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**| RESEARCH ARTICLE**

## **Improving Pupils' Recognition of Letters and Their Corresponding Sounds Using HVAM Flash Cards**

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**| ABSTRACT**

Building a strong foundation in basic literacy skills is very important among young learners because it will help in reading and writing development later on. Alphabetic knowledge starts off with recognizing letter shapes, naming the letters, sounding the letters then blending the sounds to form words are crucial basic steps in reading in order to make sure that the pupils are literate and fast reader. Unfortunately, there are pupils who having problems with it. This particular study focuses on the problem of pre-schoolers who are not able to recognize the shape of the letters, letter names and its corresponding sounds. A qualitative research with case study design and purposive sampling of five participants were used in this study. This research uses document analysis as an instrument to collect the data before and after intervention Based on the findings before intervention, it was found that the pupils did not able to recognize around 12 letters of the alphabets and sounds. Therefore, this study is conducted to overcome the problem through the use of HVAM Flashcards. HVAM Flashcards incorporate haptic, visual, audio and meteorological elements to help the pupils in mastering the letters and its sounds. Letter/ sound identification score sheet from Michigan Literacy Progress Profile (2000) adapted from An Observation Survey of Early Literacy Achievement by Marie M. Clay is used to record the ability to recognize letters and its sounds among participants. As a result, HVAM flash cards are very helpful to solve the reading problems of pre-schoolers as well as it is also helpful for the teachers and parents.

**| KEYWORDS**

Letter recognition, Sounds Association, Haptic, Visual, Audio, Meta-Phonological, Flashcards

**| ARTICLE INFORMATION**

**ACCEPTED:** 12 June 2025

**PUBLISHED:** 04 July 2025

**DOI:** 10.32996/jlds.2025.5.2.10

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### **1. Introduction**

English is taught as a second language in all Malaysian primary and secondary schools. The mastery of English is essential for pupils to gain access to information and knowledge written in English. In line with the government's policy on strengthening English, the curriculum has been designed to produce pupils who will be proficient in the language. The content and learning standards that have been developed in the curriculum are designed to help pupils acquire the language so that they can use it in their daily lives, to further their studies and for work purposes. The English language curriculum also stresses the development of literacy and critical literacy. This is to ensure that pupils who undergo primary schooling will be literate and be given a strong foundation in the language so that they can progress towards language proficiency at the secondary school level. Literacy is essential to prepare pupils to achieve personal growth and confidence in functioning as an effective and productive member of our society, in line with the goals of the National Philosophy of Education which seek to optimize the intellectual, emotional and spiritual potential of all pupils.

Literacy and numeracy lay the foundation for learning in primary education and beyond. Reading, writing, arithmetic is implicit in the basic right to education. Without these abilities, it is nearly impossible for students to attain higher education and function in the modern society. However, statistics showed that a sizeable student population in Malaysia are still ill-equipped with basic literacy and numeracy skills (Star Online, 2012). In 2008, 54,000 Year One pupils identified with low literary skills were enrolled in

the Early Intervention Reading and Writing Class (KIA2M) while 117,000 Year Four pupils without basic numeracy skills were on the 3R Remedial Program (Protim). Under the Government Transformation Program, the Education National Key Results Area (NKRA) aims to eradicate the dropout problem caused by students' inability to cope with mainstream education. The Literacy and Numeracy Screening (LINUS) program is aimed at ensuring that all Malaysian children acquire basic literacy and numeracy skills after three years of mainstream primary education. The Education NKRA has set a 100% literacy and numeracy target for all Year Three pupils in Malaysia.

So, according to recent English Literacy (LINUS), we realized students: students unable to recognize the shapes of the letters, students unable to name the letters, students unable to do letter-sound correspondence and students unable to pass Construct 1, 2, 3 and 4 LINUS Assessment. Therefore, the problem is in need to be solved. The reasons are alphabetic knowledge is one of four areas for young children's early literacy experiences – oral language, phonological awareness, alphabet knowledge, and print knowledge (National Institute for Literacy, 2009), students need to master alphabetic knowledge first in order to become a proficient readers and unattractive teaching technique applied by teachers in the classroom – flashcards, exercise book.

