

# Interactivity in Learning Between Using an English Alphabet Learning Package and YouTube Alphabet Learning Videos

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## ABSTRACT

This paper presents a comparison of the levels of interactivity in the learning of the 26 letters of the English alphabet between using a learning package, AlphabetStory, and YouTube learning videos. A child, aged four, was observed on the ways she learned the English alphabet using AlphabetStory. Concurrently, the child was shown five popular English alphabet learning videos from YouTube. The results show that AlphabetStory is more effective than YouTube videos for learning the English alphabet. It also has an interesting matching game, and an exercise pad that allows children to practise writing the 26 letters of the English alphabet.

## KEYWORDS

Interactivity in learning, English alphabet, Learning package, AlphabetStory, YouTube alphabet learning videos.

## 1 INTRODUCTION

An independent review by Frank Field [1] on poverty and life chances, reported that children's life chances are most heavily predicated on their development in the first five years of life. The opportunity for learning and development in those crucial years is one of the important factors among others such as family background and good parenting that determine whether their potential will be realised in adult life. Hence, early education presents great challenges to the kindergarten teachers as they carry this heavy responsibility in shaping these children to become confident, contemplative, well-trained, and robust workforce for nation building. Kindergarten teachers need to be creative in teaching, and also

keep abreast of the new teaching aids that can support and enhance the learning process of children. With the advancement in information and communication technology (ICT), many computer-aided learning packages, YouTube learning videos, and computer games have been developed for children aged 3-6 years. These learning aids are easily accessible and downloadable from the Internet.

Studies on the use of computer-aided learning (CAL) packages, and computer games for the pre-school children have shown positive impact on the learning outcomes. For example, Segers and Verhoeven [2] studied the effects of vocabulary training through playing vocabulary games in kindergarten, and found that such games improve the children's vocabularies. Lai, Luo, Zhang, Huang and Rozellea [3] also found that computer-assisted learning not only improves academic performance, but also greatly increases the self-efficacy levels of the students and their interest in learning.

It is widely known that YouTube has enabled online access to vast quantities of free public videos on a broad range of educational topics. It is also highly visited by viewers worldwide [4, 5]. There are uncountable YouTube videos for early childhood education to enhance the learning of English alphabet, numbers, colours, and shapes, for children aged 2-6 years. Some of these creatively done and interesting videos have more than one million hits within one year. Besides, the number of new learning videos is also increasing rapidly [6]. Sanders [7], a teacher and a Tech integration specialist, testified that his YouTube EDU videos can enhance learning and increase the motivation of the students. These evidences reflect

the enormous impact YouTube learning videos have on the learning process.

Teaching kindergarten children aged three to six years is a challenging task. One of the main problems that kindergarten teachers often encounter is the lack of focus among some of the children in class. They are easily distracted and become restless, and this affects the teaching and learning processes [8]. Hence, creating an interactive learning environment is crucial in sustaining the attention of the children. Despite the abundance of interactive multimedia learning packages and YouTube videos that support the teaching and learning process, no study has yet been conducted to assess the impact of these two interactive learning tools on the pre-school teaching process. A case study was therefore initiated to investigate the levels and the impact of the interactivity between using a computer learning package, AlphabetStory, and the YouTube learning videos, in the learning of the 26 letters of the English alphabet. This paper presents the results of the case study that was conducted over two months.

## 2 METHOD

This study aims to investigate and compare the levels and impact of interactivity in learning using a computer-aided learning package, AlphabetStory, with using YouTube learning videos. Interactivity refers to the cognitive effort made by users in learning and engaging with the learning tools, as well as the interchange between them and the tools [9, 10]. AlphabetStory was developed based on the ADDIE instructional design model comprising five phases – analysis, design, development, implementation and evaluation phases [11, 12] – to help children aged three to six years to learn the 26 letters of the English alphabet.

In order to define the features to be incorporated into AlphabetStory, interviews were conducted with one kindergarten principal (from kindergarten A) and two kindergarten teachers (from kindergartens B and C). Information gathered included the teaching and learning environment in the kindergarten, and suggestions

from the three interviewees, particularly on the use of computers in teaching.

Class observations were also carried out in two classes (Class 1 and Class 2) in Kindergarten A to observe the behaviours of the children. The observation took 90 minutes in all. One class had 10 children aged between two and four years, while the other class had 25 children aged between five and six years. The observations were recorded manually, and the results of the analyses were used in the design of AlphabetStory.

