

**VALIDATION AND EVALUATION OF A BEHAVIOUR MODIFICATION
MODULE FOR CHILDREN WITH LEARNING DIFFICULTIES**

by

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**Thesis submitted
in fulfilment of the requirements
for the degree of Master of Arts**

AUGUST 2012

ACKNOWLEDGEMENT

Completing this thesis had been quite a journey for me. Yet, in all its challenges and all its problems (ranging from the technicalities to financial, and sometimes, even personal) which seem to accompany any kinds of journey in life, there are still those moments and encounter along the way that I would love to keep frozen for all eternity. As it is with all journey, we have a tendency to be indebted to the people we meet and get acquainted with. Therefore, I think it only fitting that I dedicate this very page to express my gratitude for the contributions that they have made in order to materialize this research. I have always wanted to say this: Thank God I made it! Indeed, He has blessed me and made everything possible. Thank you, Mama and Papa, for supporting my decision to pursue a Master's degree. Had it not been for your prayers and financial support, I wouldn't be where I am today. Equally significant is the role of my supervisor, Assoc. Prof. Dr. Lee Lay Wah, who not only supervised me but supported the research with a short-term grant by the university. I would also like to thank the team of module developers (Assoc. Prof. Dr. Lee Lay Wah, Dr. Lai Fong Hwa, Ms. Silvianna Bonadei, Dr. Lynne Yong, Dr. Yusni Yusoff, and Ms. Indranee Liew) without whom, the module would not have existed in the first place, and this research would not have been possible. Not forgetting the module evaluators, teachers, students, parents, and school authorities, whose names I cannot mention for ethical reasons. Their ready cooperation really helped me a lot in completing my research. I would also like to thank the examiners and evaluators in all the stages of my thesis, whose comments and suggestions have helped to improve the quality of my thesis. Special thanks to my little sister, Maureen, who had helped me in preparing the materials needed for the research. Not forgetting the important people I have met and gotten acquainted to during my postgraduate studies in USM, especially Ditto, Joyce, Rahima, Sani, and Thongma Souriyavongsa (I can remember your name too!). You know very well what I have been through since the beginning and still being there. I would also like to thank the newer friends I had met along the way, who have added even more colours (literally and figuratively speaking) – Ombra, Maripaz, Sam Rany, Narguesse, Jenny Wu Xiao Juan, Mayuti, Suzi, Anis, Berlian, Soheil, Dr. Hazri, Haas, Ms. Parvathy, Mr. Naseer, Wei Lin, Mary Ann, Ben, Becky, Amy (who is not new), Pearly, James, Min Joong, Ha Rim, Ryan, Charlotte, and all those whom I have met but failed to mention; some briefly while others whom I might have toasted a drink or two with – without you, I would not have known life the way I know it now. Cheers! Last, but not least, I would like express my gratitude to USM for granting me a Fellowship in support of my research thus far. Thank you.

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PENGESAHAN DAN PENILAIAN MODUL MODIFIKASI TINGKAH LAKU UNTUK MURID BERMASALAH PEMBELAJARAN

ABSTRAK

Kajian ini bertujuan untuk menilai modul modifikasi tingkah laku yang telah dibina sebelum kajian ini dimulakan, untuk kegunaan di dalam kelas pendidikan khas bagi kanak-kanak bermasalah pembelajaran. Maka, objektif-objektif kajian ini adalah untuk mengesahkan modul tersebut untuk melatih guru-guru dalam strategi-strategi modifikasi tingkah laku; menilai persepsi guru-guru terhadap potensi keberkesanan modul; menilai tahap integriti pengaplikasian strategi-strategi dalam modul oleh guru-guru; dan menilai keberkesanan strategi-strategi tersebut dalam mengubah tingkah laku kanak-kanak bermasalah pembelajaran dalam keadaan kelasn sebenar. Rekabentuk kajian mod campuran telah digunakan untuk menjalankan kajian ini. Kaedah kuantitatif yang digunakan adalah kaedah kaji selidik dan rekabentuk kajian *single-subject* manakala kaedah kualitatif pula terdiri daripada kaedah temubual dan pemerhatian. Persampelan bertujuan (*purposive sampling*) telah digunakan untuk mengenalpasti sampel-sampel iaitu guru-guru pendidikan khas dan kanak-kanak bermasalah pembelajaran dalam kelas pendidikan khas. Data telah dikumpulkan semasa bengkel latihan untuk guru-guru dan sepanjang tempoh intervensi dijalankan di dalam kelas. Dua orang pemerhati terlatih telah digunakan dan skor kebolehppercayaan antara pemerhati ditentukan. Data kuantitatif dianalisa menggunakan statistik deskriptif dan analisa visual bagi data kajian *single-subject*. Data kualitatif pula dianalisa dengan kaedah kod *axial*. Triangulasi dilakukan untuk data-data yang diperolehi. Hasil keputusan kajian menunjukkan bahawa strategi-strategi di dalam modul berkesan bukan sahaja dalam mengurangkan masalah tingkah laku dalam kalangan kanak-kanak pendidikan khas, malah juga meningkatkan tingkah laku positif. Lebih lanjut lagi, telah didapati bahawa keberkesanan sesetengah strategi bergantung kepada tahap integriti pengaplikasian oleh guru-guru di dalam kelas. Kesimpulannya, strategi-strategi modifikasi tingkah laku dalam modul memang berkesan dalam memodifikasi tingkah laku.