## 2. Literature Review

As a child one of the first songs you learn to sing is your "ABC's", you never give a second thought as to what you are doing and learning. As an educator I never gave any thought about the significance to teaching the alphabet or to students learning the alphabet. Learning the alphabet at an early age is an enormous asset to further a child's academic success (Shidler & Harrigan, 2009; Wasik, 2001; & Piasta & Wagner, 2010). Knowing the alphabet early on helps to build a strong foundation for reading.

Shayne Piasta and Richard Wagner (2010) defined alphabet knowledge as a "child's familiarity with letter forms, names, and corresponding sounds as measured by recognition and, production and writing tasks." (p.8). When alphabet knowledge is not adequate in preschool and kindergarten these students are at a greater risk to be labeled with a reading disability and struggle with learning to read (Gallagher, Frith, & Snowling, 2000; O'Connor & Jenkins, 1999; Torppa, Poikkeus, Laakso, Eklund, & Lyytinen, 2006). These students are at risk of falling susceptible to: being behind their peers in reading acquisition which in turn creates gaps in reading comprehension, spelling, reading fluency and vocabulary skills (Stanovich, 1986; Torgesen, 2002). This is why it is crucial for young students to build a strong foundation starting with alphabet knowledge, "... early exposure to letters is part of a rich literacy experience and helps to build a strong literacy foundation for young children." (Wasik, 2001, p.34). Research suggests that students who have obtained the skills in letter sounds and names will also obtain more complex literacy skills such as phonological awareness and oral language later on (Piasta & Wagner, 2010).

In order for students to have a full grasp on alphabet knowledge Bradley and Jones (2007,) pointed out Mason's (1984) four components to alphabet knowledge. Mason's components consist of "(a) letter-shape knowledge, (b) letter-name knowledge (c) letter-sound knowledge, (d) letter writing ability" (p. 452). Instruction should encompass all of these components in a fun and stimulating way. Wasik (2001) discussed several ways to teach the alphabet so that children are involved in meaningful learning experiences.

One of it is, incorporation of visuo-haptic and haptic (tactual-kinaesthetic) exploration of letters in a training. Why HVAM (Haptic-Visual-Audio-Metaphonological)? This is because it involves the use of our senses. It focuses on primarily on using visual, auditory, and kinesthetic-tactile elements, helps to relate the symbols (letter) with the sounds (letter/sounds/correspondence), increases positive effect on the understanding, use of alphabetic principle and children's reading level (Bara,et.al, 2012).

## 3. Objectives

The objectives of this research are:

To improve pupils' recognition of letters using HVAM flash cards

To improve pupils' association of letters with their sounds using HVAM flash cards

## 4. Methodology

### a. The Development of HVAM Flash Cards

In learning any language, the most basic component to it is letters, and if one cannot recognize the letters, it will be challenging for young learners to venture into learning to recognize words, phrases and meanings (Waters, n.d.). Hayes (2016) even further supported the claim that the instruction of recognizing the letters upon sight is an important skill for young learners to have before embarking into a more challenging skills in language learning especially for reading. Apart from visual importance in aiding letter's recognition, other sensory inputs are also important to help young learners where the involvement of haptic, auditory and metacognition are considered in the development of this product. This product consists of 3 separate items, where the first item is the 26 flash cards for each of the letter, a box of plasticine clay, and a marker pen. For the HVAM flash cards, they were made of four different components. The first component is the A4 mounting boards, the second component is A4 glossy stickers with colourful background with QR codes, the third component is the 3D letters, and finally, the fourth component is the whiteboard sticker sheet.



**Figure 4.1.1:** Example of HVAM Flash Cards

**4.1.2 A4 Mounting Boards**



**4.1.2 » :** Example of Mounting Boards

In order for the flash cards to have its shape, the researchers used A4 mounting boards as the base of the flash cards. By using the mounting boards, the researchers ensured that the product will be durable and also not malleable so that the product can last long.

