean Piaget's (1936) theory of cognitive development explains how a child constructs a mental model. He disagrees with the idea that intelligence was a fixed trait and regarded cognitive development as a process which occurs due to biological maturation and interaction with the environment. Jean Piaget has found that children develop such traits on the conversation, reversibility of thought and reflective intelligence only at certain levels of maturity and these processes cannot reverse.

However, the rate at which assimilation of new material and the required time for accommodation is different from one learner to another in Mathematics learning. The activity methods direct learners to understand preliminary concepts in Mathematics and guided discovery methods used in elementary Mathematics classes direct learners to succeed towards high retention and transfer of concepts (Lessani, Yunus & Bakar, 2017). Many researchers viewed learning as an active construction rather than passive absorption and teacher as a facilitator rather than the transmitter (Lessani et al., 2017). However, the learner-centred education broadly encompasses methods of teaching that shift the focus of instruction from the teacher to the student while in teacher-centred classrooms teacher act as a transmitter of knowledge. Therefore, the Mathematics teachers in learner-centered classrooms create more opportunities for students to actively participate in the teaching-learning environment and to share their attitudes and emotions. In learner-centred classrooms, learner grows in competency through experiencing real situations which they create and manipulates themselves. They learn by exploring possibilities and using trial and error as a learning device. Indeed students learn better when internally motivated because they actively engage in the learner-centred Mathematics classroom by following learning activities individually or in a group. So both learner-centered and teacher-centered learning should be used in teaching Mathematics. Additionally, learners in the inclusive classroom are different from each other due to their ability of understanding concepts, attentiveness, level of performance, learning strategies and classroom environment. Subsequently, the Dunn and Dunn learning styles model have been developed to improve the effectiveness of teacher instructions across all learning levels towards an observable improvement in student learning and behaviour (1979, 1980 and 1990). The model comprised of 5 types of stimuli that can affect the students' learning and 20 different elements that impact on each stimulus to set apart individual learners. They are Environmental (light, sound, temperature, seating design), Emotional (structure, task persistence, motivation , responsibility), Sociological preferences (learning alone, in pairs, in a small group of peers, with an adult, as part of a team, with variety or routines), Physiological characteristics (perceptual strengths, mobility while learning, need for intake, time of day) and Psychological processing inclinations (global/analytic, impulsive/reflective). Furthermore, this model is imperative to examine all learners' concentration towards learning in addition to the individual learners' behaviour (Dunn, Thies & Honigsfeld, 2001). However, educators' differentiae learners in the inclusive classroom based on

three main learning styles namely visual learner, auditory learner, and tactile (kinesthetic) learner. However, it is apparent that around 65% of the learners in the classroom are visual learners and they learn through visual aids. Consequently, maintenance walls of the classroom should contain visually appealing materials such as graphs, diagrams and maps to facilitate visual learners. Moreover, visual learners prefer written instructions than verbal instructions; requires the repetition of verbal instructions; expect to study in quiet environments; motivates due to the facial expressions of the teacher and her body language; not interest to concentrate long hours of teaching. Indeed it is apparent that around 30% of the learners in the classroom are auditory learners and they learn mostly through the sense of hearing. Furthermore, auditory learners prefer verbal instructions than written instructions; adjustable to study in noisy classrooms; learn effectively through lectures, audio books and oral presentations; motivates to work in groups while discussing; lack of understanding summary of information such as graphs, diagrams or maps. Additionally, it is evident that around 5% of the learners in the classroom are tactile (kinesthetic) learners and they prefer learning mainly through emotions, touch and bodily movements. Moreover, the tactile learners prefer activity based teaching methodologies; retain the knowledge using tools and models; acquire skills through imitation and practice; grasp the abstract concepts with the combination of practical experience; requires frequent breaks when studying for long durations.

