Not Just Playing With Clay: Symbol Mastery for Spelling and Word Comprehension

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Abstract: A umber of students experience difficulty with the retention and recognition of basic spelling words. These students, who are often dyslexic and/or Three Dimensional Visual Thinkers (3DVT), are usually taught spelling through mainstream pedagogical practices, such as phonics and rote learning; practices which are generally unsuccessful with this group (Treiman 1992; Lee 2010; Ambrose and Cheong 2011).

Symbol Mastery (Davis and Braun 1994) is a process where students work with clay to create a visual interpretation of a word's meaning and then connect it to the word's spelling and pronunciation. Davis (ibid) proposed that the process of discovering what a word means, and creating an image of the word three-dimensionally, would not only give ownership of the process to students, but would also be a vehicle through which they could master spelling words.

This paper is based on a small Qualitative Case Study Research Project where the Symbol Mastery program was trialed with four Dyslexic students, in one to one tutorial sessions after completing a specialized program. Data were gathered through pre and post program interviews with students and parents; researcher observations, artifact collection; as well as pre and post tutoring spelling tests. Results showed that the program helped with improving spelling scores and increased confidence and willingness to attempt to spell words.

Keywords: Dyslexia, Spelling, Creativity

Introduction

Spelling is a means of exchanging information in a format that can be understood by those who read, write and spell the language (Katriz 2006). Gehry (1982) defines spelling as a way of representing sounds used in speech to reflect spoken language in a written way (cited in Aaron et al. 1998). This process of representing sounds with letters works well if the language sounds and letter names have only one representation: such as occurs in phonetic languages like Finnish. If a letter represents more than one sound and has more than one way of being pronounced, spelling becomes a more difficult process (Ibid), thus creating a need for rules to be learned (Roberts 2003; Gunter, Larking and Ellis 2004 cited in Faber 2006). This results in some learners – especially those who could be described as 'dyslexic': having a 'three dimensional thinking ability' (Davis and Braun 1994), or 'visual – spatial thinkers' (Silverman and Freed 2001) – experiencing a lack of success in their journey to become competent spellers. Three Dimensional Visual Thinkers can be described as those learners who "think with the mental pictures of concepts or ideas" (Davis and Braun 1994, 9).

Spelling Instruction Overview

Sayeski (2011, 79) notes that "spelling is challenging because single sounds can be represented by many different spelling patterns." For example: 'ough/ow' for the sound 'ow,' as in plough/plow.

Letter recognition develops in a gradual, systematic fashion (Adams 1990; Ehri 1998). After the letter names have been introduced, phonics is the next step. Phonics are the sounds in the words and the order they are heard within a word. Emergent spellers often use the sounds they

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hear as a guide to how the word is spelled (Treiman 1992). The letter symbols then have a sound related to them. Students need to learn to match a letter to its sound. This is most frequently through practice; to increase word recognition using the letter sound (Li, Shu, McBride-Chang, Lui and Xue 2009 cited in Kast 2011).

For those learners who struggle with spelling, additional support, instruction and remediation is often provided in schools, incorporating the integration of remedial specialists in regular classroom learning (Walcot-Gayda 2004). This additional support compliments phonics-based instruction received in the classroom, through providing a more individualized learning experience. As Doyle, Schuster and Meyer (1996) noted, computer instruction is one example of additional support (cited in Campbell and Mechling, 2008).

Multi-sensory approaches suggest that a more effective way of learning spelling is through activities that integrate information across multiple senses (Van Haren 2008; Kalantzis and Cope 2005; Davis and Braun 1994), thus enriching the experience and memories created (Shams and Seitz, 2008) and integrating information about how the word is spelled (Davis and Braun 1994). Kalantzis and Cope (2005, 86) refer to this as "knowledge in action," and see it as being an intellectual and creative process whereby the learner knows the word's definition plus creates an image which represents the meaning. Shams and Seitz (2008) suggested that these multi-sensory activities, such as Davis' (Davis and Braun, 1994) Symbol Mastery, are a more effective method for learning information such as a word's meaning and correct spelling.