VALIDATION AND EVALUATION OF A BEHAVIOUR MODIFICATION MODULE FOR CHILDREN WITH LEARNING DIFFICULTIES

ABSTRACT

The purpose of this research is to evaluate an existing behaviour modification module for use in the special education classrooms for children with learning disabilities. To achieve the purpose, the objectives of the research are to validate the behaviour modification module that will be used by teachers in special educational classroom to evaluate the teachers' perception on the potential effectiveness of the module; to evaluate the extent to which teachers are able to apply the strategies in the module; and to evaluate the effectiveness of the strategies in modifying students' behaviour when applied in a natural setting. A mixed-mode research design was executed to evaluate the behaviour modification module. A survey and single-subject research design was carried out for the quantitative part, and interviews and observations for the qualitative part. Purposive sampling was adopted to select special education teachers for this study. It was also used to identify students with learning disabilities in intact special education classrooms. Data was collected during the teacher training workshop and during implementation in authentic special education classrooms. Two observers were trained for the classroom observation and inter-rater reliability scores were calculated. The quantitative data collected was analysed using descriptive statistics and visual analysis of single subject research data. Qualitative data was analysed using the axial coding method. Triangulation was then executed. Results of the findings showed that the module was valid in terms of content and social validity; teachers who were trained perceived that strategies in the module were potentially effective in changing children's behaviour; the strategies in the module were effective not only in decreasing off-task and disruptive behaviour but also in increasing desirable behaviour; and teachers were able to apply the strategies frequently and accurately as intended in the module with temporary guidance. Additionally, it was found that for some strategies, the effectiveness is influenced by the teachers' fidelity in implementing the strategies in the classroom. In summary, the behaviour modification strategies in the module are effective in modifying behaviour.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Classroom misbehaviour is a universal problem faced by teachers in schools. It usually takes skills and years of experience to effectively handle a classroom of children with different characteristics and background (Maag, 2001). Sometimes, even decades of teaching might not be a fair predictor of how well a teacher is able to control the classroom, especially when “traditional approaches to manage them have failed” (Maag, 2001, p. 174). Unsurprisingly, teachers who find lack of support from their work environment tend to reveal lower job satisfaction thereby providing reasons for them to discontinue their positions (Billingsley, 2004).

One of the most common classroom management approaches used in special education is the behaviour modification approach. However, the behaviour modification approach is not a compulsory practice in the Malaysian special education classrooms; hence it is unsurprising if special education teachers have not benefited from the usage of the strategies. As such, this research will focus on the application of behaviour modification approach in the special education classrooms. In this chapter, the background of the research, statement of the problem, purpose and objective of the study, research questions, research hypotheses, significance of this research, theoretical framework, conceptual framework, the research limitations, and the definition of terms used in the research will be discussed.

1.2 Background of Research

Generally, children with learning difficulties or learning disabilities are those diagnosed with psychological difficulties in learning that hinders comprehension and use of language appropriately or calculations in mathematical problems (Individuals with Disabilities Education Act [IDEA], as cited in Rothstein & Johnson, 2010). However, as the U.S. Office of Education in 1977 had defined learning disabilities as individuals showing achievement that is significantly incommensurable to their age and ability, notwithstanding appropriate learning experiences (Fuchs, Mock, Morgan, & Young, 2003), it is deemed more appropriate to use the term 'learning difficulties' to describe the category of children in the Malaysian special education classroom who are not categorized under visual or hearing impairment.

Children with learning difficulties (*masalah pembelajaran*) (LD) in Malaysia comprise children diagnosed with cognitive disabilities and/or developmental disabilities such as autism, attention-deficit hyperactivity disorder (ADHD), Down's syndrome, mild retardation, specific learning difficulties, and all other disabilities that are not classified under visual or hearing impairment or physical disabilities (Kementerian Pelajaran Malaysia, 2010; Lee, 2010). Compared to the definition by the U.S. government, these children comprise those whose general intelligence does not appear to be severely inconsistent to their achievement tests. These children mostly receive their education in special education classrooms conducted either by the Ministry of Education (*Program Integrasi Masalah Pembelajaran*), the Department of Social Welfare (Community-based Rehabilitation Centre, *Pusat Dalam Komuniti* [PDK]), non-government organisations or private schools (Lee, 2010). The classrooms typically comprise four to eight children with a

teacher or an additional teacher aide. In certain circumstances when children are able to function well academically and do not demand intensive attention from the teacher, they will be integrated or even included in the mainstream classes (Lee, 2010).

