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# The use of interactive educational animated series to enhance second language development in preschool children

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# The Use of Interactive Educational Animated Series to Enhance Second Language Development in Preschool Children

A Research Report submitted in partial fulfillment of the requirement for the Degree of Masters of Arts in Digital Animation at the University of the Witwatersrand (Wits School of Art) Johannesburg, South Africa

By

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12 October 2015

# Declaration

I declare that this research report and abstract are my own unaided work. Proper accreditation has been given to all outside sources.

This report has not been submitted to another university or institution of higher learning. No part of this report has been published in any journals or social media.



**Claire Dongo**

on this 12th day of October 2015.

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# Introduction

The use of interactive educational animated series to enhance second language acquisition in preschool children has been widely successful in the United States of America (USA) with programmes like *Dora the Explorer (Dora) and Blues Clues*. It is important to mention that educational animation is not always interactive, but *Dora* in particular is considered to be interactive because during each episode the characters prompt the viewer to actively participate in the adventure through repetition of words, singing and other activities.

*Dora* was translated into thirty languages across the globe (Gifford, "Barista Kids"), but not a single African language. There is a need in southern Africa for this kind of series, as the rate of migration has increased over the last decade both within the region itself and to other parts of the world. These migration patterns have forced people from different language backgrounds to co-habit the same locations. This has had a ripple effect of language barriers that have created social problems, in particular segregation, which is largely due to miscommunication. There is a need to maintain identity and at the same time learn each other's languages, especially among children. There are several languages in southern Africa and there is a need for children in this area to be exposed to and learn these languages at an early age.

The current investigation comprises four distinct parts. The first section will explore the theories that have been put forward by other researchers into how children learn in general, with a particular focus on language acquisition. This issue is an area of great debate and as a result there are many theories that need to be considered. Linda Pound in her book *How Children Learn: from Montessori to Vygotsky* presents over thirty theorists, all with different views on the subject, which makes this aspect of the research very extensive. Due to the vastness of the subject there is a need to narrow down the information. This paper will therefore focus on theories that deal specifically with how children learn or acquire language. Most of the theories that focus on how children

acquire language deal with first language acquisition even though the focus of this research is on second language acquisition. There are more similarities than differences between how children acquire their first and second language as will be revealed in the chapter with supporting evidence (Nap-Kolhoff 16). For most children between the ages of three and seven, during the time that they are acquiring a second language they have a basic foundation of the first language, but are still building up more structure in their first language. Some are actually learning the first and the second languages at the same time, side by side, and these children are regarded as bilingual.

In this section, there is a need to also take a look at theories that deal with unintentional learning in an informal setting. Due to the nature of the current study this suggests an analysis into theories that encourage play as a form of learning. According to Davidson's short film titled *How Children Learn*, unintentional learning is believed to be the biggest and most effective source of learning for most children. Play is regarded to be part of unintentional learning. There are various theories that support learning through play that will be discussed in this chapter.

While educational interactive animated series does not necessarily fall under play it is a medium that children enjoy and by its nature of being interactive with children responding to calls of action as opposed to passively watching the content, it would then fall under play. If it is well designed and follows the researched design principles proposed by Richard Mayer, it can be an effective tool that can increase interest and motivation in learning (Lowe and Schnotz (i)). VIA University in Denmark promote the use of animation as a learning aid claiming that the use of animation develops critical skills in children such as competency in storytelling, visual communication, cognition, and encompasses emotional ethic and aesthetic aspects, observation and sensitive aspects, and concentration among many others ("Animation as a Learning Tool").