Even with different approaches to spelling instruction and its related activities, there are still some learners who struggle to either master the rules of spelling and to apply them consistently; or even to be able to associate the letters and sounds successfully. These students are often diagnosed as being 'dyslexic' or having learning difficulties. In fact, they may have a different learning style; that of a 'Three Dimensional Visual Thinker' (3DVT), or a 'Non-verbal Conceptual Thinker' (Davis and Braun 1994, 9) as defined by Davis above. They require an approach that adds the process of creating a visual image to the learning mix (Davis and Braun 1994; Silverman 1991).

Dyslexia: Definition and an Image Based Learning Approach

Dyslexia is defined as a "Specific Learning Disorder with impairment (American Psychiatric Association, 2000), and is considered a brain-based difficulty in reading. Kalantzis and Cope (2012), describe dyslexia as difficulties with distinguishing phonic symbols and letter reversal, which from the authors' experience is supported by the observation that dyslexics commonly confuse and reverse 'b/d' and 'p/q', both in the direction of the circle and placement on the line when writing. This letter reversal results in them sounding out words incorrectly so for 'dog' – dee-oh-gee the may write: bee-oh-gee (b-o-g); thus creating the wrong sounds from the writing; difficulties in decoding words by analyzing the alphabetical representation of sounds; and spelling. Dyslexics experience difficulty in attaching sounds to letter/s, which may affect their ability to match the appropriate sounds and letters consistently (Treiman 1992). This affects both the encoding of spelling words and the decoding of the words due to erroneous matching of sounds to symbols. It results in poor spelling (Phillips and Feng 2012). Students experiencing these difficulties find themselves under a lot of pressure as they learn the spelling rules and their usage. Another difficulty experienced may be 'mirror writing', which results in the words being written backwards, but when held up to a mirror they are spelled correctly (Davis and Braun 1994).

Common complaints of dyslexics related to spelling include how tiring the process of spelling can be, as it may take them a longer period of time to encode a word, either successfully or unsuccessfully (Carson and Sorin 2014). The authors have observed that some Three Dimensional Visual Thinkers have difficulty with penmanship, resulting in writing being a slow and time-consuming practice. Instructions such as, 'sound out the word' can be interpreted by the

learner as meaning different things to what the teacher understands it to mean. Usually this direction refers to the sounds in the written word. Some Three Dimensional Visual Thinkers consider this to mean the sounds they hear when they say the word (Ibid). This can lead to increased inaccuracies if students also have a hearing or speech difficulty; as well as increased frustration as words appear not to conform to how the learner understands they should be spelled and the spelling rules they are asked to apply appear to be random and make no sense to them (Davis and Braun 1994).

Non-verbal conceptual thinkers look for visual representation of a words' meaning; then the written word (Davis and Braun 1994). Davis and Braun suggest that mental pictures of the concepts or ideas need to be created and translated into three dimensional, visual representations which use letters to reflect the sounds. Creating the word in clay can be a tool for this translation.

Although Davis (in Davis and Braun 1994) acknowledges that adding a two-dimensional picture to the word may help the learner, and dyslexics in particular, he argues that this would involve a huge amount of repetition as the image is not created by the learner, nor is their creativity engaged in this process. Rather, he proposes a three dimensional approach to help these learners spell words and gain and retain comprehension of the words. His approach is referred to as 'Symbol Mastery' and enhances the learning process by using clay to represent the letters and the meaning of the word. This is based on his belief that, "the creative process and the learning process, if not identical, are so closely related that they are inseparable (Ibid, 65). Davis chose clay as the medium to create three dimensional images, as clay is very easy to mould and shape.

How Symbol Mastery Works

Symbol Mastery requires the learner to connect the three components of a word: definition, pronunciation and spelling. For the first component, definition of a word, the dictionary is most commonly used, as it is typically the definition used most frequently.