Nevertheless, it should be noted that children with cognitive disabilities and/or developmental disabilities usually lack meta-cognition and executive function of the brain. In the absence of these functions, the children's brain will not be able to monitor their own cognition; understand how they think or learn, or even perform tasks that do not involve routines, e.g. making decisions and detecting errors (Fernandez-Duque, Baird, & Posner, 2000). For example, children with ADHD have difficulties in paying attention, sitting still, and waiting turns (DSM-IV-TR; American Psychiatric Association [APA], 2000). Children with autism on the other hand show limitations in developing "social and emotional reciprocity" (DSM-IV-TR; APA, 2000, p. 75) and are easily distressed whenever their daily routine are disrupted (Filipek, et al., 1999).

Based on past research about the different approaches in improving classroom behaviour among children with learning difficulties, the behaviour modification approach appeared to pose the least risk of side effects compared to the other methods such as medication. For example, studies done by Ayllon, Layman, and Kandel (1975) and Rapport, Murphy, and Bailey (1982) showed that use of medication in controlling hyperactivity in children could also inhibit the development of their academic performance. However, when behaviour modification was introduced in the study, misbehaviours were brought under control and at the same time, children's academic performance increased. Other similar studies reported the usefulness of behaviour modification in managing children's

behaviours thereby decreasing the dosage of their prescribed medication (Pelham, et al., 2005) or even no medication at all (Blum, Mauk, McComas, & Mace, 1996; Kayser, Wacker, Derby, Andelman, Golonka, & Stoner, 1997).

Despite the numerous evidence from previous studies about the effectiveness of behaviour modification strategies, a glimpse at the research situation in Malaysia suggests a different attitude towards the efficacy of the behaviour modification approach. As there is a lack of special educational journals in Malaysia, a search was conducted on conference papers in international special education conferences, and it was found that research on behaviour modification is extremely lacking. As an example, in the recent proceedings of the International Conference of Early Childhood and Special Education 2011 (Norhashimah Hashim, Lee, Anna Christina Abdullah & Fadzilah Amzah, 2011), this researcher's paper is only one of three papers on behaviour modification in the proceedings. In the most recent workshop on special needs, the International Workshop on Special Needs Education 2011 (Universiti Malaysia, 2011), none of the workshops were on behaviour interventions. It is not surprising, therefore, if teachers of our children are deprived of knowledge and skills in the area of behaviour management.

The lack of research in the area is a major concern considering the statistically dramatic increase of children with LD in the classroom. For instance, between 1998 and 2005, children enrolled in the special education class for LD in Malaysia showed an increase of 177.05% (Jabatan Pendidikan Khas, 2005). The percentage of increase remained high from 2005 to 2009, i.e., 105.66% (Bahagian Pendidikan Khas, 2009). Realizing the pressing need for an efficient behaviour management treatment, a team of multidisciplinary professionals which included the researcher was set up in a collaboration to develop a behaviour modification module

for use in the special education classrooms. The contents of the module were based on theories of the behavioural approach. However, the developed module had not been validated and evaluated, hence the purpose of this research, which is attached to a bigger project, is to validate and evaluate the effectiveness of the module.

1.3 Problem Statement

There is no argument that success in academic skills depends highly on children's ability to participate in classroom learning activities. Coincidentally, those activities often require children to pay attention to teachers and to monitor their own learning by completing tasks with minimal errors (U.S. Department of Education, 2008; Vosniadou, in Rao, 2003). However, children with LD have a tendency to show behaviour that might appear disruptive to the teacher, which in turn may interfere with the classroom lesson (Baloğlu, 2007; Guardino & Fullerton, 2010; Lauridsen, 1978), thereby posing a threat for their academic success. Recognizing the gravity of the situation, this research aims to evaluate the behaviour modification module that will be used in the special education classrooms with the interest of increasing desirable classroom behaviour that might enhance the efficiency of lesson delivery and learning processes.

At the practical level in special education classrooms and in inclusive regular classes where children with LD who are identified with behaviour problems are included, teachers find themselves having to juggle their time between lesson delivery and classroom management; creating stress for teachers thus affecting their abilities to behave objectively in the situation (Baloğlu, 2007). It is unsurprising, therefore, that some teachers tend to react hastily in the situation which often ended up putting themselves in a tangled condition (Maag, 2001). Constant recurrence of

such phenomenon could be harmful for the reputation of the teaching profession. Generally, educators across the special education settings in various organisations in Malaysia have to face similar challenges as well while still lacking in classroom management skills. Thus, there is an urgent need to train educators and carers specifically on the techniques and strategies of the behaviour modification approach in an attempt to improve the current classroom situation. This was also revealed in an interview with the Head of a Special Education unit at a university who have had more than ten years of experience in supervising teaching practicum in many special education classrooms throughout Penang (Lee, L.W., personal communication, 5 January 2011).