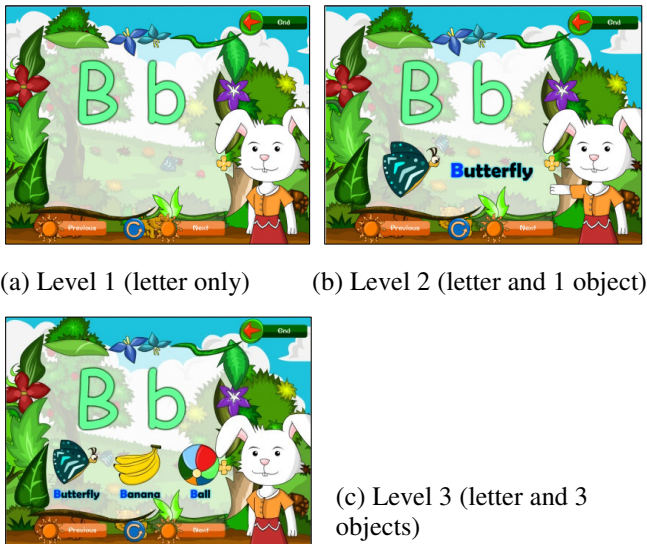
### 2.1 Modules of AlphabetStory

AlphabetStory consists of four main modules – Lesson, Exercise pad, Test, and Game, and briefly described below [13]:

**Lesson Module:** It consists of a simple story which is divided into three sections (Figure 1). The first section consists of eight letters (letters A-H) in spring design, followed by the next eight letters (letters I-P) in winter design, and the remaining 10 letters (letters Q-Z) in a beach and sunny day design. The different designs are aimed at making it more interesting for the children to learn the alphabet. To cater to the different learning abilities of the children, three levels of learning were designed (Figure 2). A simple quiz is given at the end of each section.



**Figure 1. Learning process using story flow**



**Figure 2. Three levels of learning**

**Exercise Pad Module:** Children can practise writing the 26 letters of the English alphabet, both in uppercase and lowercase, using a mouse or track ball. The correct sequence of strokes are animated and repeated to show the right way of writing the alphabet (Figure 3).



**Figure 3. Practise writing using exercise pad**

**Test Module:** Aims to evaluate whether the children have successfully learned and understood the 26 letters of the English alphabet. There are two types of tests – Alphabet Frenzy, and Words Trivia.

**Alphabet Frenzy Test:** Children are tested on the uppercase and lowercase letters of the alphabet. This test applies to all three learning levels of the lessons.

**Words Trivia Test:** This test is for level 2 and level 3 lessons only (for children aged four years and above). In the test, a child must find a letter to

match an object. At the start, a minimum of three objects are displayed on the screen, and the number is gradually increased to a maximum of six objects.

**Game Module:** A child is asked to find a matching pair of objects by clicking on the boxes. This game is aimed at testing the memory of the child. It has three levels of difficulty, and the number of pairs to be matched (two to eighteen pairs) can be set, as appropriate. There are four types of matching: alphabet only; first object only; alphabet and first object only; and alphabet and all three objects. Figure 4(a) shows the letter and first object only matching type. The number of matching pairs, time limit, and the type of matching can be set based on the learning ability of a child as determined by the teacher or parents, using the Parental Control module (Figure 4(b)).




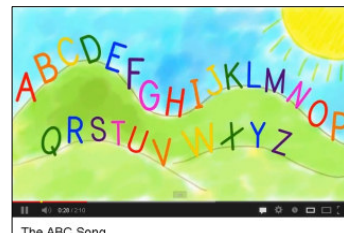




**Figure 4. Features of game**

These four modules were designed to achieve the learning outcomes – making it enjoyable for children to learn the English alphabet, and at their own pace. In each module, there are interesting learning activities, and these, coupled with the attractive user interface design help in sustaining the children's attention in the learning process and in enhancing the interactivity level between a child and AlphabetStory.

## 2.1 Selection of English Alphabet Learning Videos from YouTube

The interactivity in learning using AlphabetStory was compared with five popular YouTube English alphabet learning videos (each has more than a million hits). A brief description of each video is given in Table 1.

