Faculty of Cognitive Sciences and Human Development

TEACHING READING AND COUNTING IN SOLAH: EXPERIENCES OF MUSLIM CAREGIVERS OF DOWN SYNDROME CHILDREN IN SELANGOR

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Bachelor of Science with Honours  
(Cognitive Science)  
2017
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TEACHING READING AND COUNTING IN SOLAH: EXPERIENCES OF MUSLIM CAREGIVERS OF DOWN SYNDROME CHILDREN IN SELANGOR.

AMIRA BINTI ABDUL RAHMAN

This project is submitted in partial fulfilment of the requirements for a Bachelor of Science with Honours (Cognitive Science)

Faculty of Cognitive Sciences and Human Development
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(2017)
The project entitled ‘Teaching reading and counting in Solah: Experiences of muslim caregivers of Down Syndrome children in Selangor’ was prepared by Amira binti Abdul Rahman and submitted to the Faculty of Cognitive Sciences and Human Development in partial fulfillment of the requirements for a Bachelor of Science with Honours (Cognitive Science).

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ABSTRACT

This study examines the experiences in Teaching Down Syndrome Children how to read and count in *Solah* among Muslim family caregivers in the state of Selangor. The general objective of this research is to explore and document the experiences and methods in assisting Down Syndrome Children to read and count while the specific objectives are to investigate the experiences faced by caregivers in helping Down Syndrome Children to acquire the cognitive based skills of reading and counting. The study also aims to collect, the best practices to facilitate a Down Syndrome child to perform daily religious prayers that involves the skills of reading and counting. The study also analyses the social interaction between family members that helps in improving the skills of reading and counting to be applied when performing religious prayers. Case study method is deployed to examine responses from three informants who voluntarily participated in this study. The type of questions asked to the caregivers during the interview session are semi structured questions. Semi structured questions are used to ensure there is a guide to be followed, with questions and topics that must be covered in order to comply with the objectives of the research. The study uses the non-probability sampling because it is the best strategy to acquire accurate and realistic conceptions from caregivers who are actively working with their respective Down Syndrome children. Findings from the study revealed the importance of caregivers to emphasize on using repetition in the learning process, and to create an environment where the Down Syndrome children can imitate the actions done and words spoken. The use of rewards are also found to be useful and effective to motivate and encourage Down Syndrome children to learn to read and count for the purpose of performing the *Solah*.

*Keywords:* cognitive based skills, experience and methods to assist, Down Syndrome children, reading and counting.
ABSTRAK


Kata Kunci: kemahiran berasaskan kognitif, pengalaman dan kaedah untuk membantu, kanak kanak Sindrom Down, membaca, mengira.
CHAPTER ONE
INTRODUCTION

1.1 Introduction

The aim of this study is to investigate experiences in teaching Down Syndrome children how to read and count in *Salah* among Muslim family caregivers in Selangor, Malaysia. Malaysia is known as a multi-confessional and multicultural country where most professed religion is Islam and similar to other religions in Malaysia which are Buddhism, Christianity, Hinduism, Chinese, Confucianism, Atheism, Taoism and other traditional Chinese religions, religious tasks and prayers are also being practised by the Muslim people. In Malaysia, with regard to religious affiliation, 60.4 percent of the population consists of Muslim, 19.2 percent are comprised of Buddhist, 9.1 percent and 6.3 percent are Christian and Hindu respectively, the 2.6 percent practice old-style Chinese religion, and the remaining 2.4 percent does not profess to any specific religion.

Daily religious tasks performed by the Muslims are unique in the way it is, because it consists of specific movements and recitation in the prayers that requires the skill of counting and reading. In Islam, from the beginning of the prayers, one has to recite the *Niyyah* (intention) in the heart, followed by the act of raising the hand to ears and say “*Allahu Akbar*” which means Allah (God) is Great. Throughout the prayers, there are some actions with particular oration that requires repetition for example "*Subhana Rabbiya Adhim*" which means: (How Perfect is my Lord, the Supreme) is being repeated three times. The position is called *Rukoo*'. In Islam, it is crucial to understand the meaning of each recitation because it is the guidance towards the right path in one’s life. It is more than a series of actions, therefore the study unique as it focuses on how Down Syndrome children acquire these skills and apply it in their personal daily religious tasks. To add to the five compulsory prayers to be completed in a day, in Islam, Muslims are encouraged to make
**du'a** or to recite brief prayers for self-supplication in order to always be in ease and peace (Qur'an 2:186, 40:60). Moreover, Islam accentuates the responsibility to Allah is an obligation that should be fulfilled and **Solah** (religious prayer in Islam) is one of the responsibilities bestowed onto men, and it leads to the cultivation of other good deeds such as good relationships with living things, calmness in one's soul and so on.