The second part takes a look at educational animation, the benefits and pitfalls. There is plenty of scepticism amongst parents as to the value of edutainment with educational animation falling under this category. For most parents the link between education and

entertainment is very blurry as the content of some educational animation being produced has more of an entertainment rather than an educational value. Richard Mayer, a leading expert in the field of multimedia, supports this aspect of the blurred link between education and entertainment in edutainment, as he believes most educational animation being created is less effective than it should be. Mayer says that this is because the content creators are placing too much emphasis on the technology as opposed to the actual content and its design (Lowe and Schnotz, 32). Mayer argues that educational content designers can get carried away with technology such as the type of software and the need to showcase the power of the technology and therefore the content becomes centred on the technology. He believes that for learners to gain value from educational animation there are certain principles that need to be followed when designing the content in collaboration with an understanding of how children learn and being sensitive to these needs (Lowe and Schnotz 33). This means that the design of edutainment should be learner-centred as opposed to technology-centred. For this reason, this research will take an in-depth look at Richard Mayer's principles of learning with animation.

The principles of learning with animation are largely based on his cognitive theory of multimedia learning (Lowe and Schnotz 33). Mayer has dedicated most of his life to studying the field of multimedia and how it can best be used to support learning. He has collaborated with other various researchers to conduct empirical studies to support his theories. This provides an opportunity for understanding as to how effective educational animation is created and offers the necessary foundation and understanding to be able to analyse the chosen case study – *Dora the Explorer*.

The analysis of the *Dora* series forms the third part of this research report. The series was identified as important for this investigation because there are several aspects of the show that connect with the current study that will be discussed in detail in the chapter. The analysis of the case study involves taking a brief look at history and the making of the series. The research also takes a critical look at the first three episodes of the first season and analysing them against Mayer's researched principles of learning with animation as well as the learning theories discussed in Chapter One.

Even though there is very little written about African educational television, the fourth and final part of the research report takes a look at the current educational content in southern Africa targeted at children, such as *Takalani Sesame* and *Magic Cellar*. The research analyses the conception and making of these shows in comparison to *Dora*. This allows a conclusion to be drawn on how the development and use of interactive educational animated series as an effective language-teaching tool for children aged three-seven years old in southern Africa can add value to the current television content.

# Chapter One: How Children Learn

## 1. 1. How children acquire a second language.

The method in which children develop/acquire a second language has been the subject of much debate amongst educational theorists in the past and present. There are various studies associated with how children acquire a second language. One of the key texts on the subject is a book based on a doctoral thesis titled *Second Language Acquisition in Early Childhood: A Longitudinal Multiple Case Study of Turkish-Dutch Children* written by Elma Marcelle Nap-Kolhoff (2010). Second Language Acquisition is referred to as SLA or L2. The primary language, which is also known as the mother tongue, is normally referred to as L1. Nap-Kolhoff discusses that while these educational theorists disagree with each other, some are influenced by each other's ideas and widely agree that SLA is greatly influenced by L1 and in most instances the learning structures are the same, especially in pre-pubescent children. "Child second language learners learn their second language in situations that are similar to first language learners…" (Nap-Kolhoff 16). It is important to note that SLA also refers to third, fourth and fifth languages.

Barry McLaughlin in his book *Children's Second Language Learning,* cited the 1978 work of H. Wode that studied four English-speaking children aged three to seven years who were acquiring German as a second language. Wode's studies revealed that the children's developmental sequences were similar to those found in monolingual German children (McLaughlin 10). While there have been many studies that suggest similarities there have also been a few that highlight the differences. Wode noted that in his research on German speaking children learning English as a second language he observed a stage in understanding the negative in which the negative element was placed after the verb, a structure that heavily reflects the word order of the child's first language, referring to the German language. This suggests that children use knowledge of the first language to decipher the structure of the second (McLaughlin 11). McLaughlin also declares that another major difference is the child learner's attitude towards the second language has a great effect on the child's success in mastering the second language. The learner who is

positively predisposed toward the second language and culture is more motivated to learn the language (McLaughlin 14). This supports the idea of utilising something that grabs the attention and interest of children and in turn moulds a positive attitude such as play. It is, therefore, important to analyse both theories of first and second language acquisition as they clearly intertwine.