### **3.2 Empirical Evidences**

The issue of classroom management and disruptive student behaviour are of continuing interest to individuals within the fields of psychology and education (Hagoramagara, 2015). Student's classroom behavior has been examined from perspectives such as the most frequent disruptive behavior, the most troublesome disruptive behavior and the behavior of most concern to teachers (Stephenson, Martin, & Linfoot 2000). Subsequently, researchers proceed to investigate teachers' management strategies and perceived control in the classroom (Lewis, Romi, Qui & Katz, 2005). As discussed by Arbuckle & Little (2004), the middle years of schooling is a period involving social and emotional changes and it involves during school transition for the majority of students. However, it is evident that the impact of the change in friendship groups and the emergence of peer group pressure transmit on students when they commence the secondary school after concluding their primary schooling (Arbuckle & Little, 2004). Often, the transition period is a time of high anxiety for students due to the movement



from the familiarity of primary school surroundings, to a secondary school involving unfamiliar teachers, unfamiliar buildings and markedly elderly students (Arbuckle & Little, 2004). Therefore, any problem arises on students when adjusting to these changes may result in the emergence of school refusal, anxiety and adjustment problems. According to Arbuckle & Little (2004), the importance of these areas to both students and teachers highlights the need of an investigation about the changes in student classroom behaviour throughout the middle years, and particularly throughout the transition period. Although there is often high variability between research findings in this nature, teachers frequently report high levels of concern for student behaviour in the classroom (Stephenson et al., 2000).

Numerous studies have conducted universally to determine the influential factors on classroom-related causes and the learners' behaviour during teacher instructions in the classroom. Factors such as characteristics of the learner (Zikhali, 2006; Miller, Ferguson & Byrne, 2000) teacher's personality and teaching methods (Serame, 2013; Sawada et al., 2002), content of the curriculum (Tiwani, 2011) and peer group characteristics (Tiwani, 2011; Sawada et al., 2002) were determined as influential factors on learner's behavior in Mathematics classroom. The ecological approach introduced by Sullivan, Johnson, Owens & Conway (2014) assumed that the classroom is an ecosystem and explored the association between factors related to classroom misbehaviour during Mathematics instruction and the performance in the Mathematics classroom. Additionally, the classroom ecosystem may involve the interaction between the physical environment consisting of the teacher characteristics, curriculum, teaching methods, instructional resources and a multitude of other learner characteristics (Sullivan et al., 2014). As explained by Serame (2013), learners' behaviour during Mathematics lessons may be disruptive if the learner confronts difficulties to follow the teaching method. Indeed Ofsted (2014) documented that the perceptions of teachers', learners' and parents' on the impact of low-level disruptive behaviour in English classrooms. Furthermore, he remarked that many school leaders in the secondary schools are not majorly concerned about learners' low-level disruptive behaviour in the classroom and how that behaviour impacts learners' scholastic performance. As stated by teachers, the occurrence of disruptive behaviour of students in the classroom is becoming natural at present (Ofsted, 2014). Indeed it creates the problematic impact on teachers to implement effective teaching towards attaining educational objectives even if they are not violent (Mkhize, 2002). Disruptive behaviour is an activity happens in the inclusive classroom

which causes distress for teacher's teaching and learning process which leads teachers to make continual comments to the student (Tiwani, 2011). Thereby, the disruptive learner is uncooperative, manages to grasp the teacher's attention away from teaching and prevents teachers and other learners to engage in classroom activities. A study conducted in the USA about how teachers keep learners working on the task and how they deal with misbehaviour has remarked that 80% of the teachers' time was wasted to control the learners talking and 19% wasted due to a lack of classwork engagement (Wheldall, 1991). It becomes apparent that teachers commonly report talking out of turn, disturbing or hindering other students and lack of attentiveness as the most problematic and most frequent disruptive behaviours (Wheldall, 1991). Furthermore, it has noticed that 33% to 62% of the teachers in primary and secondary schools have reported that talking out of turn as the most frequent and the most troublesome disruptive behaviour occur in the inclusive classrooms respectively while 13% to 25% of the teachers in the two groups mentioned that hindering other learners as the most frequent and most troublesome behaviour (Wheldall, 1991). However, as confirmed by Ofsted (2014), the disruptive behaviour of the classroom is significant at present where 9% of the teachers rated 'talking with others' and 38% of the teachers rated that 'disturbing to other learners in the classroom' are the most influential. Furthermore, disruptive behaviours such as 'calling out during the lesson' and 'not getting on with the work in the class' were reported by 35% and 31% of the Mathematics teachers respectively (Stephenson et al., 2000). Similarly, Serame (2013) noted that the lack of concentration of learners and boredom are the most common misbehaviours in the Mathematics classroom in South African rural schools causing great concern to teachers. When the teacher attempted to involve with these forms of misbehaviour, they lost almost 50% of the time needed for teaching and learning (Hagoramagara, 2015; Sokol, Smith, & Mowat, 2003). However, the discipline is a positive term for Andreason (2011) and as he stated 'classroom discipline' is a teaching strategy used to facilitate for learners' to engage in learning during the instructional time but not inhibiting and restricting. As indicated by Andreason (2011) in his study, the teacher has to attempt to build-up the learner's esteem and has to be given responsibilities for the anti-social learners to assert themselves. Therefore, it is imperative to study about causes for the existence of the disruptive behaviour of students in an inclusive Mathematics classroom to implement an effective teaching-learning process to attain the educational objectives.