**4.1.3 A4 Glossy Sticker Paper**



**Figure 4.1.3.1:** A4 Glossy Sticker Paper

The designs for the background of the flash cards were printed on glossy sticker paper and then pasted on the mounting board. The designs are made to be colourful but not excessively as to prevent from distracting young learners' attention too much. The

QR codes included were made using QR Code Generator from <https://www.qr-code-generator.com/> and are linked towards Pinkfong! Kids' Song and Stories videos.

#### 4.1.4 3D Letters



**Figure 4.1.4.1:** Glitter Papers



**Figure 4.1.4.2:**

Felt Papers



**Figure 4.1.4.4:** Googly Eyes.



**Figure 4.1.4.3:** Buttons.



**Figure 4.1.4.5:** Examples of 3D Letter

In order to come up with the 3D letters which will cater towards the haptic sensory input, various materials are used such as glitter papers, felt papers, buttons and googly eyes. The glitter papers and felt papers are cut out in the shapes of the letters and they served as the base of the letters. Next, either buttons or googly eyes were used for the 3D effect for the letters and are arranged on the cut-out shapes of the letters. With different combinations of materials and colours, no single letters are the same with one another in the set. Furthermore, the cut-out shapes of the letters are big enough for young learners to have a hands-on experience.

#### 4.1.5 Whiteboard Sticker Sheet



**Figure 4.1.5.1:** Whiteboard Sticker Sheet]

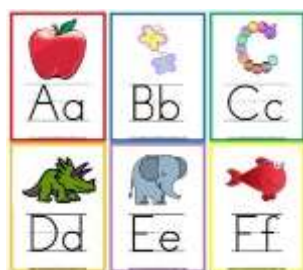
For the lower half of the flash cards, whiteboard sticker sheets were cut in the size of A5 and pasted over the glossy sticker paper. This area is used for writing the shapes of letters using the model letter above it by using the marker pen included. Moreover, this space is also for young learners to model the shape of the letters using the provided plasticine clay.

#### **a. Relation to Learning Theory**

This product is based on the Constructivism Theory. Bada (2015) stated that this theory involves active learning by the learners in constructing new ideas or concepts by using existing or past knowledge. As young learners, learning the shape of letters might be experienced by them as early as they could (if they are exposed to the letters earlier on by their parents). However, normally, they would be learning through sight alone. Hence, combining different sensory inputs which served as current knowledge of the letters, they would form and strengthen the idea of the shape of the letters as well the sounds of the letters. Hence, they constructed new idea about the letter, not only through sight alone, but also from other inputs. Learners are also exposed to exploratory learning experience as the product does not limit their creativity in learning and forming the shape of the letters as there are no directional arrows included to guide them for drawing the strokes for the letters. This would allow them to not be constricted by traditional way of forming the shapes of the letters.

#### **b. Market Survey**

Based on the 2016 market study by Technavio (2017) regarding the global educational toys market, about 33% of the market share is dominated by academic educational toys as compared to cognitive thinking toys (28%), motor skills toys (21%) and other toys (17%). It was expected that the market share for academic educational toys market will expand even further in following years due to parents preparing their children for early head start in kindergartens. As of now, existing flash cards are abundant in the markets and offer nothing new in terms of their functionality.



**Figure 4.3.1:** Traditional Flash Cards

#### **Sample**

The sample for this study is 5 participants who were selected prior to the product development as they are the ones who possess problems in recognising the shape of the letters and their sounds. The participants are 6 years old and went to a kindergarten where the problems are highlighted. Most of the participants came from families with low-economic status. From the observations, document analysis and interview carried out with the teacher, it was found out that the participants were unable to recognise the letters of the alphabets and also associate the letters to their sounds.

#### **Results**

The study involved a qualitative research with case study design. The central phenomenon in this study is the recognition of letters and its corresponding sounds among pre-school children. With only 92 percent of Malaysian adults are literate according to the report in Education for All 2015 National Review: Malaysia, there is a need to provide the young children with the utmost basic reading skills. Therefore, this study aims to improve the recognition of letters and its corresponding sounds using HVAM Flash Cards.