Once the learner has a clear image of the meaning, they create all parts of the definition out of clay, followed by creating the word in clay. An advantage of this approach is that it engages the learner, no matter which learning style they prefer; whether it be auditory, kinesthetic, tactile or visual (Fleming 2006; Kalantzis and Cope 2005).

Dolch Words

The majority of words that are frequently spelled incorrectly in the English language are found in the Dolch word list (Johnson 1971). This is a list composed by Edward Dolch in 1948, in which he collected the 222 most commonly used words, excluding nouns, in the English language.

These words, also known as 'sight words', tend to be the majority of words children are expected to know by the end of second grade. Many of these words cannot be spelled phonetically; rather spelling rules need to be applied. In addition, the word list includes homonyms, which are words that are pronounced in the same way as another word but have a different meaning, source and spelling. An example of problematic homonyms is 'for' and 'four', as they sound the same but are spelled differently. Kohnen and Nickels (2010, 187) observe that homonyms can cause problems "even for average spellers" (cited in Mullock 2012).

Davis (Davis and Braun 1994) suggests that in order to spell Dolch words, including homonyms, correctly, a clear understanding of the meaning is beneficial for some learners. This can be achieved through Symbol Mastery. Ehri (1989, 31) supports this conclusion when stating that "It is apparent that anytime the abstractness of a Dolch sight word is taken to the concrete level with pictures and mnemonics, word acquisition improves." This research aimed to further determine the impact of Symbol Mastery on spelling mastery. The research question was: What is the impact of the Symbol Mastery program on Three Dimensional Visual Thinkers' spelling abilities and retention of Dolch words?

Methodology

Symbol Mastery falls within a constructivist theoretical paradigm. Piaget, who first introduced the concept suggested that children construct knowledge and understanding through direct experience with their environments (Huitt and Hummel 2003). With every new experience, individuals must reconcile it with previous experiences and understandings and the process of doing so positions the learner as creator of their own knowledge. The process of Symbol Mastery requires learners to construct three dimensional visual images as a way of learning new words and thus acquiring the knowledge of how they are spelled. Honeban (1996) found that constructivist theoretical assumptions see research as being a collection of educational practices which are student focused, meaning based, process orientated, interactive and responsive to participants' needs (cited in Johnson 2004).

This research acknowledges the constructivist nature of the process and was conducted as a qualitative case study. According to Lankshear and Knobel (2011), qualitative research refers to perspectives and techniques. This type of research showcases a collection of participant views in words and images (Creswell 2012). In its many forms, it is often suitable to teacher research, which usually deals with practicalities (Ibid).

Case study was chosen, as within this approach many different techniques can be utilized to collect data. Techniques included: interviews with participants; surveys with one parent of each participant; researcher observations; and artifact collection. There is also quantitative component to this research, as spelling scores were examined to inform the research. These methods are described in detail below.

All four participants had successfully completed thirty hours of the one-to-one Davis Dyslexia Correction Program®. This program is delivered individually to student participants who have successfully demonstrated that they can think with three dimensional visual images. This ability is assessed by administering the Perceptual Ability Assessment, designed by Davis (Davis and Braun 1994). The program includes mastering the alphabet, punctuation, Symbol Mastery and reading practice.

Symbol Mastery began by repeating the word in sentences. This helps to check that the word is being used in a way that matches the definition, as well as helping to create ideas of what can be used to show the meaning. As the process is individual, the principal researcher asked each participant: "Do you have a picture you could make of what the word means?" If the answer was 'yes', the participant made their model. On completion, they were asked to show the different parts of the definition, as illustrated by their model. If parts of the definition were missing, these could be added and, if there were superfluous parts, they could be removed. After using the word in sentences, if the participant was unsure about what to make, questions were asked as to what was included in the definition and how it could be shown in a model. The researcher's role was not to tell the participant what or how to make the models.