Behaviours such as talking out of turn, hindering other students and distractibility are readily amenable to redemption by behavioural methods and appropriate management strategies (Traynor, 2003). Furthermore, it is imperative to identify the existing teacher supports and management strategies to overcome disruptive behaviour in the classroom towards suggesting innovative management strategies to adapt in the inclusive classroom (Tiwani, 2011). The classroom management skills of teachers create the positive classroom environment towards student on-task behaviour and achievement (Poulou & Norwich, 2000; Traynor, 2003). Low incidences of praise and high rates of disapproval were observed in the classroom (Andreason (2011). However, student on-task behaviour is shown to be increased through the use of positive management strategies rather than the use of disapproval (Kaplan, Gheen & Midgley, 2002). Teachers' perceptions towards behaviour management have highlighted the importance of consistent positive strategies and the importance of student involvement in the discipline process (Clement, 2002). Involving students in classroom decision-making is considered to be an effective classroom management technique (Lewis et al., 2005). It is feasible that teachers' perceptions of student maturity may play an important factor in teachers' choice of management strategy (Lewis et al., 2005). Even though it is evident that the students' behaviour is the key variable which impacts teachers' stress, well-being and confidence, it is paramount to study about the effects of disruptive behaviour of students on teachers (Miller et al., 2000). Additionally, the teachers who perceive classroom management problems severely are more likely to leave the education system (Taylor & Dale, 1971; as cited in Sokol et al., 2003). A study conducted in the USA with 400 teachers have highlighted that 30% of teachers already left the education system due to classroom management and discipline concerns (Ingersoll, 2001).

### **3.3 Research Gap**

As emphasised by Lessani et al. (2017) the role of the teacher mainly focuses on developing suitable study environments to facilitate learning, implement more group activities and accessing student learning continually. The teachers' teaching considered as an interactive process involving primarily with verbal communication methods where the teacher's verbal action during teaching influences the learning process and behaviour of the learners (Sullivan et al., 2014). However, based on the students' perspective, most of the teachers in the classrooms are stereotyped, repetitive and to a certain extent monotonous. According to Poulou & Norwich (2000), effective teachers appear to be confident, enthusiastic, self-esteem and see themselves as

being responsible for learners' achievement. Furthermore, the Mathematics teacher should be familiar with all mathematical concepts and principles along with different teaching methodologies to inculcate an effective teaching-learning process (Andreason, 2011). Additionally, the effective Mathematics teacher should have the minimum competency to identify the nature of the learner, planning and organising instructions, an adaptation of the curriculum and classroom management to achieve lesson objectives (Serame, 2013). Subsequently, the teachers' are lack of skill in the preparation of the lesson plan before implementing the lesson through verbal instructions and the school-based support towards innovative teaching practices in the classroom is problematic (Ofsted, 2014). Hence, the supports employed by teachers to assist with disruptive behaviour of students to implement effective teaching in the inclusive classroom constitute a reasonably new area of investigation. Indeed the factors which are not within the controlled by the teachers such as time for homework, class size, father's occupational status and gender of students have an impact on the teaching-learning process (Zikhali, 2006). However, the present study has excluded these factors.