As previously mentioned, children with cognitive disabilities often demonstrate behaviours that do not indicate engagement in classroom tasks approved by teachers (Wheldall & Merrett, 1984). Instead, behaviours such as being out of seat, talking out loud, day-dreaming, disturbing others, etc. are usually exhibited. These behaviours are categorically grouped under off-task behaviour as defined by Junod, et al. (2006), because they interrupt or are unrelated to the academic task assigned. Sometimes, children might also exhibit disruptive behaviours which are defined as behaviours that interfere with the teaching process or behaviours that prevent others from engaging in their task (Amada, 1999). Through the demonstration of these behaviours, the special education classroom could turn out to be quite challenging for teachers to handle (Cohen & Cohen, 1987; Rosén, O’Leary, Joyce, Conway, & Pfiffner, 1984), especially if they are not skilled in the behaviour modification approach.

Traditionally, one of the most common methods used in controlling misbehaviours in the classroom is punishment (Reyna & Weiner, 2001; Maag, 2001)

delivered in various forms; with corporal punishment at the harshest level. A similar phenomenon occur in the Malaysian classrooms that warrants the Education Ministry to control the infliction of corporal punishment (Abdul, 2003) due to some extreme cases of severe punishment that resulted in fatal injuries and even death (“Malaysian Teacher Held Over 7-year-old Pupil’s Death”, The Straits Times, 2011; “Student Hurt in Scuffle with Teacher”, New Straits Times, 2011). However, despite the grave impact that sometimes punishment inflicts on the children, the problematic behaviour persists (Wheldall & Merrett, 1984). Teachers are then left with two choices – whether to continue punishing or to find other alternative methods that work. Usually, the former is chosen because it is “easy to administer, works for many children without challenging behaviours, and has been part of the Judeo-Christian history” (Axelrod, 1996, in Maag, 2001, p. 175). Hence, the vicious cycle continues, which just proves the ineffectiveness of the strategy.

Without a doubt, some educators might have tried applying the behaviour modification approaches in their daily classroom management whether consciously or unconsciously. However, erroneous application of strategy such as lack of systematic delivery might jeopardize its potential effectiveness (Sulzer & Mayer, 1972; Greer, 1982). In a review about the use of teacher praise and reprimand (part of behaviour modification approach), Beaman and Wheldall (2010) found that teachers tend to criticise misbehaviour more often as compared to praising good behaviour which shows the teachers’ inclination to focus on negativity. This is contradictory to the practice of the behaviour modification approach that focuses first on the positive reinforcement strategies before resorting to the negative ones (Friend & Bursuck, 2009). Therefore, the finding demonstrates how teachers misinterpret the behaviour modification approach.

Furthermore, with no emphasis on behaviour modification in the special education curriculum by the Ministry of Education (MOE), effort to integrate the approach in the lesson is almost nonexistent. For example, in the lesson syllabus for children with learning difficulties (*Sukatan Pelajaran Masalah Pembelajaran*), one of the components that are included in the self-help area is the behaviour management component (Bahagian Pendidikan Khas, Kementerian Pelajaran Malaysia, 2003). However, the exposure is only at the surface level and no specific approach is prescribed on the methods to teach the component.

In the Malaysian mainstream classroom, some effort had been shown to promote the use of behaviour modification approach in curbing disciplinary problems among schoolchildren. As an example, a study had been conducted by Khalim Zainal, Rohani Ahmad Tarmizi, Zakaria Kasa, and Mizan Adiliah Ahmad Ibrahim (2007) to compare the discipline problems between schools in Selangor that practice the Penalty System Programme (PSP) and schools that practice the Conventional Discipline Programme (CDP). Through the PSP practiced in the school, wrongdoings will be penalized through penalty points. Based on the amount of penalty points accumulated, consequences will be inflicted according to each level of penalty points.

For instance, in the study conducted by Khalim Zainal and colleagues (2007), when five penalty points had been collected, the consequence would be warning and community service whereas for ten penalty points, a slightly heavier consequence would be inflicted such as reporting to the parents, one-time caning, and letter of warning. As the penalty points increased, so did the weight of the consequence. It was found that the total percentage of decrease in wrongdoings for the school that practiced PSP was much higher than the school which still practiced

the CDP. In addition, the school that practiced PSP reported a much higher increase in academic performance compared to the one that did not. The finding further emphasizes the usefulness of behaviour modification approach in managing behaviour in the Malaysian school setting. But then again, the focus was still on punishment rather than on positive reinforcement.

In addition, some literatures had been written on behaviour management by Malaysian authors, however none were for special education, The current literature either lacks focus on the behaviour modification approach (e.g. Abdul Ghani Abdullah & Abdul Rahman Abdul Aziz, 2009), or made no specific mention of behaviour management for special education classroom (e.g. Mohd Hasani Dali, 2009). The most related to the current study is literature by Amir Awang (1991) which was translated from Bootzin (1975), which focuses on the practice of behaviour modification. However again, it is on practices in the clinical setting rather than in special education classrooms. Therefore, it is clear that an instruction manual that is easy to use and is validated in special education classrooms will be desirable for the convenience of educators in the management of classroom behaviour.