Following the thirty hours, each participant had an additional eight hours of one-to-one tutoring to re-enforce Symbol Mastery. These sessions were the focus of the research. In these sessions, participants were given four words that were uniquely for them and four that were common to all four participants. Tutoring was delivered either in person or through Skype, depending on locations involved. All sessions were undertaken individually. Qualitative data were collected through researcher observations, diary entries which recorded participants' comments and reactions to the Symbol Mastery process. Further, photographs and drawings were made of the models created. A parent questionnaire and participant survey were administered individually on the first day of the program and within in one week after completing the tutoring. Open or emergent coding was used to identify commonalities and trends. Quantitative data were gathered through the administration of pre and post tutoring spelling tests.

Participants ranged in age from 11 to 16. There were three males and one female. One participant was home schooled; two were in Middle school (grades 7-9) where they received additional support, and one was in Elementary (Primary) school. Three had the majority of their educational instruction in English, while one had theirs in French. All programs were delivered in English, and each participant had one of their parents included in the research.

At the beginning of the program, each participant was interviewed in regard to how they rated their spelling skills; how they felt about spelling; which spelling strategies they used; and how successful they felt these strategies were. They then completed an eight-word spelling test, four of which were individual words known to be difficult for them and four were common Dolch words chosen by the researcher and given to all four participants. The researcher had no previous knowledge as to whether these words had proven difficult for the participants. The common words shared among the participants were: Were, Where, There, and Their.

During this first session, parents completed a questionnaire that asked similar questions to those asked of participants in their interviews, with additional questions about how well they rated their child's spelling skills, the strategies used, and any non-school provided interventions that had been used. This process was repeated within a week of completing the tutoring.

The researcher collected quantitative information in the form of results scores from the pre- and post-spelling tests. Participants' answers were compared for correct spelling, correct phonetic spelling and the number of words attempted. Qualitative information, which was focused on the participants comments and insights, was elicited through interviews, parent questionnaires, researcher observations and diary entries.

Photographs and drawings were made of each participant's model on completion of the mastery process. The photographs and drawings record how the participant interpreted the dictionary meaning of a word, as well as notes taken about how they mastered it. Mastery included: looking at the model and word, then saying the definition and spelling; touching the model components as they are being named, then spelling the word; adding hand movements to the process; or anything else the participant did to personalize the mastery process.

Findings and Discussion

This study presented a number of findings. This paper focuses on two of the major findings: a) improved spelling scores and b) increased confidence and willingness to attempt to spell. In examining the changes in spelling scores, the scores themselves: accurate words out of eight and phonetically correct words out of eight; student comments and researcher observations were examined. This examination is looked at initially through individuals and then as a whole group.

In the pre-tutoring spelling test the scores for accuracy ranged from 1 - 4 words correct out of eight. When phonetically correct spelling was considered, the range increased to 2 - 4 out of eight correct. After the eight hours of one on one tutoring in which participants created the definition of the word visually and added the word symbols (letters), all created in clay, three of the four participants had increased their spelling scores.

Regarding confidence, prior to the eight hours of tutoring, both student participants and parents reported a lack of confidence in participants about their spelling abilities.

Spelling and confidence findings are elaborated below.

Spelling

This section outlines the spelling achievements of each of the four participants, referred to as: B, N, G and T.

Participant B

Pre-tutoring

In the first spelling test student participant B had a spelling score of three out of eight words correct. Along with this there were four misspelled words that were phonetically correct. B's words were: Where, Were, There, Their, About, You, Girl and Else.

During the eight hours of tutorials this participant explored the meaning of the words as to whether they were singular or plural and compared them to their use in French, the primary language of instruction at school. B appeared to enjoy these sessions as joked, told stories and sang songs throughout the creative process.

Post-tutoring

In the score for the post spelling test four out of eight words were correct showing an increase of one correctly spelled word. Along with his there were four misspelled words that were phonetically correct.

Participant N

Pre-tutoring

Student participant N before the eight hours of tutoring scored only one word correct out of eight. Along with this there were two misspelled words that were phonetically correct. N's words were: where, were, there, their, laugh, about, those, them. N seemed to struggle with spelling commenting "it made no sense." A feeling and comment often repeated through the tutorials.