The gender impact on the disruptive behaviour of students in the inclusive classrooms of secondary schools has researched and behavioural differences among gender have been recognised (Stephenson et al., 2000). Additionally, considerable number of secondary school studies reported that male students are more disruptive than female students across the majority of disruptive behaviours (Kaplan et al., 2002). Therefore the current study limited to explore about the classroom behaviour of female students of two schools of Colombo district as the preliminary attempt.

The learner and teacher perspectives on the lower performance in Mathematics are different. Moreover, many research studies about the effectiveness of teaching and learning environment of the classroom have employed by teacher questionnaires as a data collection instrument including ranked scale (Zikhali, 2006). Therefore, results are often ordinal and not a clear reflection of how closely teachers perceive behaviours to be ranked. Furthermore, Miller et al. (2000) derived a questionnaire using Likert scales to assess the students' disruptive behaviours based on teachers' perspectives and the management strategies employed by teachers. Therefore, the present study attempts to conduct a mixed research study involving teachers and learners as respondents and to collect both qualitative and quantitative data needed concurrently and sequentially. It is apparent that it is not realistic to determine the disruptive behaviours

manifested by students during the teaching-learning process without studying antecedents and consequents in the real classroom situation. Indeed classroom observations widely used as a technique for monitoring the classroom environment when the teaching-learning process occurs. Therefore, the present study used to observe the real situation in the Mathematics classroom appropriately using the prepared observation checklist to identify the predetermined aspects according to the objectives of the study along with the narrative summary every 5 minutes.

In conclusion, the proposed conceptual framework (figure 2) to identify how the role of teacher influences on the disruptive behaviour manifested by the learners in the Mathematics classroom was developed to attain the objectives of the present study.

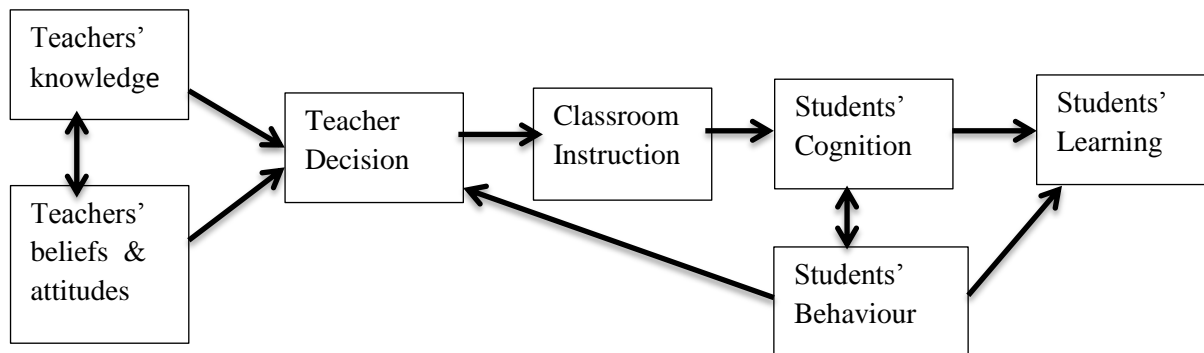


Figure 2: Proposed Conceptual Framework

#### 4. Research Methodology

Thereby, the present study conducted in a mixed research design in which data collection and data analysis implemented concurrently and sequentially to attain the objectives. A sample of 25 Mathematics teachers and 330 students in grade 9, 10 and 11 was selected randomly from two private schools in the Colombo district. Data gathering instruments were questionnaires, focus group discussions, and semi-structured interviews apart from classroom observations. Furthermore, systematic classroom observations act as a criterion to monitor the real classroom environment of the inclusive classroom which facilitates to identify the areas to restructure in implementing effective teaching. Indeed it is a commonly used method to affirm how the effective teaching and learning process happens as stated by the learners and the teachers. Therefore, classroom observations method mostly caters to the requirement of triangulating the data collected by questionnaires. However, the collected data through questionnaires of Mathematics teachers and learners is imperative since observations are only snapshots of the

setting of the behaviour. However, students may be aware that they are being observed and may be differential in their traditional classroom behaviour. Moreover, students may posture their attitude towards the observer. Therefore, classroom observations were video recorded to avoid biases in the real situation.