Most of the findings are theories related to first language acquisition. The three key theories are behaviorism theory led by Burrhus Skinner, the social interactionist theory led by Lev Vygotsky and finally the innatist theory led by Noam Chomsky. All these theories are applicable in second language acquisition as first language acquisition is very similar and closely linked with second language acquisition.

### 1.1.1. Behaviorism Theories

In the early twentieth century a study of behaviorism in education arose. One of the leading theorists of behaviourism was Gordon Allport who stated that the mind is nothing but behavior which meant that children's first words where meaningless sounds that became habits through repetition and the processes of stimulus and response (Pound 43). This highlights that repetition is an important element because if something is repeated enough times it becomes part of one's memory unintentionally. Behaviourist theory is responsible for teaching methods that focus on repetition of words. They "…generally believe that all behaviour is learned and that it can be shaped" (Pound 43). Behaviorism is also known as the learning theory (Pound 43) and at present has become a major learning theory emphasizing stimulus, response and reinforcement. For example, to learn the word *ball,* the child would first associate the word *ball* with a spherical object, which is the stimulus. Next the child would produce the word by imitation, which would be the child's response, at which time an adult would praise the child for saying *ball,* thereby reinforcing the child's correct verbal response (Peregoy and Boyle 46). In this particular example interactive animation would be a useful tool to impart this knowledge as the child can relate to seeing the visual of the ball and the word being communicated with audio at the same time as the visual appears, followed by a cue asking the child to imitate the word and finally an audio response praising the child for imitating the word.

Allport, however, failed to explain how children learn to produce sentences and acquire grammar, which made his theory incomplete. Burrhus Frederic Skinner attempted to explain that children learn language from "long experience in a verbal community" meaning that children learnt from gradually repeating what they heard in their environment that is similar to Lev Vygotsky's social learning theory (Nap-Kolhoff 5).

### 1.1.2. Social Interactionist Theories

Lev Vygotsky is another theorist whose work has proved to be vital in the field of how children learn with a specialization in language. His theory later came to be known as the social interactionist theory (Peregoy and Boyle 48). He "was a Soviet psychologist whose book, *Thought and Language*, has become a classic text in university courses on psycholinguistics" (Pound 39). He believed that children's language skills originated from social interaction between the child and others. He observed the importance of children talking with adults about familiar everyday experiences as this built up knowledge of language and awareness of particular ways of thinking and interpreting their own experiences (Pound 40). "Interactionists study the language mothers and caregivers use when caring for infants and young children, with special attention to modifications they make during these social interactions to assist children in communication" (Peregoy and Boyle 48). An example given is that of a conversation between a mother and her child, when the child says "Birthday cake Megan house" the mother corrects her child and expands her vocabulary by responding "We had birthday cake at Megan's house" (Peregoy and Boyle 48). Vygotsky "also thought that play and imagination were important to development and learning" (Pound 40). Vygotsky's work offers vital information in the pursuit to understand how children generally learn. It further cements the importance of constant exposure from adults and other older children as a great source of learning for children in general and the role of social interaction between the child and his/her environment.

### 1.1.3. Innatist Theories

Language acquisition has been linked with age claiming that early childhood is the best period in which to learn a variety of languages, as some language-learning abilities tend to decrease with age. John Comenius, who has been referred to as the father of modern education stated in his theory that education begins in early childhood thus it is a vital time to provide the best/most effective learning aids (Pound 5). He recommended in his studies of how children learn that the use of a combination of sensory experiences enhance learning. Animation utilises a combination of sight and hearing sensors at the same time. His understanding of the importance of learning through the senses and the holistic nature of learning remains the cornerstones of educational theories today. His theories and philosophies have had a strong influence on the way that we view contemporary learning (Pound 5). Language acquisition's link with age has been one of the most controversial issues in this area of study. Eric Lenneberg was a linguist who pioneered the critical period hypothesis for language acquisition and his theory supports this claim. He claims "humans are able to learn their first language between the ages of two and twelve… After the age of twelve the hemispheric lateralisation in the brain is complete and this makes language acquisition from this point on difficult" (Nap-Kolhoff 15). This is crucial to this study as it reveals that the best period for one to learn languages is when one is young and the brain is still developing. Trying to learn a second language tends to become more difficult with age therefore the learning of languages should be encouraged at an early age.