N was very careful in making the models and appeared to enjoy both the process and the clay, as would frequently touch and smooth pieces already completed, as well as those being worked on. N found marks and nicks on the clay distracting at first, but as grew more comfortable, was less distracted by the occasional mark in the clay, though did continue to enjoy the tactile experience of touching and smoothing the clay as indicated by a big smile.

Post-tutoring

In the post test scores N had two out of eight correctly spelled. Along with this there were four misspelled words that were phonetically correct. The remaining two words had reversed b/d in them. This student participant had shared prior to starting the spelling test that they were feeling very tired and anxious. This may have had an effect on the results, as one of the principle researchers observations of the participant was that when tired they tended to reverse b/d.

Participant G

Pre-tutoring

Participant G scored three out of eight words correctly the first time. Along with this there were four words misspelled but which were phonetically correct. G's words were: Where, Were, Their, There, First, Light, Little and Said.

G appeared not to enjoy the clay or creating the models for the definitions. This was reflected in the number of breaks requested/required, yawning and non-related off topic talking to the researcher. G made numerous comments about using technology which would have been easier. Technologies used by G were iPods and mobile phones. These were used to look up a words meaning most often by speaking the word into the technology rather than spelling it using

the keyboard. G did not use technology to draw three dimensional images of what the word meant. G observed that talking into the phone gave the information desired quickly, accurately and verbally.

G requested gloves to use with the clay, which were provided. Towards the end of the tutorial G would occasionally make alterations to the original model without putting on the gloves and shared that "it is faster than putting them on all the time. That takes too long!"

Post tutoring

G scored four out of eight correct in the second time; showing an increase of one word correct. Along with this there were four words misspelled though phonetically correct, same as in the pre-test.

Participant T

Pre-tutoring

Student participant T got four out of the eight spelling words correct the first time. Along with this there were two misspelled words that were phonetically correct. T's words were: Where, Were, Their, There, What, Please, Much, and Thank.

During the eight hours of tutorials, T seemed to enjoy the sessions by the enthusiasm shown in working the the clay and sharing how he/she created the image for example with 'there' - the tree represented 'there' and to T that was a place – Hawaii. T wanted to be 'there' (Hawaii) and talked about this while making his tree – "I am going there. That is Hawaii." T tended to work quickly with the clay. It was observed that when T seemed tired as indicated by yawning and that they worked slowly in creating the clay model.

Post-tutoring

After eight hours of tutoring, T scored three out of eight for the second time. Along with this there were three misspelled words that were phonetically correct.

Overall this learner participant's correct spelling dropped, though the misspelled words that were phonetically correct increased. A potential reason for the drop in the number of correct spelling could be that the participant reported having a bad day at school and was upset prior to doing the spelling test.

Tables 1 and 2(below) summarize the pre and post tutoring spelling test results for each of the four participants.

Table 1.1: Summary of Pre Symbol Mastery Tutoring Spelling

Participant	Test	Correct	Phonetically correct	Not attempted
T	Pre-test	4	2	
B	Pre-test	3	4	
N	Pre-test	1	2	
G	Pre-test	3	4	1

Table 1.2: Summary of Post Symbol Mastery Tutoring Spelling

Individual	Test	Correct	Phonetically correct	Not attempted
T	Post-test	3	3	
B	Post-test	4	3	
N	Post-test	2	7	
G	Post-test	4	4	

The above information indicates that there were improvements in spelling and phonetical spelling, based on the eight hours of tutoring in Symbol Mastery. The results of the pre/post spelling tests demonstrate that two student participants made gains, one remained the same and one decreased. This confirms Davis' (Davis and Braun 1994) notion that doing Symbol Mastery may help with spelling achievement. Overall results show some improvement in spelling of the Dolch words. This appears to support the conclusions reached by Ehri (1989) that taking an abstract Dolch word to a concrete level, in this case by using Symbol Mastery helps improve word acquisition. In my opinion further research is indicated.