In view of the problems highlighted and the rise in the number of children identified with LD nationwide (Bahagian Pendidikan Khas, 2009), it is only fitting that due focus be given to the use of behaviour modification in the Malaysian school. Furthermore, in reference to the problems that special educators in Malaysia face as mentioned in the preceding paragraphs, there is a pressing need to equip these teachers with specialised knowledge and skills in behaviour modification. Therefore, the first point of focus in this research would be to validate the behaviour modification module for the use in Malaysian classroom context for special education teachers' reference. A group of teachers trained to use the strategies in the

module would then assess the module. Finally, the effectiveness of the behaviour modification programme would be evaluated in an actual special education classroom setting.

1.4 Purpose

The main purpose of this research is to validate and evaluate the behaviour modification module that will be used by teachers to change the behaviour in their classroom. Following the validation of the module, the effectiveness of the strategies in the module is evaluated in a real special education classroom setting.

1.5 Objective

In achieving the purpose of this research, a few objectives are set. The objectives are

1. to validate the module on behaviour modification strategies that will be used by teachers in special education classrooms;
2. to evaluate teacher's perception on the potential effectiveness of the behaviour modification module; to evaluate the effectiveness of the behaviour modification strategies in modifying behaviour of students with learning difficulties when applied in authentic special education classrooms; and
3. to evaluate the extent that teachers are able to apply the behaviour modification strategies in the module in their special education classrooms.

1.6 Research Questions

For each of the objectives, research questions are formulated. The research questions based on the first research objective are:

1. How do the content experts and target users judge the content validity of the behaviour modification module?
2. How do the content experts and target users evaluate the social validity (acceptability) of the behaviour modification module for our special education classrooms?

Based on the second research objective, a question has been formulated to direct the research towards achieving the objective. The question posed is

How do teachers who have been trained using the behaviour modification module perceive the potential effectiveness of the module? Based on the third research objective, comparisons have to be made on the level of misbehaviour between the baseline and post intervention stages to see the changes. Therefore, these research questions are asked

3. What is the current baseline behaviour profile in the special education classroom before implementation of the behaviour intervention program?
4. How did the use of the behaviour modification strategies affect children's off-task behaviour in the classroom?

Based on the fourth research objective, the teachers are evaluated on their ability in executing the strategies in the module. Hence, this research question is asked

5. To what extent are the teachers able to apply the behaviour modification strategies in their classroom correctly?

1.7 Research Hypotheses

For this research, one research hypothesis applies which is:

H₀: There is no significant difference in off-task behaviour level of children with learning difficulties before and after implementation of the behaviour modification strategies in their special education classrooms.

1.8 Significance of Research

The behavioural modification approach has been applied in the special education classroom in developed countries for quite some time (e.g. Australia: Herrera & Little, 2005; UK: Cameron, 1998; USA: Burchard & Barrera, 1972; Dawkins, 1994; Iovannone, Dunlap, Huber, & Kincaid, 2003; Guardino & Fullerton, 2010; Pfiffner & Barkley, 1998) and has proven to be successful in controlling misbehaviour, even that of children with special needs when implemented properly. However, the subjects are usually children categorized under the same diagnosis. Therefore, in this research, a module that combines different strategies of behavioural modification is investigated for effectiveness in changing behaviours of children in an authentic Malaysian special education classroom.

As previously stated, the learning disability category in Malaysia encompasses all children with cognitive disabilities that cannot be categorized under hearing impairment and visual impairment (Kementerian Pelajaran Malaysia, 2010; Lee, 2010). Hence, strategies that work for children with one type of disability may not work for children with a different type of disability. The rationale in combining various strategies in one module is the notion that the uniqueness of each individual (as suggested by the Humanistic approach) and the different types of diagnostic characteristics might require different prescription (Lefrancois, 2000).

This research could contribute to the teaching practice in Malaysia by providing a solution that is accessible for teachers everywhere, yet bearing significant results in handling behavioural problems in the classroom. The behaviour modification module can be used to train pre-service special education teachers in institutions of higher learning. It can also be used to train in-service teachers in the Integrated Programme for Learning difficulties under the Ministry of Education, community-based rehabilitation centres under the jurisdiction of the Social Welfare Department and also special education classrooms operated by non-government organisations and the private sector.

With this module, it is hoped that a change in the teachers' attitude towards LD children will take place through acquisition of knowledge and skills in behaviour intervention. Teachers need to understand that the disabilities, e.g., ADHD is a biologically based problem resulting in inattention, hyperactivity, and impulsivity, hence demanding more effort in performing academic tasks and exhibiting appropriate social behaviour as expected of other children (Pfiffner & Barkley, 1998). Therefore, teachers should keep an objective perspective while dealing with children's behaviour.