Lenneberg's theory was further supported by Noam Chomsky, an American linguist who is sometimes described as "the father of modern linguistics" (Fox) who concluded in his language acquisition theory that "human beings are endowed with a 'Language Acquisition Device' LAD which guides the process of learning" (Nap-Kolhoff 6). Chomsky's study came to be known as the Innatist theory. Linguists working in the Chomskyan generative tradition believed that the LAD disappeared with maturity. They argued that the differences in word-order patterns they observed in the acquisition of German by children and adults are explained by the fact that children make use of LAD whereas adults use only "general learning (problem solving) strategies" (Nap-Kolhoff

12). This further supports the “Critical Period” hypothesis and encourages learning of languages at an early age. Both Lenneberg and Chomsky’s work validates the target age of the study to be the peak and perfect age to encourage second language learning as most children by the age of three have already started to talk and are continuing to learn their initial language and the LAD is still in play.

Suzanne Peregoy and Owen Boyle who co-wrote a book titled *Reading, Writing and Learning in ESL (English as a Second Language): A Resource Book for Teaching K-12 English Learners* also discuss language acquisition theories. They state that Chomsky believed that grammar comes embedded in children and is a whole separate process on its own that is triggered during the language learning phase as they are learning words. Chomsky gave an example “that a child may hypothesize the rule that *all* plural nouns end with an -s. Thus when they come to a word such as *child,* they form the plural as *childs,* or when they come to the word *man,* they say *mans* for the plural. Gradually, they will revise their hypothesis to accommodate exceptions to the plural rule. Thus children create sentences by using rules rather than by merely repeating messages they have heard…” (Peregoy and Boyle 47). This in a way answered what Allport failed to explain. All the theories make valid points in certain aspects, but it is a fact that most of the theories are seemingly not fully developed, as evidenced in the findings (Peregoy and Boyle 47).

Chomsky disputed Skinner because he believed that the linguistic input that children received from their environment was too “poor”, meaning that it was not always grammatically correct and contained false starts and interruptions and was often limited in scope. This gave rise to his theory that children came embedded with a LAD (Nap-Kolhoff 5).

Howard Gardner, a psychologist from Harvard, later stated that Chomsky “was too dismissive of the ways that mothers and others who bring up children help infants to acquire language.” (Peregoy and Boyle 47). Gardner argued that “while the principles of grammar may indeed be acquired with little help from parents or other caretakers, adults

are needed to help children build a rich vocabulary, master the rules of discourse, and distinguish between culturally acceptable and unacceptable forms of expression." (Peregoy and Boyle 47). Gardner's ideas stem from the social interactionist theories of Lev Vygotsky. This clearly shows that whilst each theorist has a valid point, his or her thoughts are not always complete or are lacking in one way or another.

One of the educational language theories that are seemingly fully developed mentioned in Peregoy and Boyle's book is that of Stephen Krashen whose work was a continuation of the innatist theory. Krashen developed a series of hypotheses about second language acquisition that have taken root in the field of second language teaching due in part to his desire to address classroom second language learning (Peregoy and Boyle 53). This seemed to be a complete theory because it appeared to incorporate all the theories mentioned earlier. Krashen realized that the factors that influence how children acquire language cannot be compartmentalized into just one package but should be separated. This theory is divided into five different hypotheses, which are: The acquisition-learning hypothesis, the monitor hypothesis, the natural order hypothesis, the input hypothesis and lastly the affective filter hypothesis (Peregoy and Boyle 53).