Confidence

Pre-Tutoring

Prior to the tutoring student participants felt they had little confidence in their ability to spell correctly. Three rated themselves as 'poor spellers' and one as a 'good' speller. All parents reported a lack of confidence in their student participants spelling ability. It appeared this lack of confidence lead to two participants using avoidance behaviors with one parent reporting they "don't do it," while another observed that they "walk away" when asked to spell.

The principle researcher observed behaviors such as slouching in the chair when writing, tight grips on pencils, and head down so avoiding eye contact as possible signs of a lack of confidence in their abilities when asked to spell. One participant walked away and then came back a few minutes later, while another commented, "I am getting anxious." This was before the spelling test was administered.

Post-Tutoring

On completion of eight hours of tutoring, three out of four learner participants felt their spelling had improved. Increased confidence in their spelling abilities was reflected by all learner participants' attempting all the words. This had not occurred in the pre-tutoring spelling test.

For one participant who before the tutoring became upset at being asked to write similar sounding words when actually it was a homonym, post-tutoring said "Oh it's not that their, it's the other" (The word was given in the same sentence as in the pre-test).

Three parents reported that their child felt more confident in their spelling ability "sometimes." This was indicated by comments "not being afraid to write things down." Another reported their child was "more willing to try and solve the spelling themselves." A different parent observed that their child was less anxious than previously.

Only one parent reported that there had been no change in their child's confidence.

The principle researcher observed behaviors which seemed to indicate increased confidence. These included: sitting straighter to write, a looser pencil grip, and while initially most of the participants' remarked they would prefer not to take the spelling test; after the completion of the tutoring they were more willing to take the spelling test and completed all words.

The researcher's observations confirmed an increase in confidence. For example one of the student participants chose to do the spelling standing up which seems to imply that they were confident enough to do it in a way that they preferred. Where as previously they had sat hunched over the paper tightly clutching their pencil.

Another example that seems to indicate confidence noted by the observations was students self-correcting and proudly implementing their spelling understandings in discussion with the researcher.

Limitations

This research was focused on the participants' experiences and responses; with secondary responses coming from the parents, while the third response was from the principle researcher. The principle researcher's primary source was the participants' comments, observing and recording their responses. It is possible that another paper could be written in the future focusing on the parents and principle researcher's responses, experiences and observations.

The age of the participants may have had an impact on how willing they were to use the clay. Younger participants and those who 'enjoyed' creating appeared to enjoy the process most. The sex and age of older participants may have impacted their willingness to use the clay as they may have perceived it as 'childish' or 'uncool'. This could be investigated in future studies.

Before agreeing to the program all the participants' had an opportunity to experience the clay through a period of exploration and free play. The free play appeared to break down some of the barriers to using the clay for some of the participants as they agreed to use the clay to create the letters and visual definitions. For those who preferred not to touch the clay, gloves were provided.

I feel the study indicates that further research: a) using a larger group of students who can both be Three Dimensional Visual Thinkers and non-Three Dimensional Visual Thinkers; which could act as a control group; b) following the participants for a longer period of time to see if the results stay the same, increase or decrease without ongoing tutoring; c) research could perhaps look at participants with ongoing follow up over a longer period of time; d) parents and researchers observations and comments could form the basis of other research; and e) different environments could be explored. For example: traditional classrooms, home school situations, tutoring groups; and how effective Symbol Mastery is in these settings.

Conclusion

This was a small case study which indicates that there is some support for the multi-sensory Symbol Mastery approach, as it enriches the experience of words and enhances associated memories as previously suggested by Shams and Seitz (2005) (cited in Kast 2011). The Symbol Mastery system also improves the integration of information related to a word's meaning and spelling (Davis and Braun 1994). Enjoyment of the creative process demonstrated by three out of four student participants appears to support Warwick's 2005 observation about students being highly motivated towards creating their own clay models.