Based on a study done by Bittles and Glasson (2007), it describes Down Syndrome as linked with moderate to severe levels of learning disability even though those with a mosaic karyotype are able to display higher levels of intellectual function. The learning disability will affect one's development in acquiring any cognitive based skills like reading, counting and many more. On the other hand, the learning disability could be improved by assisting the Down Syndrome children with learning strategy that suits one's capability. According to the Down Syndrome Education International, the typical learning style of a Down Syndrome child is that the process of reading is considered as relative strength to them, number recognition and counting and memory are considered in the area of difficulty that is why for some individual who was born with Down Syndrome, it is difficult for them to easily acquire both skills to be applied in **Solah** compare to Non Down Syndrome individual.

In addition, Barrett (2007) stated that CSR (Cognitive Science of Religion) carries the theory of Cognitive Science that will bear on why the religious actions and thoughts are communal in humans and how the religious occurrences take on features and actions they practice in a daily life. Religious actions may help in strengthen one's soul and lead towards a better way of life. The existence of CSR theory conforms with the mutual occurrence in any action and belief practiced in other religions. In addition, Cognitive Science looks into the process of learning and cognitive development in an individual which will further support the findings of this study which focusses on two cognitive based skills to be applied in **Solah**: reading and counting.
1.2 Background of Study

In 1866, Down Syndrome was first documented by John Langdon Down. According to Dr Ananya Mandal (2014), Down Syndrome is defined as a congenital condition caused by the presence of an additional copy of chromosome 21 in a person’s cells. The intellectual impairment is strongly related to a chromosomal anomaly which is also referred to as Trisomy 21. Furthermore, in the year of 2006, The Ministry of Health Malaysia states that more than 600 cases of children born with Down Syndrome was reported annually in Malaysia.

Due to the intellectual impairment that causes delayed in cognitive development, it was reported by Kasari (1997); Carr (1987); Pueschel, Bernier & Pezzullo (1991); Chapman & Hesketh (2000); Stores, Fellows, Buckley, Turner & Alborz (2003); Dykens & Silverman (2007), the Down Syndrome children have a lower IQ (Intelligence Quotient) compared to Non Down Syndrome children. Therefore the teaching methods and approaches for assisting Down Syndrome Children to read and count differ from Non Down Syndrome children.

According to Down Syndrome Education International, although the Down Syndrome children progress slowly compared to Non Down Syndrome children, not all of the areas of development in the brain is equally affected hence each Down Syndrome children will not have the same ability in acquiring cognitive based skills like reading and counting. It was also stated that by understanding the various learning style and development, we can devise more effective teaching approaches or therapies to help in assisting the Down Syndrome children to acquire any cognitive based skills.

Most Down Syndrome children receive care, love, support and encouragement from their own family and it has been studied that when a family members take care of the special kids, they do it sincerely with love and under a condition of unpaid basis. Family is considered as a transactional system in which they can be a medium of interaction of various variable among the Down Syndrome children and the family member. Therefore the teaching
methods in teaching Down Syndrome children may differ in every family as different family have different routine and suitable approach that the Down Syndrome children may adapt to.

1.3 Problem Statement

Children born with Down Syndrome face difficulty in reciting daily prayers (Islam) because they have disability that will affect the process of acquiring the skills of reading and counting. Therefore, this causes the children with Down Syndrome to not be able to recite surah in prayers at the expected age caused by the delay in learning. According to Prof. Sue Buckley (2016), “All people with Down syndrome experience some delay in their development, however, they are not equally delayed in all areas, but have a specific pattern of cognitive and learning difficulties”. Furthermore, there is no similar study has been conducted before that is why this research is important in order to come up with a new insight, ideas and opinions. In addition, there are a few approaches that can be taken into consideration by their family members and ways to facilitate Down Syndrome children to acquire the skills of reading and counting. Other than that, new approaches, support, physical and emotional support are important in helping the Down Syndrome children to read and count.
1.4 Research Objectives

Below are the objectives of the study which will guide the direction, process and management of the investigation stipulated.