#### **4.1 Questionnaire**

The questionnaire with 4 points Likerts' scale (SA to SDA) was developed for teachers to determine their perception of the awareness and applicability of different teaching methods in Mathematics instructions, willingness and attitudes towards in implementing innovative teaching methods against different concept formations and the teacher attitudes of learner behaviour in the inclusive classroom. Furthermore, students' questionnaire was prepared mainly to determine the preferred learner style of individual learner, perception about the actual classroom behaviour of learners towards teachers' teaching and attitudes towards learning Mathematics.

#### **4.2 Classroom Observations**

The classroom observations of 12 English medium Mathematics classes of grade 9, 10 and 11 in both schools were observed once a month in real teaching-learning environment. Indeed 24 classrooms have observed according to the criteria of the classroom observation schedule. The observation schedule attempts to record actual classroom activities in relating to Mathematics instructions, determine the learning behaviour towards the applicability of teaching methods in the inclusive classroom, explore the target behaviour in the classroom environment, monitor the learners' progress in learning Mathematics and learning styles of learners which was followed by narrative summary in every 5 minutes. However, the environment of the classroom impact on students' social, emotional and intellectual changes since the learner spends a considerable amount of active time in the classroom under the guidance of the teacher. Furthermore, classroom observations focus to gain insights into different aspects of behaviour in the classroom instructional process.

Additionally, classroom observations have focused on the overall plan of the lesson development which includes specific objectives expected to be achieved, the arrangement of the physical environment of the classroom, teachers' interaction with learners, learner attentiveness to the lesson and the interaction of the learner-learner in the inclusive classroom. Therefore, it was imperative to study the learner behaviour patterns which emerged during the

Mathematics instruction. However, the present study has not extended towards in investigating any of the behaviour notices deeply.

### **4.3 Interviews and Focus Group Discussions**

Subsequently, semi-structured Interviews for 25 Mathematics teachers have conducted to explore the gap between the implemented methodology of teaching during instructions and teacher opinions about the applicability of innovative methods, especially at concept formation. The interview schedule was developed based on the responses of the teacher questionnaire and lesson observations. Additionally, this allowed teachers' to explore their perceptions of the disruptive behaviour experienced in several occasions and their attitudes towards teaching Mathematics, especially in concept formation apart from the methodology of teaching. Moreover, the focus group discussions have proceeded with the students whose behaviour was noticed as disruptive in the inclusive classroom during lesson observation. Indeed the students with psychological causes of parenting styles and sociological factors have removed from the focus group discussions. The students (n=35) were freely engaged in the focus groups discussion and expressed their perceptions, discomforts and unhappiness situations during Mathematics instructions which caused them to deviate from the lesson.

## **5. Analysis of Data**

The collected data through questionnaires from teachers and learners were analysed using descriptive statistics. Furthermore, the data collected through focus group discussions and semi-structured interviews have transcribed initially and analysed thematically. The data collected by classroom observations are imperative since it facilitated to compare the teacher, learner and the classroom simultaneously to rectify the existences and causes of disruptive behaviour during Mathematics instructions in the inclusive classroom. However, the behaviour of learners has analysed in several criteria: Frequency (how often did the disruptive behaviour occur?); Topography of the behaviour (what is the nature of the disruptive behaviour and how did it look like?); Duration (how long did the disruptive behaviour continue?); Latency (how long was taken to initiate the task assigned?); Magnitude (what was the strength of the disruptive behavior?); Locus (what were the locations identified as bias situations when teaching methodology mismatches with learners?). In later occasions, the findings of the classroom observations have

combined and compared with other data collections instruments of the present study to analyse the disruptive behaviour of the classroom based on the perspective of lecturers and learners.