**Table 1: Brief descriptions of five YouTube English alphabet learning videos**

Name	Author; Hits; Date uploaded; Brief descriptions; Duration (minutes) and Sample screen of the video
TOONBO "Alphabet Song" (Vol.1) [14]	<p>serenade2008; 81,297,511 (as of Jan 21, 2014); 9 Jan 2008; Singing of lovely and catchy song by tiny "mice" that pop up from holes; it is aimed at providing an interesting and easy way to learn the English alphabet. Duration: 1:11</p> 
The ABC Song [15]	<p>A.J. Jenkins/KidsTV123; 61,131,989 (as of Jan 21, 2014); 6 Jan 2010; A classic ABC song with big and small colourful letters. Duration: 2:10</p> 
ALPHABET - ABC song with TUTITU [16]	<p>TuTiTuTV; 46,248,701 (as of Jan 21, 2014); 1 Nov 2011; TuTiTu - "Baby Steps" is a 3D-animated television show targeting children aged 1-3 years. Through colourful shapes, TuTiTu is aimed at stimulating the children's imagination and learning ability. Duration: 6:37</p> 
Phonics Song 3 [17]	<p>A.J. Jenkins/KidsTV123; 22,996,409 (as of Jan 21, 2014); 6 Aug 2011; It is a song on phonics with a picture for each letter. It is designed to help children in learning the sounds of the 26 letters. Duration: 2:03</p> 
Learn to Write Alphabets at www.gudli.com [18]	<p>gudlidotcom; 2,407,332 (as of Jan 21, 2014); 31 Jan 2011; An online activity for writing the letters, and a creative way to learn and practise writing for preschool, kindergarten, and early elementary school children. Duration: 9:13</p>  

### 3 RESEARCH DESIGN

The study on the interactivity in learning using AlphabetStory and the YouTube learning videos was conducted using a case study. This is because the principal and the teachers prohibited such study to be conducted during class hours as it would disrupt the regular classes. As most parents are working, only one parent agreed to collaborate and help in recording the observations for the study. A CD copy of AlphabetStory was given to the parent of a child aged four, to install on a laptop computer. She was given clear explanations on the use of AlphabetStory, and the way to conduct and record the observation. The child was guided by the parent throughout the lesson component, including writing of the letters, tests, and game. As the child is currently taught to read and recognise numbers, the English alphabet (uppercase and lowercase), and simple objects in a nursery (first grade) class, she was able to use the keyboard, mouse and track ball to learn the alphabet, easily. The child was guided in learning the English alphabet by following the story flow of AlphabetStory and doing a test, once a day for three days. However, when the child got bored and refused to learn the alphabet or explore the other features, the parent allowed the child to do other activities or play the games she likes. From the fourth day, the child was left on her own to use AlphabetStory to learn the English alphabet. The parent starts up the AlphabetStory package whenever the child requested. The child was closely observed when she was using AlphabetStory to learn the 26 letters of the English alphabet. All observations were recorded.

From the first day of the case study, the child was shown the five selected learning videos from YouTube – all the five videos once a day for a week. Again, when the child got bored and refused to watch any of the videos, the parent stopped playing the video and allowed the child to get involved in other activities or play other games that she likes. From the fourth day, only those videos that the child requested were shown. Observation on the child was made and recorded when the child was watching the videos. As the child is hyperactive, she became restless easily. She often requested for a change after using

AlphabetStory for about six minutes, and to change to another video after watching one of the five selected videos for about two minutes. Hence, the case study was conducted over two months as the parent found that observing and recording the child's behaviours was time-consuming and stressful. The following sections present a summary of the observation and findings of the case study.

### 4 RESULTS

#### 4.1 Findings of the Observation on the Child Using AlphabetStory

The child enjoyed playing AlphabetStory – playing the matching game, taking tests, and practising writing after learning the 26 letters of the English alphabet. The child did not have any problem in using the keyboard, mouse, and track ball. The responses and behaviours of the child to the four main learning modules of AlphabetStory, are as follows:

Lesson module: Although the child had learned and recognised the 26 letters, occasionally, she would review the Lesson module, and enjoyed answering the simple quiz at the end of each section of the story.

Exercise Pad module: The child used the exercise pad to practise writing the 26 letters, and sometimes to draw. She was also able to erase the incorrect strokes when writing by clicking on the “eraser” icon. She was fascinated with the use of the eraser, and this motivated her to practise writing the letters, every day.