This study uses one research instruments which are document analysis. Letter/ sound identification score sheet from Michigan Literacy Progress Profile (2000) adapted from An Observation Survey of Early Literacy Achievement by Marie M. Clay is used to record the ability to recognise letters and its sounds among participants.

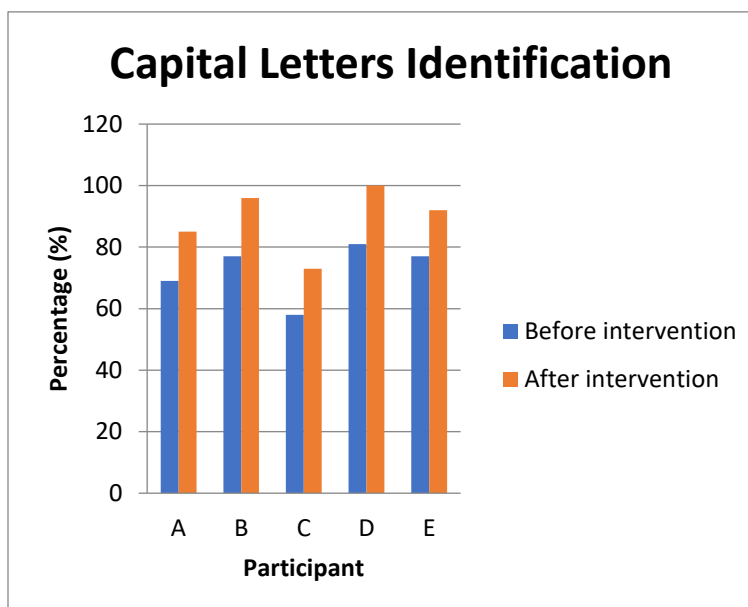
##### **Document Analysis**

By analysing the documents of which the participants completed regarding their letters recognition and the association of their sounds, the following results were obtained.

Capital Letters Identification					Improvement
Participant	Before	Percentage	After	Percentage	

A	18/26	69%	22/26	85%	16%
B	20/26	77%	25/26	96%	19%
C	15/26	58%	19/26	73%	15%
D	21/26	81%	26/26	100%	19%
E	20/26	77%	24/26	92%	15%
Total					17%

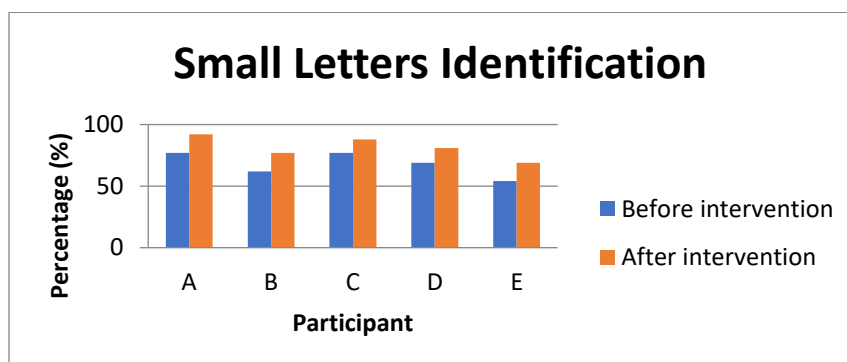
**Table 6.1.1:** Result Analysis of Ability to Identify Capital Letters



**Figure 6.1.1:** Bar chart of capital letters identification.

Small Letters Identification					Improvement
Participant	Before	Percentage	After	Percentage	
A	20/26	77%	24/26	92%	15%
B	16/26	62%	20/26	77%	15%
C	20/26	77%	23/26	88%	11%
D	18/26	69%	21/26	81%	12%
E	14/26	54%	18/26	69%	15%
Total					14%