## **6. Findings and Discussions**

All Mathematics teachers in the sample are highly qualified and experienced in teaching Mathematics. Based on the qualifications, around 86% of teachers are qualified with a Bachelor's degree and of that 27 % are qualified with the postgraduate diploma in Education. Besides, 13.33% are Mathematics trained teachers. Furthermore, the teaching experiences of the teachers in the sample encountered from 10 years to 23 years. However, around 90% of the teachers confirmed that their personality type is flexible and structured while 6% indicated that they are energetic and quiet. Additionally, all teachers highlighted that they dress and behave as positive role models. Indeed it is apparent that all teachers were aware of different teaching methods and 20% of teachers have engaged in innovative teaching methodologies while teaching Mathematics except team teaching. However, the teaching methods such as lecture, discussion and lecture-discussion rated equally among the teacher sample.

According to the responses of teachers, the most disciplinary problem occurred in the Mathematics classroom was the disruptive behaviour of learners. Alternatively, 80% of the teachers confirmed that the student behaviour is disruptive mostly during algebraic topics, problem solving and simplifications. According to teacher responses, Mathematics is a complex subject for students who are lack of adequate knowledge of preliminary concepts and skills. Even though more than 50% of teachers have confirmed that they use group work method and activity-based method in Mathematics instructions, it has noticed that the lessons have conducted using chalk and talk method and lecture method mostly. Indeed, most of the teachers have used chalkboard method inefficiently. Around 75% of the teachers required a quiet environment in the classroom during instructions since they allow students to raise any questions at the end of the lesson development. Indeed, around 80% of the teachers expected to promote passive listening during Mathematics instructions. In contrast, it has identified that there should be some discussions between learner-learner and learner-teacher in effecting teaching-learning process especially when they are solving Mathematics problems or practising questions in the classroom. The Mathematics teacher's responses to the questions about prevailing teaching methods in the classroom and the teacher awareness of innovating teaching methods are remarkable. Indeed,



78% of the teachers have confirmed their knowledge of different teaching methods irrespective of their qualifications while 80% indicated their willingness to implement different teaching methods in the inclusive classroom. Furthermore, around 88% of teachers have confirmed their desire to use different teaching methods during instructions while 75% of them have stated that they are waiting for an opportunity to implement it during the instruction. It is evident that the attitude of teachers towards implementing innovating teaching methods along with Mathematics instruction is increasing positively. Therefore, this has become the necessity of adequate teacher training programmes to familiarise innovative teaching methods apart from developing teaching skills. Hence it is the prime responsibility of the school administrators to create the opportunities for teachers to improve their teaching skills.

However, the responses made to the statements raised for the teachers through the questionnaire to verify the impediment of implementing different teaching methods are critical. It is apparent that the applicability of innovative teaching methods during Mathematics instruction depends on the school environment and negative attitude of other Mathematics teachers in the same grade creates problematic situations towards in transforming to different teaching methods. Consequently, 68% of the teachers confirmed that there is a lack of freedom to implement different teaching methods during classroom instructions while 77% confirmed that the support from the staff members is imperative to initiate the innovative teaching methods. The statements related to the teacher attitudes on the effectiveness of different teaching methods have included in the questionnaire. Indeed, 85% of teachers have indicated that the teaching methods lead to initiate motivation among learners in learning Mathematics which is long term. Alternatively, around 89% of teachers have confirmed that the applicability of different teaching methodologies focuses more on increasing attention of learners in the immediate situations. It is apparent that the applicability of different teaching methods leads to increase the motivation of the learners in the classroom and it has confirmed by 83% of the teachers in the sample. However, around 46% of the teachers have remarked that the subject content is imperative while 92% have indicated that the appropriate learning aids are essential towards effective teaching and learning. In contrast, 83% of the teachers have depicted that effective teaching can be implemented without adapting learning aids to the instructions since the applicability of different teaching methodologies entrusts effective teaching and learning environment in the inclusive Mathematics classroom.