Test (Alphabet Frenzy and Words Trivia) module: At the beginning, the child was not familiar with the locations of the 26 letters on the keyboard. Thus, she took a longer time to find the correct answer (letter) in the Alphabet Frenzy test. After answering the two different tests a few times, the child was able to use the keyboard to answer the questions easily (i.e. re-take the tests). Basically, the child was able to answer all the questions in Alphabet Frenzy correctly except for the letter l (lowercase L) which looks like uppercase letter I. In the Words Trivia test, the child did not know the spelling of the objects and was thus, unable to understand the instructions displayed on the



computer screen. The parent had to read out the name of the object to guide her to choose the correct object from the list of objects displayed on the screen. After a few attempts, the child understood the way of answering the test and she was able to choose the correct object the moment the name of the object was read out by the parent. Subsequently, the child only did the two tests, occasionally.

Game module: At the beginning, the child did not know how to play the matching game as she had failed to find the matching pair even after making a few attempts. After she was shown the way to play the game, she started to play the game without any help from the parent. She enjoyed playing the matching game and even asked the parent to play to compete with her. After finding the matching object, the parent also asked the child to read out the name and the spelling of the object.

Generally, it was observed that the child was attracted to the graphics and animation used in AlphabetStory. She was fascinated with the animations and the sound of clapping hands such as when a correct answer was given. This had made her more eager to explore AlphabetStory further. She adapted herself quickly to the system, especially, if the buttons are always located consistently at the same place on the screen. After she had been taught the use of the system, she knew how to return to the main page by clicking the “back” button, which is consistently located at the top right corner of the computer screen. The child was adept at handling the keyboard and track ball. She was able to click on some of the small buttons correctly. The child had explored the different features of AlphabetStory, but preferred playing the matching game, and writing the letters (3-5 letters of her choice only), every day. She only followed the lesson and took the test, occasionally.

#### **4.2 Findings of the Observation on the Child Using YouTube Alphabet Learning Videos**

All the five learning videos lack interactive feature. As a result, she only watched the videos and animation, listened to the songs and/or explanation about the objects related to the

specific letter, and the sequence of the strokes to write the 26 letters of the alphabet. Below are the responses and behaviours of the child when watching the five videos.

TOONBO "Alphabet Song" (Vol.1): The child loves the interesting and funny sound of the song and the animation of the tiny “mice” labelled with the 26 uppercase letters on their body, that pop up from the holes. She was able to sing the song after listening to it two to three times. Although she had not requested to watch this video every day, she had asked the parent to show her this video three to four times a week.

The ABC Song: The child loves the song and the animation of the 26 letters in uppercase and lowercase, against a sunny day background. She was able to sing the song after listening to it three to four times. She did not find this video interesting, and thus, only requested to watch the video, occasionally (one to two times per week). Sometimes, she refused to watch the video completely, as no related objects were used to illustrate the letters.

ALPHABET - ABC song with TUTITU: The child found this video very entertaining and requested to watch it every day. She loves the sound and the animation of the “space ship” that drops an object or animal that is related to each letter. The “space ship” also reads out the letter and the name of the object. In this way, the child not only learns the 26 letters of the English alphabet but also the names of the objects and animals, as well as the spelling of the word “TuTiTu”.

Phonics Song 3: The child loves the song and the animation of the objects or animals related to the specific letter. Besides learning the phonetics of the 26 letters, she was able to sing the song completely and correctly after having listened to it three to four times. She requested to watch the video, two to three times in a week.

Learn to Write Alphabets at [www.gudli.com](http://www.gudli.com): The child watched the animation showing the sequence of strokes to write each letter. As the child has practised writing the letters using AlphabetStory and also learned to write both uppercase and lowercase letters, in the nursery class, she watched the video once and was very eager to find out the related object that is displayed at the end of

writing each letter. As the sequence of strokes to write each letter is being shown on the screen, she followed to write likewise by using the mouse. Occasionally, she would use her index finger to draw the shape of the letters in the air. She pointed out that the sequence to write the letter “T” (sequence: l, T, I) is different from the sequence that the teacher taught her in nursery class – which is writing the short horizontal stroke from left to right followed by a vertical stroke from the centre point down, and a short horizontal stroke from left to right (┌, T, I). She also commented on the absence of animation for writing the lowercase letters. She commented that it is very strange to see a purple rat which was displayed for the letter R. She felt bored when she watched the animation the second time and asked for it to be stopped after having watched the first four letters (A-D). She found this video to be uninteresting and refused to watch the remaining letters. Since then, she has not requested to watch this video.