1.4.1 General Objectives:
To explore and document the experiences and methods in assisting Down Syndrome Children to read and count.

1.4.2 Specific Objectives:
This research aims to investigate:
- The experiences faced by caregivers in helping Down Syndrome Children to acquire the skills of reading and counting.
- The best practices to facilitate a Down Syndrome child to perform daily religious prayer that involves the skills of reading and counting
- The social interaction between family members that helps in improving the skills of reading and counting to be applied in the religious prayer.

1.5 Research Questions

1. What are the current practices among Muslim Caregivers in Selangor to aid a Down Syndrome child to perform daily religious prayer that requires the skills of reading and counting?

2. How does the social interaction between family members helps in assisting the Down Syndrome child to read and count?

1.6 Definitions of Terms

There are several terms that are focused in this study. The first term, Down Syndrome is associated with trisomy of Chromosome 21 which is a type genetic anomaly. The genetic anomaly causes intellectual impairment, delay in both physical and cognitive development. The affected individuals differ considerably due to the severity of particular deficiencies or
impairments (Silverman, 2007). Down Syndrome also causes one to have a delay in the process of learning compared to a Non Down Syndrome child.

Secondly, literacy is denoted as one’s ability to read and write text. In a broader context, literacy is being conversant and educated in a specific field and area.

In this study, intellectual disability is also one of the focussed terms where it is the effect of delay in learning for Down Syndrome children. According to American Association on Intellectual and Developmental Disabilities, Intellectual disability is regarded as a substantial limitation in intellectual operation and in adaptive behaviour. Both are involved in daily practical and social skills. To add to that, before the age of 18, this ability has started to initiates.

Fourthly, according to Richard Anderson and the Commission on Reading, reading is the process of creating meaning from texts and writings. When one attains the skill of reading, he has the ability to extract informations and at the same time understanding the context of the text which has purpose and meanings. In this study reading is one of the important aspects as it contributes in the final findings of how Down Syndrome children apply the cognitive based skill into their religious prayer in Islam; Solah.

In addition, counting, which is another cognitive based skill that is being studied in this study, is defined as the first verbal numerical activity where it acts as a basic for children’s problem solving in further mathematical development. Counting is essential in this study as it is practised in daily prayer; Solah by the Down Syndrome children. The repetition and series of actions in Solah involves the skill of counting. Mathematical knowledge takes place when there is an involvement on numbers and sequencing. One has to be able to count in order to perform the Solah in the correct manner.
1.7 Significance of Study

This study has the potential to provide an insight into the teaching methods in assisting Down Syndrome children apply the skills of reading and counting in *Solah* among family caregivers in Selangor, Malaysia. As a result of the findings, the study has the potential to assist in improving ways and approaches to aid Down Syndrome children to learn to read and count, specifically to be applied in the Islam’s religious prayers effectively, and consequently to emphasize to every family with children born with Down Syndrome about the importance of best practices in teaching Down Syndrome children in any cognitive based skills. The learning disability should not be a reason for a Down Syndrome child to be excluded from the process of acquiring any type of knowledge, whether in school or at home. By conducting the research, caregivers of Down Syndrome children will be aware of actions needed to be taken to ensure their Down Syndrome children will not be left behind in learning process.