**Table 6.1.2:** Result Analysis of Ability to Identify Small Letters



**Figure 6.1.2:** Bar chart of small letters identification.

Sounds of Letters Identification					Improvement
Participant	Before	Percentage	After	Percentage	
A	12/26	46%	17/26	65%	19%
B	17/26	65%	20/26	77%	12%
C	14/26	54%	19/26	73%	19%
D	20/26	77%	26/26	100%	23%
E	18/26	69%	22/26	85%	16%
Total					18%

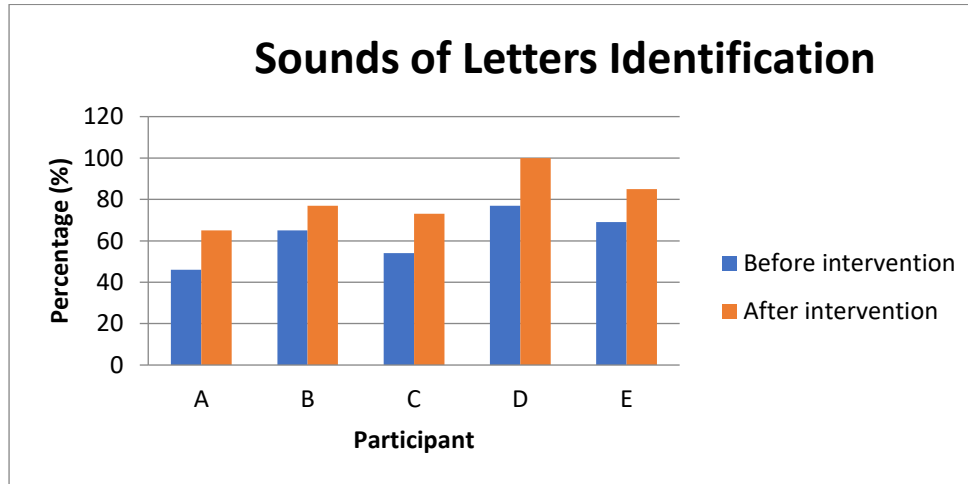


Table 6.1.2: Result Analysis of Ability to Identify Small Letters.

Based on the results above, it shows that there is an improvement among the participants in letters and sounds identification. The participants were required to identify and distinguish the capital and small letters. They also have to identify the sounds of the letters.

The main problem in letters' recognition is the shape. There are multiple tasks that pupils have to do in letters recognition which are 1) distinguish shapes between capital letters, 2) distinguish shapes between small letters and 3) associate the sounds of the letters. Gibson (1965, as cited in Rystrom (n.d)) supports the problem related to letter discrimination tasks by pointed out that certain types of letter confusions were harder for children to distinguish than others, resulting in differing improvement rates. There are about 54 different letter shapes that the pupils need to understand and memorize as this is the most basic of their alphabetic knowledge.

Based on the observation made before intervention, there are several letters that most pupils having difficulty in recognition. For capital letters, the letters that always caused confusion among the pupils are B, D, Y, J, M, N, P, Q, V, K, E, and W meanwhile for small letters are b, d, p, q, g, j, v, w, u, m, and n. There are at least 11 kind of letters that have similar shapes and the pupils have to differentiate between those letters. These findings are supported by Richmond and Taylor (2014) in their studies of comparison of letter difficulties where they have determined the most difficult letter orientation for learners to identify are P, D, K, E, c, s, t, d, g, q, z. This aligned with the data collected before and after intervention. Mostly the participants do not recognise around 12-14 letters each almost 58% of the alphabet. The pupils have problem in differentiating the letter shapes as there are too many letters that have similar shapes. This has caused them to not be able to name the letters correctly as they cannot see the different pattern in letter development. A study by Olson (1958) concluded that knowledge of letter names was the best predictor of success in reading. Knowing the letter names is very important first step in literacy skills because it determines the pupils' ability to read later on.