#### **4.3 Comparison of Interactivity in Learning between AlphabetStory and YouTube Alphabet Learning Videos**

Based on the two-month observation on the child, some interesting inferences can be made on the levels of interactivity when learning the English alphabet using AlphabetStory and YouTube videos. It is found that the child likes to learn the English alphabet using AlphabetStory. She finds both the test and the game a fun way to learn. She is able to recognise all the objects and memorise the spelling of simple words (i.e. objects with 4-5 letters) such as ball, fish, lion, etc., after playing the games a few times. It is obvious that the interactive features in AlphabetStory have motivated her to learn and write the English alphabet, improve her vocabulary, as well as spell some simple words.

Among the five YouTube videos, ALPHABET - ABC song with TUTITU is the most attractive and interesting learning video – it motivated the child to watch it every day – and also the most effective in helping the child to learn the 26 letters and associated objects. The remaining four videos lack creative animation and/or funny sound features, which cause them to be not interesting enough to

the child. It is very obvious that better animation and sound features should be added to the videos to attract children’s attention. Nonetheless, it is worth noting that the videos also have their strengths – TOONBO “Alphabet Song” (Vol.1) in the singing of the alphabet song; Phonics Song 3 in pronouncing the sound of each letter and the name of each related object; ABC Song in singing the alphabet songs but without creative design and related object; and Learn to Write Alphabets at [www.gudli.com](http://www.gudli.com) in teaching writing the alphabet.

### **5 CONCLUSIONS**

Teaching pre-school children is a challenging task as each child behaves differently – some could be introvert, extrovert, or hyperactive. They also have different learning paces, and they are easily distracted. Therefore, it is understandable why kindergarten teachers emphasise learning through interactive activities when teaching children aged two to six years. For those kindergartens that have computer classes, the teachers guide the children on the use of the computer keyboard and explain the use of the computer (Lew, 2010). Based on the interviews with the kindergarten Principal and teachers, none of the local kindergartens use YouTube learning videos in teaching. The results of the case study conducted on a child aged four years, show that AlphabetStory, and YouTube alphabet learning videos can inspire and enhance the learning of the English alphabet.

AlphabetStory is found to be more effective than YouTube learning videos as it has more interactivity features – one simple quiz at the end of each lesson; easy-to-answer tests (Alphabet Frenzy and Words Trivia); an interesting matching game; and an exercise pad to practice writing both the uppercase and lowercase letters of the alphabet. Besides, it has very colourful and attractive user interfaces. YouTube learning videos, however, can help children to learn, recognise and memorise the alphabet through the singing of catchy alphabet songs. As children easily lose their concentration, YouTube learning videos that have beautiful objects, interesting animation, funny sound feature, and play within 2:10 minutes continue to sustain the children’s attention better than videos that do not have

similar features and run for more than 3:00 minutes. For example, ALPHABET - ABC song with TUTITU, runs for 6:37 minutes, but it still attracts and engages the child in the learning process. This is attributed to four main features – colourful and interesting animation of the “space ship”, letters and objects; kid’s voice used in the pronunciation of the letters and objects; letters with big font size; and singing of the TuTiTu song at the beginning and at the end of the video.

There are two important issues worth noting from the findings of this case study – the sequence of writing the letter “I”, and the purple rat. The YouTube videos illustrate the correct sequence of writing the letter “I”, which the kindergarten teacher had taught differently, perhaps incorrectly. Needless to say, the teachers must ensure that what they teach is correct. Similarly, the learning videos, especially for children, must present facts and not fantasies, for example, a purple rat is shown in one of the YouTube videos. In reality, this does not exist.

Another interesting finding from AlphabetStory and the YouTube videos is the interactivity feature that requires the children to use the keyboard, mouse or track ball in the learning process. When using the exercise pad, the child aged four who was not able to use the track ball to write the letters due to her small hand size, learned to adapt by using the other longer finger (i.e. the thumb and the middle finger instead of the thumb and the pointer finger) to write the letters. The amount of typing required to answer the tests in AlphabetStory actually helped the child to recognise and memorise the locations of the 26 English letters on the keyboard. This shows that the use of the keyboard is a very useful interactive feature not only in the learning process (language development), but also in the physical development of the learners.