## **6.1 Focus Group Discussions**

Focus group discussions with learners were attempted to identify the causes related to the disruptive behaviour noticed during the classroom observation sessions. Indeed the teachers' attitudes towards implementing the caring and trust in learners during Mathematics instruction are imperative in eliminating the disruptive behaviour than setting up the classroom environment. As highlighted by the learners, several teacher behaviours have induced disruptive behaviour of learners: teachers' comments in high authoritative terms; overreact against minor disturbances and mass punishments enact; inculcate continuously for every little infraction in the classroom environment; create unnecessary monitoring due to lack of instructional goals; repetition of the content towards lack of interest; attention placed only to the front rows in the classroom. Furthermore, teacher concentration about the different learner ability levels entrusts to inculcate positive behavioural change on learners in the inclusive classroom.

## **6.2 Classroom Observation**

It has noticed that several functions attached with Mathematics instructions have disregarded by the teachers: lack of feedback from students in the lesson engagement stage; passive listening promotes without the active participation of learners in the lesson; lesson objectives are different from the lesson development; not attentive for the distractions due to adjoining classes; lesson development conducted through verbal instructions; minimal application of instructional materials during instruction to facilitate all learners in the classroom; minimal usage of different evaluation methods to evaluate the learners after the lesson development; lack of concern about the learner characteristics, interest and drawbacks; lack of concern about the classroom environments.

Additionally, during lesson observations, it has noticed that the walls of very few classrooms were full of educational posters in various subjects to facilitate discovery learning. Even though the discussions among learners make the noisy environment during instructions, the noise due to the disruptive behaviour of learners makes the adverse effect on the teaching-learning process since learners deviate from the lesson engagement. Indeed it has noticed that most of the classrooms were noisy due to the disruptive behaviour of students and teachers attempt to make them silence while teaching.

## 7. Conclusion

All teachers in the sample are highly qualified and experienced in teaching Mathematics. Even though they are aware of different teaching methods, the applicability of those in real teaching and learning environment was minimal and it was discussed by Lessani et al. (2017). Indeed Mathematics teachers have a desire to experiment themselves by transforming teaching conjoint with innovative teaching methods, although the lack of support from the environment curtail their effort towards in attempting it. Consequently, the development of an appropriate plan to encourage teachers is imperative towards in implementing effective teaching and learning to reach the educational objectives eventually and it was remarked by Kaplan et al. (2002). Furthermore, teacher preparedness for the lesson development is essential to attain the lesson objectives during concept formation in Mathematics classroom. Indeed, learner confidence in problem-solving in Mathematics raise due to the proper understanding of concepts. However, learners in the classroom tend towards a unique learning style while the dominant learning style of a learner is an overlap of several learning styles. Therefore, it is beneficial to identify the learners' preferred learning style to eliminate the disruptive behaviour of learners due to the mismatches in teaching methods during Mathematics instructions. Additionally, the teacher should conduct self-evaluation of her teaching methodologies and instructional practices regularly to avoid the emergence of misbehaviour of learners in the classroom. Moreover, as highlights by Hagoramagara (2015), the teacher should teach the learners to use the skills of self-management, self-instruction, self-recording, self-monitoring, self-reinforcement, self-evaluation and self-punishment to manage their disruptive behaviour in the classroom.

## 8. Suggestions

The present study recommends using innovative teaching methods appropriate to learner styles to overcome the disruptive behaviour in Mathematics instruction. Furthermore, implementing group activities towards discovery learning inculcate co-operative learning among students. Indeed all members engaging in group activity tends towards the success of the common goal. Moreover, the lack of learners' knowledge in simplification sections in Mathematics establishes inattentiveness in Mathematics class initially and proceeds to disruptive behaviour eventually. Based on the perspective of Mathematics teachers, the learner difficulty in simplification Mathematics problems caused due to lack of skill and practise in algebraic

concepts in former level classes. Therefore, the study suggests in implementing more hands-on activities and group work when conducting algebraic lessons in inclusive Mathematics classrooms. Additionally, this type of approach encourages interpersonal skills, peer learning and positive self-esteem on learners. Furthermore, it is suggested to implement circular seating arrangements or clusters to establish peer learning apart from discovery learning which will eliminate the distractions due to discussions among students.

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