Besides, success of the module in modifying behaviour of children in the naturalistic environment will enable teachers to focus more on the lesson content. With the time on coping with behavioural problems cut short, teachers can channel more energy and attention on the delivery of lesson, improvement of content quality, and do more activities in the classroom (Wheldall & Merrett, 1984). Children would get the opportunity to be exposed to various kinds of learning experience which could help in their understanding of the lesson and memory retention (Lefrancois, 2000). Thereafter, children's academic performance could be improved.

Clearly, behaviour problems in the classroom are parallel with off-task behaviours. When children are busy running about in the classroom or talking non-stop with their classmates, their work are left undone. But through the behaviour modification programme, children have to engage in on-task behaviours like paying attention in class or completing tasks given by the teachers in order to be rewarded. Thus, children have a higher chance of learning in the classroom (Pfiffner & Barkley, 1998; Wheldall & Merrett, 1984).

In addition, behaviour modification usually brings about changes not only to the children but also to the teachers (e.g. change in attitude) (Wheldall & Merrett, 1984). Consequently a more conducive classroom environment can be achieved. Teachers tend to rely less on punishment in managing behaviour, whilst children get the opportunity to show their skills or talents which might gain them points for rewards. Subsequently, children will associate school with more positive and enjoyable experiences.

1.9 Overview of Theoretical Framework

The theoretical framework of this research is based on various theories in the behavioural paradigm. The theories involved in this research are Operant Conditioning Theory or better known as the Skinnerian Theory (1953), and the Social-Cognitive approach in terms of behaviour (Rosenthal & Bandura, 1978) and cognitive development (Vygotsky, 1997). These theories underlie the behaviour modification approaches for classroom management.

Basically, behaviour modification is the changing of behaviour through operant conditioning (Skinner, 1974). By operant conditioning method, the recurrence of behaviour is dependent on the consequence that follows the behaviour

(Nye, 1979; Wheldall & Merrett, 1984). Desirable consequences contingent to a behaviour will increase the likelihood of the behaviour occurring (positive reinforcement), whereas an aversive outcome contingent to a behaviour might increase the likelihood of a behaviour occurrence that can avoid the undesirable outcome (negative reinforcement) (Lefrancois, 2000; Nye, 1979; Pierce & Cheney, 2004).

According to Skinner's theory of operant conditioning, while consequences play a large part in determining the occurrence of certain behaviour, events preceding the behaviour are also important influences of that behaviour. These events are known as antecedents (Lefrancois, 2000; Sulzer & Mayer, 1972; Wheldall & Merrett, 1984). Therefore, in behaviour modification approach, antecedents and consequences are factors that will be analysed for changes to be made so that occurrence of desirable behaviours will increase. A behavioural modification module was developed based on these various theories and behavioural modification strategies.

The behavioural modification module is validated and evaluated based on constructs suggested in the literature. The evaluation is based on the definition of effectiveness by Dorland (1994), whereby a treatment that gives the desired results in the real setting is considered as effective. According to the single-subject research design, effectiveness is considered when a visible change can be observed in the visual presentation (Gonnella, 1989). On the other hand, the rationale for evaluating the social validity is explained by Wolf (1978) as a treatment that meets the need of the society and presents a social importance.

The theories used in the behaviour modification module will be explained in greater detail in Chapter 2. The strategies in the module will also be explained in

Chapter 2. In addition to that, the literatures that supported the need for social validation and content validation will be elaborated in Chapter 2.

1.10 Research Delimitations and Limitations

Due to the applied nature of this study, the research is not without limitations. This study is carried out in a fully special education classroom; therefore the results yielded might differ from those where non-disabled classmates are involved. Moreover, the study is set in a private school which often has a very different environment compared to a government school, especially because of the larger teacher to student ratio. In addition, as the number of children in special education classrooms is limited, hence the sample size of this study is small. Therefore, the result cannot be adequately generalized to the whole population. The findings of this research might only be applicable to identical situations, conditions, and environments.

As an effort to provide experimental control to these problems that might pose threats to internal validity, a multiple baseline design is applied (Horner et al., 2005). In addition, precise and detailed documentation of the conditions during baseline is noted to enable replication by other researchers (Horner, et al., 2005). Yet, any attempt to interpret the results should be done with caution until further systematic replication of the effects is carried out to control for threats of internal validity (Kratochwill, et al., 2010).

1.11 Definition of Terms

1.11.1 Behaviour modification

Behaviour modification is a study of altering behaviour based on Skinner's theory of operant conditioning. Skinner held that everyone behaves in a certain way towards their environment to produce consequences which would affect them in return (Nye, 1979; Wheldall & Merrett, 1984). Therefore, all behaviours can be taught to an individual by controlling the consequences that follow the behaviour.