This study reports on the findings regarding the levels of interactivity in learning based on one case study only. The outcomes could be different if more children (both boys and girls) from other ethnic groups were to participate in the study. Therefore, further studies need to be conducted to investigate other factors that could affect the levels of interactivity in learning such as gender, behaviour, age groups, ethnic groups, and socio-

economic background of the children. Any new findings can serve as useful guides for both the educational software developers and video developers, in developing suitable learning packages and videos for young learners.

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## 7 REFERENCES

1. Field, F.: The Foundation Years: Preventing Poor Children Becoming Poor Adults: The Report of the Independent Review on Poverty and Life Chances. London, Cabinet Office (2010).
2. Segers, E., Verhoeven, L.: Effects of Vocabulary Training by Computer in Kindergarten. *Journal of Computer Assisted Learning*, 19(4), 557--566 (2003).
3. Lai, F., Luo, R. F., Zhang, L. X., Huang, X. Z., Rozelle, S.: Does Computer-Assisted Learning Improve Learning Outcomes?: Evidence from a Randomized Experiment in Migrant Schools in Beijing. Working Paper, Rural Education Action Program. Stanford University, Stanford, CA (2011).
4. Alexa. YouTube.com site info, <http://www.alexa.com/siteinfo/youtube.com>
5. comScore. comScore Releases May 2010 U.S. Online Video Rankings: YouTube Streams All Time High of 14.6 Billion Videos Viewed, [http://www.comscore.com/Press\\_Events/Press\\_Releases/2010/6/comScore\\_Release\\_s\\_May\\_2010\\_U.S.\\_Online\\_Video\\_Rankings](http://www.comscore.com/Press_Events/Press_Releases/2010/6/comScore_Release_s_May_2010_U.S._Online_Video_Rankings) (2010).
6. Miller, M. V.: Integrating Online Multimedia into College Course and Classroom: With Application to the Social Sciences. *MERLOT Journal of Online Learning and Teaching*, 5(2), 395--423 (2009).
7. Sanders, J.: YouTube in the Classroom. Google Education: Hangouts On Air, <https://sites.google.com/site/eduonair/conference-sessions/chromebooks-deployment-and-management> (2012).
8. Ow, S. H., Lew, T. W.: Instructional Design of a Learning Package of English Alphabet. In: *Proc. of the 3rd Annual International Conference on Education and*



- e-Learning (EeL 2013), pp. 113—120, Global Science and Technology Forum (GSTF), Singapore (2013).
9. Preece, J., Rogers, Y., Sharp, H.: *Interaction Design: Beyond Human Computer Interaction*. John Wiley and Sons Inc., New York, NY (2002).
  10. Liang, H. N., Parsons, P. C. Wu, H.C., Sedig, K.: An Exploratory Study of Interactivity in Visualization Tools: 'Flow' of Interaction. *Journal of Interactive Learning Research*, 21(1), 5--45 (2010).
  11. Molenda, M.: In Search of the Elusive ADDIE Model. *Performance Improvement*, 42(5), 34--37 (2003).
  12. Clark, B.: The History of Instructional Design and Technology. <http://www.slideshare.net/benton44/history-of-instructional-design-and-technology?from=embed>.
  13. Lew, T. W.: Development of an English Alphabet Learning Package for Kindergarten. Undergraduate Final Year Project Report. Kuala Lumpur: Faculty of Computer Science & Information Technology, University of Malaya (2010).
  14. serenade2008. TOONBO "Alphabet Song" (Vol.1), [http://www.youtube.com/watch?v=7XYQd\\_sJVzk](http://www.youtube.com/watch?v=7XYQd_sJVzk)
  15. Jenkins, A.J. The ABC Song, <http://www.youtube.com/watch?v=75p-N9YKqNo>
  16. TuTiTuTV. ALPHABET - ABC song with TUTITU, <http://www.youtube.com/watch?v=YtGxzlWRgeM>
  17. Jenkins, A.J. Phonics Song 3, <http://www.youtube.com/watch?v=BELIZKpi1Zs>
  18. gudlidotcom. Learn to Write Alphabets at [www.gudli.com](http://www.gudli.com), <http://www.youtube.com/watch?v=eldP9qW4sdg>