1.8 Scope of Study

The study will be conducted in Selangor, Malaysia. The targeted participants in the study are three caregivers of Down Syndrome children, whose children are aged seven to nine years old. An interview session will be conducted with the caregivers of the Down Syndrome children to discover the experiences faced by them in assisting their Down Syndrome children to apply the skills of reading and counting in daily religious prayer. The caregivers will be interviewed using a semi-structured interview questions which are based on a fairly open framework that allows for focused, conversational, two-way communication between the researcher and the caregivers of the Down Syndrome children.
CHAPTER TWO
LITERATURE REVIEW

2.1 Down Syndrome

In 1866, Down syndrome was first recognized and described in detail by an English doctor, John Langdon Down. Down Syndrome is caused by a chromosome defect by an extra copy of chromosome 21 inside each of the body’s cells. According to the National Institute of Neurological Disorders and Stroke, Down Syndrome is the most common genetic cause of mental retardation and is reported occurring in one in 800 live births around the world. To add to that, according to Hassold & Jacobs (1984); Stoll, Alembik, Dott, & Roth (1990), Down Syndrome is occurring in one in 700 to one in 1000 live births and 95% of the Down Syndrome cases is triggered by the presence on an extra chromosome 21 which is also known as Trisomy 21.

Individuals born with Down Syndrome may suffer cognitive deficits, facial dysmorphology, leukemia, gastrointestinal anomalies and congenital heart disease. The National Institute of Neurological Disorders and Stroke also reported that a person with Down Syndrome has the life expectancy of more than 50 years.

The National Institute of Neurological Disorders and Stroke has also stated that in the previous history of Down Syndrome, researchers have managed to investigate the characteristics of people born with Down Syndrome due to the advancements in medicine and science fields. These advancements have opened many doors for researchers to gain insights which also leads a French physician named Jerome Lejeune to recognise Down Syndrome as a chromosomal anomaly composed of the 47 chromosomes present in each cell of a person born with Down Syndrome in the year of 1959. 41 years later, an established international team of scientist efficaciously catalogued each of the roughly 329 genes on the chromosome
21 of a Down Syndrome person. Furthermore, the differences in the development of the brain of a person born with Down Syndrome have an effect on some cognitive processes that is being applied in our daily life. Moreover, as a result of their academic and intellectual disability and affiliated verbal difficulties (Miller, 1987), children born with Down Syndrome are at risk of complications in learning to read. Understanding Mathematics is also a difficulty for a Down Syndrome kids compared to normal kids as they need more guidance and practices.

TRISOMY 21 KARYOTYPE (FEMALE)

Figure 1: Karyotype of a female with Trisomy 21.

Irrespective of the type and level of Down syndrome an individual may have, there will be a presence of the critical portion of chromosome 21 in all or some of their cells. The extra genetic material changes and alters the classification of development and eventually leads the
characteristics associated with the Down Syndrome. It causes the development of certain parts of the brain to be not fully developed which will affect the acquisition of any cognitive based skills and also delay in the process of acquiring knowledge whether in home or at school. Down syndrome is typically recognised at birth as Down Syndrome children are born with features such as slanted eyes, flattened facial profile and many more. Therefore the figure above illustrates a chromosomal analysis called a karyotype. The procedure to obtain a karyotype starts with the doctor draws a blood sample to examine the baby’s cells. After the chromosome are photographed, it will be grouped according to their shapes, numbers and sizes. Therefore it is really important to examine the karyotype in order to help the doctors to diagnose Down Syndrome.

*Figure 2: The affected region of Chromosome 21 in a person with Down Syndrome*

Source: National Down Syndrome Society

Figure 2 shows the Nondisjunction which is a faulty cell division that results in an embryo with three copies of chromosome 21 instead of the usual two. As the embryo grows, the extra
A chromosome is replicated in every cell of the body. This error that occurs in cell division is responsible for the 95 percent of all cases of Down syndrome.