In this study, behaviour modification is operationally defined as changing behaviours of children through implementation of strategies that apply the operant conditioning theory. Teachers, acting as interventionists, will manipulate events that might influence behaviours (antecedent) or events following the behaviours (consequence) in the attempt to change the behaviours.

1.11.2 Positive reinforcement

Positive reinforcement is an event of strengthening the rate of behaviour occurrence through delivery of positive consequences contingent upon the behaviour (Lefrancois, 2000; Pierce & Cheney, 2004; Skinner, 1974; Sulzer & Mayer, 1972). Thus, the behaviour will increase as a result of the desired consequences.

In this study, positive reinforcement is operationally defined as increasing the likelihood of displaying behaviours that teachers have identified as desirable. The method to increase the behaviour occurrence is through the strategies presented in the behaviour modification module.

1.11.3 Negative reinforcement

The conceptual definition of negative reinforcement is an event of strengthening the rate of behaviour occurrence by removing aversive consequences which would usually follow if the opposite of the desired behaviour is shown

(Lefrancois, 2000; Nye, 1979; Pierce & Cheney, 2004). Hence, a child will engage in certain behaviours to avoid the undesirable consequence.

In this study, negative reinforcement is operationally defined as increasing the likelihood of displaying behaviours that teachers have identified as desirable to replace the opposite undesirable behaviour. In the case of negative reinforcement, the undesirable behaviour would bring about a negative effect to the children; hence the need to avoid the negative effect drives the children to behave in a manner that will result in a rewarding outcome. The method to increase the behaviour occurrence is through the strategies presented in the behaviour modification module.

1.11.4 Prevention strategies

Antecedents are events that occurred prior to certain behaviour and are considered as a trigger to the behaviour (Wheldall & Merrett, 1984). Therefore, any events that have potential to trigger misbehaviour have to be prevented. Prevention strategies are defined as removal of any antecedents that can increase the possibility of disruption in the classroom (Martella, Nelson, & Marchand-Martella, 2003, as cited in Guardino & Fullerton, 2010).

For the purpose of this study, the prevention strategies are steps taken by the teachers to reduce the likelihood of off-task and disruption before the behaviours occur. Some of the strategies in this category include rearranging the classroom layout by function and to create an orderly environment through classroom rules and routines.

1.11.5 Positive reinforcement strategies

Positive reinforcement strategies are strategies whereby reinforcers applied immediately after behaviour occurs will increase the occurrence of that particular behaviour (Lefrancois, 2000; Pierce & Cheney, 2004; Skinner, 1974; Sulzer & Mayer, 1972). In this strategy, the reinforcers are stimuli that are rewarding and desirable (Skinner, 1974), hence, encouraging the recurrence of the behaviour.

In this study, positive reinforcement strategies are operationally defined as strategies that apply the positive reinforcement concept, whereby behaviour shows an increase in occurrences contingent to delivery of rewarding consequences. The reinforcers used in these strategies are in the form of material goods (e.g. food and stationeries), activities (e.g. computer games, extra break time), or social reinforcers (e.g. compliments, pat on the back).

1.11.6 Punishment

Punishment is conceptually defined as the delivery of an unpleasant stimulus upon the exhibition of certain behaviour, thereby decreasing its occurrence (Wheldall & Merrett, 1984). In other words, punishment does not necessarily inflict physical pain but rather, something that is to be avoided by the child.

Operationally defined for this study, punishment is a strategy (chosen from the module) that results in undesirable consequences on a student immediately following occurrence of misbehaviours. The punishment strategies in this study include methods that involve delivery of unpleasant stimulus and also removal of valuable possessions (response-cost).

1.11.7 Behaviour modification module

A module is a manual or a guide reference that outlines the comprehensive curriculum for teaching of a specific subject or skill (Russel, 1974). The format of module content varies depending on the purpose and institution for which it is developed and might be generally categorized to three main parts – introduction, main body, and conclusion. Therefore a behaviour modification module would contain the comprehensive curriculum for strategies and principles for modifying behaviours.

By referring to the module cluster by Brent and Harrison (1973) and the description of module development by Yusmarwati Yusof (2010), the introduction of this module involves the objective specification, definition of terms used in the module, the theories, and underlying principles of the subject to be taught in the module. The main body usually consists of the complete syllabus of skills or knowledge to be mastered for the subject, of which, in this module refers to the method of identifying behaviour, recording behaviour, and strategies or techniques used to change behaviour. The conclusion part of this module focuses on the implementation of the curriculum in a specific setting, such as suggestion of activities or examples of implementation in the real-world setting.

1.11.8 Content validity

Content validity is defined as the extent to which the constructs of a topic are relevant and representative of it (Haynes, Richard, & Kubany, 1995). In this research, the content validity of the behaviour modification module is evaluated in terms of its curriculum and format. The purpose of validating the content of the

module is to ensure that the fundamentals in the behaviour modification are included (Gay & Airasian, 2000).