As we can see from the above results, the participants showed different achievement between capital and small letters recognition. The number of capital letters that the pupils can identify is higher than the number of small letters with the percentage of 17% and 14%. Children typically gain proficiency with uppercase letters before lowercase letters (Smythe et al. 1971; Worden & Boettcher, 1990) largely due to more frequent exposure with uppercase letters in environmental print (Bowman & Treiman, 2004) and with initial uppercase letters in names (Treiman et al., 2007, as cited in Richmond & Taylor, 2014). Through observation made, the pupils easily recognise the capital letters because there is more exposure of capital letter uses than small letters such as textbook titles, classroom signs and even their name tag. In addition, the pupils begin writing their names with capital letters too. The letter formation of capital letters for writing is a lot easier than writing small letters. The



size of capital letters which is bigger also credits to the letters' identification. The participants of this research study like to mix the letters when writing. This shows that the pupils have difficulty in discriminating the letters.

However, the difference does not matter as long as both shows improvement. The multisensory approach offered by the flash cards helps the pupils to recognise the letters better. The activities carried out in using the flash cards starting with tracing the letters, moulding the letters, then writing gives a meaningful learning experience to the learners. According to Lachman and Geyer (2003), it is generally accepted that primary school learners need to develop many prerequisite skills including motor and eye-hand coordination, visual perception, letter perception (including the ability to recognise forms likenesses and differences) and orientation of the printed language in order to write correctly and legibly. The multisensory trace using the index finger while pronouncing the letter names give extra sense of touch for pupils in learning using flash cards in contrast to the common use of flash cards. The pupils remember the formation of letter shapes better when they actively engaged in their learning as what HVAM Flashcard promoted. Bundy, Lane and Murray (2002) supports the activities of multisensory by saying that The Sensory Integration Theory affirms that with the child's active participation through physical movement and sensory stimulation, learning takes place because several neural pathways are stimulated at one time. This shows that the learning process of letter recognition promoted by HVAM Flash Cards generate the sensory organs of the pupils to work more effectively and thus help the students to easily identify the letters.

Letters recognition is closely related to sounds association. Alphabetic knowledge includes the letters identification and sounds association. Bush (2010) found that it is essential for the children to master the alphabet, phonemic awareness, and the phonological process during the early acquisition of alphabet skills. In order to become independent readers, it is essential for a person to be able to read fluently which means they need to be able to recognise the letters, sound the letters then process them into recognizable spoken words. The results show that there is also improvement in sounds identification after intervention among the participants. In average, they improved 18%. Even though only one out of five participants successfully associate all the sounds of the letters of the alphabet but in overall, they show a satisfactory achievement. The use of HVAM Flash Cards that combines visual and audio through the use of QR Code being really helpful throughout the learning process. The code directly links to YouTube video of Phonics songs. The pupils' learning process of letter-sounds identification is more meaningful as the pupils can watch attractive graphics with catchy audio while learning. The pupils will have a longer memory term of what they learn since it is aided with audio-visuals. The attractiveness of a video is much relying on the moving images and background sounds used in the video. These two elements are said can strongly affect the audience's mind and senses (Berk, 2009).

As a conclusion, the confusion of letter shapes and sounds lead to the problem in identifying and distinguishing letters of the alphabet and the association of the sounds. Knowing the letter names before proceeding to learning of the sounds is important as the letter recognition would lead to the smoother process of learning phonics. As the pupils already have the printed letters in the minds, they easily relate the letters to the sounds. The combination of multiple sensory in one as offered by HVAM Flash Cards makes it a great tool to learn letter-sounds correspondences better.

#### Conclusion

With the many academic educational toys existing in the market, the researchers believed this product will be helpful to overcome the problems of letters and sound recognition that might occur in few young learners. It is again emphasised that this literacy skills are in need to be developed quickly in order for them to venture into more advance literacy skills. This product is definitely a product that is based on traditional flash cards, and can be used like normal flash cards, but with many added values that one need to purchase different kits normally. Based on the findings, it is proven that this product can overcome the problems highlighted earlier. Hence, the researchers strongly believe that this product will be helpful not only for the pupils, but also for teachers and parents as well

**Funding:** This research received no external funding.

**Conflicts of Interest:** "The authors declare no conflict of interest.

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