Symbol Mastery appears to be very engaging and participants were motivated to create their models. This supports Davis' (Davis and Braun 1994, 65) contention that if learning was more "interesting and entertaining they (students) would learn faster and more thoroughly."

Based on this small study Symbol Mastery may be an approach that dyslexics, specifically Three Dimensional Visual Thinkers could utilize to increase their confidence and ability to spell words. This is particularly useful when attempting to spell Dolch words which often cause the

most problems for this type of learner. While the study was limited by the small number of participants and the limited time of the program and research, the findings suggest that Symbol Mastery has benefits and should be further researched.

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Not Just Playing with Clay Change Note

Reviewer 1:

A few concepts need to be clarified (see paper).

All concepts highlighted by Reviewer 1 have been clarified.

The author should discuss his/her research question earlier on in the paper, prior to the methodology. At present, the question is presented right before the findings.

The research question has been moved and presented along with the aims of the research, prior to the methodology.

Reviewer 2:

The reference list did not include all the citations within the article.

The reference list now contains all the citations in the article.

This article presented the case study in a straight-forward fashion *without demonstrating a critical awareness* of alternative or competing perspectives. I felt the reporting style, while being clear and direct, was also green in a way that is more descriptive than interpretative.

For example, one of the four participants clearly showed no interest in making clay models. This *must be discussed further* in relation to *why he thought using technology to draw was way better than getting his fingers dirty and play with clay*. In this case, his creativity lies in computer graphics rather than indulging with raw clay; in a way, he can still be considered as a 3D visual thinker, but not through the medium of clay modelling.

This issue was address in the paper, with further description and critical analysis.

In order for other researchers to replicate this study in the future, the author must address the method section more carefully. No *detailed description was recorded as to how to instruct the kids to do clay modelling.*

We have now described in much more details the processes, so that other researchers can replicate this study.

The eight words from the Dolch list test were not included; this led to further confusion for the readers as to which words besides “their-there” were being referred to.

All words are now mentioned in the article .

Furthermore, the model of a ‘tree’ was made by one participant to indicate the word ‘Hawaii’. To me as an outside observer, a tropical tree may be associated with the word island, but why ‘Hawaii’, not the word ‘Bali’ instead. And how did a tree model help the kid to spell the word

'Hawaii' successfully? There would be a huge missing link in the thought processing of a normal person, let alone a dyslexic kid.

This is now further explained in the text. The child chose 'Hawaii' as a place to go 'there'.

The author was conscious of the limitations of the study: only two out of four participants showed slight improvements in spelling in post-tests; yet *he/she concluded the usefulness of this approach in a premature fashion.*

This has been changed to read that the method may be useful, but more research is needed.

I feel that this article did not effectively advance the themes that the article sets out to address, although there was merit about the study being a useful tool to further investigate the hypothesis that "3D Visual Thinkers, by doing symbol mastery were helped with the spelling and retention of Dolch words" (p.13 research question). However, the value of this study will increase with *the re-writing of the method, and interpretation and discussion of results*, even if the results were not one-directional.

This section has been rewritten, with further interpretation and discussion

Other considerations should include the age-range of the participants, gender, and how these variables might or might not contribute to the amount of enthusiasm with them playing with clay.

Further discussion of limitations is now included.

Would there be any difference between the home-schooled kid and the other three school kids in terms of their receptiveness to try new ways of learning, knowing and experimenting?

This is certainly another point to consider, but in a future paper. This paper set about to address to main findings, and has done so.

What could be the possible explanations to the kids' reluctance to take pre or post-tests?

This is now discussed in the article

Reporting on parents' views further would give this study another edge, and what about researcher's own learning through conducting this research? All of these can enrich the final discussion section and extend the "so what" of this study.

These perspectives could be covered in another paper, but the focus here is on the children's learning. This is clarified in the article.

Applicability of this study has to be added after the revision of the method and result sections.

This has been added.

It needs minor proofing only.

This was done with the revisions.