In terms of curriculum, the module was checked for relevance and representativeness of the constructs (Haynes, et al., 1995). Therefore, the evaluation constructs for curriculum-based validity are relevance of the content, comprehensiveness of the content, applicability, and appropriateness of the content (Gay, et al., 2006).

In this study, the evaluation constructs for the content validity in terms of curriculum of the module are relevance of the module content to behaviour modification, comprehensiveness of the module content according to the curriculum of behaviour modification, applicability of the module in real settings, and appropriateness of the content for use in the special education classrooms for children with learning difficulties.

On the other hand, the content validity in terms of format is the relevance and representativeness (Haynes, et al., 1995) of the document in terms of the format of such subjects. Therefore, the evaluation constructs for the validity of the formate are clarity of instructions and appropriateness of the language used (Gay, et al., 2006).

In this study, the validity of the format is defined as the relevance and representativeness of the format of the module in terms of module writing. As such, the evaluation constructs for the validity of the module's format are clarity of instructions provided in the module and the appropriateness of the language for the target users.

1.11.9 Acceptability of treatment (Social validity)

Acceptability of treatment is defined as the appropriateness of a treatment procedure as judged by the users or the society (Kazdin, 1980; Lane, Kalberg, Bruhn, Driscoll, Wehby, & Elliott, 2009). It is one of the components in social validity measure that justifies the procedures in the treatment to match the impact of the treatment's results (Wolf, 1978). Social validity is defined as the degree of importance that a treatment exhibits in a society (Wolf, 1978). For a treatment to be considered as socially important it has to be validated in terms of the significance of the goal to the society; appropriateness of the procedures as judged by the society; and the impact of the effects on the society, whether it is satisfactory (Wolf, 1978).

In this study, the acceptability of the treatment is determined by the teachers who are the target users of the module. The acceptability of the treatment is rated by using the Intervention Rating Profile-15 (IRP-15) (Martens, Witt, Elliott, & Darveaux, 1985). The higher the scores achieved in the rating, the greater the acceptability of the treatment as perceived by the target users.

1.11.10 Single-subject research design (SSRD)

According to Horner, et al. (2005), the single-subject research is a method executed in a scientific and thorough manner to ascertain evidence-based practices. It is experimental in nature whereby the main objective is to determine the relations between variables. In this type of research, subjects act as their own control by comparing baseline data to post-intervention results. The number of participants varies from an individual to a group of participants that produce a common measured variable.

In this study, the single subject research is operationally defined as a study that involves measuring children's off-task and disruptive behaviour levels before behaviour modification is implemented and compared to the levels of off-task and disruptive behaviour of the same children after behaviour modification is implemented. The unit of analysis used in this study are children in special education classrooms who have behaviour problems.

1.11.11 Fidelity of treatment

Fidelity of treatment is defined as the degree to which interventionists execute interventions constantly and carry them out as close to as they are originally intended (Gresham, 1989; & Noell, et al., 2000, as cited in Digennaro, Martens, & Kleinmann, 2007). In short, fidelity of treatment is the extent to which an intervention strategy is able to be carried out as was intended.

In this study, treatment fidelity is operationally defined as the extent to which the teachers are able to carry out the behaviour modification strategies as frequently and as precisely as possible. The treatment fidelity to the behaviour modification strategies is measured by the frequency of implementation and also the accuracy of delivery.

1.11.12 Effectiveness of treatment

Effectiveness is defined by Dorland (1994, p. 531) as the "ability of an intervention to produce the desired beneficial effect in actual use." Therefore, if the desired effects produced of a treatment used in an actual setting where circumstances might not be ideal, is large, the effectiveness of the treatment is said to be great (O'Donnell, 2008).

In this study, effectiveness of treatment is considered to be achieved when a positive change can be observed in the behaviour of the children after implementation of the behaviour modification strategies. Apart from the observation data, feedback from the teachers through interview, indicating the degree of success of the strategies, will set the standard for determining the extent of effectiveness of treatment. In other words, when teachers report a significant difference of behaviour change in the children (supported by statistical data evidence from the observer), the treatment is said to be effective.

In this study, potential effectiveness as perceived by the teachers is measured too. The potential effectiveness refers to the effectiveness of the strategies as predicted by the teachers, based on their perception.

1.11.13 On-task

On-task behaviour is defined as behaviours that exhibit student attending to teacher-assigned academic task, whether actively or passively (Shapiro, 1996, as cited in Junod, et al., 2006). Technically, the task the child engaged in has to be approved by the teachers to be considered as being on-task.

In this study, on-task behaviour is operationally defined as engagement in work that the teacher approves of. For example, looking at the teacher when lesson is delivered and working on teacher-assigned task during self-working period.

1.11.14 Off-task

According to Junod, et al. (2006), off-task behaviour can be observed in three different categories, i.e. motor, verbal, and passive behaviour. Basically, any