### Developmental Milestone

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Down Syndrome Range</th>
<th>Typical Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Motor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sits Alone</td>
<td>6-30 Months</td>
<td>5-9 Months</td>
</tr>
<tr>
<td>Crawls</td>
<td>8-22 Months</td>
<td>6-12 Months</td>
</tr>
<tr>
<td>Stands</td>
<td>12-39 Months</td>
<td>8-17 Months</td>
</tr>
<tr>
<td>Walks Alone</td>
<td>12-48 Months</td>
<td>9-18 Months</td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th>Milestone</th>
<th>Down Syndrome Range</th>
<th>Typical Range</th>
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</thead>
<tbody>
<tr>
<td><strong>Language</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Word</td>
<td>12-48 Months</td>
<td>8-23 Months</td>
</tr>
<tr>
<td>Two-Word Phrases</td>
<td>2-7 1/2 Years</td>
<td>15-32 Years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Down Syndrome Range</th>
<th>Typical Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal/Social</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsive Smile</td>
<td>1 ½ - 5 Months</td>
<td>1-3 Months</td>
</tr>
<tr>
<td>Finger Feeds</td>
<td>10-24 Months</td>
<td>7-14 Months</td>
</tr>
<tr>
<td>Drink from Cup</td>
<td>12-32 Months</td>
<td>9-17 Months</td>
</tr>
<tr>
<td>Uses Spoon</td>
<td>13-39 Months</td>
<td>12-20 Months</td>
</tr>
<tr>
<td>Bowel Control</td>
<td>2-7 Years</td>
<td>16-42 Months</td>
</tr>
<tr>
<td>Dresses Self</td>
<td>3 ½ - 8 ¼ Years</td>
<td>3 ¼ - 5 Years</td>
</tr>
</tbody>
</table>

*Figure 3: Developmental Milestones of an individual born with Down Syndrome.*


Every Down syndrome child experiences cognitive delays, however, the effect is usually mild to moderate and is not symptomatic of the many strengths and talents that each individual possesses. Children with Down syndrome learn to sit, walk, talk, play, toilet train and do most other activities just like the Non Down Syndrome children, only somewhat later due to the cognitive delays as shown in *Figure 3.*
2.2 Reading

Reading is very important as it contributes to a Down Syndrome child's vocabulary and language development. Past studies have shown that some approaches in teaching Down Syndrome kids to read. According to Buckley (1985), a sight word approach already managed to prove that it is the new way of teaching how to read to children born with Down Syndrome and in 1999, visual sight word has been recommended as the latest approach to assist the teaching of single word reading skills to children with Down Syndrome. Sight word acquisition is important in constructing children's ability to read. This process has to be done at the early age to nurture children's interest in reading. It is proven that there are several proven techniques that adults, educators and family members can use to teach sight words.

In 1985, Buckley has suggested that Down Syndrome kids learn to read without memorizing and processing letter-sound relations in words which is also known as reading visually. Adding to that, an observation on how Down Syndrome children could learn to read at a time when they barely can speak (Buckley, 1985) is not contradicting with Buckley’s hypothesis that states Down Syndrome children learn to read visually. However, Cardoso-Martins et al. (2009) doubt Buckley’s findings on Down Syndrome children learn to read visually. They strongly suggest that the way Down Syndrome children learn how to read is as similar as normal and typical children learn how to read and that is by phonological coding skills.

In teaching and assisting Down Syndrome children to learn to read, adults are encouraged to emphasize the one-on-one session with the children. It is a very effective way in encouraging and promoting the interest for them to learn to read. In addition, Connors (1992) suggested that a word-analysis method is practicable and suitable for children born with Down Syndrome. In line with this view by Connors (1992) a report by Farrell and Elkins
has shown that Down syndrome children managed to use and apply the ‘the alphabetic principle’ in reading and writing and successfully attended to the forms and sounds of words given.

Other tools often used to help solving the process of learning to read for a Down Syndrome child is by implementing Augmented Reality that will help in enhancing the surrounding environments which will simultaneously promotes interest for Down Syndrome to learn to read. According to a research done by Azuma et al. (2001), an AR structure should mix real and virtual matters in a real environment, runs interactively in real time and records real and virtual objects with each other. Augmented reality (AR) is a condition where both virtual and real objects exist together. When AR is being implemented in a book, it has the ability to create a more meaningful learning environment for its readers.

According to Roslinda Ramli & Halimah Badioze Zaman (2011) an AR technology named AR SindDown was developed to assist Down Syndrome children in learning to read simple malay text as the courseware is able to provide a fun and meaningful learning process for children with Down Syndrome. Finally, previous research has indicated that the implementation of Augmented Reality is a good learning medium and it supports student with disability like Down Syndrome as they allow the children to be actively and interactively engaged with the content and at the same time, they dominate the reading skills.

2.3 Counting

Counting is an integral part and a crucial skill for every young children’s daily experiences and activities. An early introduction and socially guided leaning at home conducted by parents and family members are believed to be an effective way in assisting