*The acquisition-learning hypothesis*

According to Krashen the acquisition-learning hypothesis states that there is a distinct difference between acquisition and learning a second language. SLA is a natural development process similar to first language acquisition with no particular attention to form. Learning a second language, however, refers to a formal, conscious and structured study of language forms and functions. Acquisition process takes place when the target language is used in meaningful interactions with native speakers (Peregoy and Boyle 53). Krashen goes on to mention that learning cannot turn into acquisition and that it is only acquired language that is available for natural fluent communication. This has caused considerable controversy in the academic community. Krashen's critics have highlighted that it would be extremely difficult to differentiate which system, acquisition or learning is at work in any instance of language use (Peregoy and Boyle 54).

*The Monitor Hypothesis*

The monitor hypothesis suggests that the formal study of language leads to the development of an internal grammar monitor. This monitor is easier to use when writing than speaking as it requires sufficient time, focus on grammatical form and great knowledge of the rules of the language. Krashen maintains that knowing the rules only polishes one's language skills. From this assumption he concludes that language teaching's focus should be on communication and not rule learning. (Peregoy and Boyle 54).

*The Natural Order Hypothesis*

The natural order hypothesis suggests that learners gradually acquire the rules of a language such as grammar in a natural and predictable sequence. For example certain grammatical features tend to be easily acquired earlier while others tend to be acquired more easily at a later stage. He states that there are a considerable number of morpheme studies that support this natural order of acquisition (Peregoy and Boyle 54).

*The Input Hypothesis*

The input hypothesis suggests that language acquisition is a "direct result of the learners' understanding of the target language in natural communication situations." (Peregoy and Boyle 54). Krashen discusses that understanding the language can be made more comprehensible by the use of extra linguistic information and cues such as gestures, pictures and audio.

*The Affective Filter Hypothesis*

The affective filter hypothesis suggests that a low anxiety environment promotes better and progressive language acquisition. A low anxiety environment encourages student motivation, and promotes self-esteem and self-confidence in the learner. (Peregoy and Boyle 54). This suggests a playful environment, which allows the child to let their guard down.

The most important aspects of Krashen's hypotheses are the differentiation between

learning and acquisition and that acquisition requires a greater focus on communication as opposed to grammatical form. It is important to mention that Krashen's hypotheses are also similar to Vygotsky's theory as they encourage natural communication and conversations with native speakers, which is part of social interaction.

## 1.2. Children's Educational Theories

How children acquire a second language is the focus of the research, but it is vital to take a brief look at how children learn in general as this also affects how they acquire language. There are several educational theories that are associated with the methods of how children learn. This section will focus primarily on theories that discuss and encourage play as a form of learning and deal specifically with language acquisition.

According to Linda Pound in her book *How Children Learn*, all of us learn best when we have an interest in what we are doing as opposed to being forced to do something. Children are drawn naturally to play and can concentrate for long periods in their self-chosen play activities (Pound, 74). Play provides children with control and makes them feel competent without fear of getting it wrong; they are able to makes sense of their own (often confusing) world. Play enhances creativity, imagination and gives them a chance to learn at their own pace (Pound, 74). Friedrich Froebel is a theorist well known for saying that play is a child's work. "His influence is evident today in the emphasis on the play in early childhood education…" (Pound 14). Froebel strongly believed that play had a place in a child's development, believing that it fostered enjoyment, emotional well-being and was a fundamental source of benefit (Pound 15). A greater part of children's learning comes from their environment and what they are exposed to. A greater part of what children are exposed to whilst growing up is play.

Froebel highlighted the idea that children should be allowed to be children, enjoying the things that children enjoy without having to be concerned about what comes next (Pound 15). Froebel's theory suggested that children benefited from play subconsciously.
He was among the first educationists to appreciate the value of educational songs and

developed songs and rhymes for young children that were published in 1878 (Pound 16). Froebel's work was further supported by the work of Sigmund Freud. Pound discusses that even though Freud's theories have generally been more influential in therapy than in education, they do have a place in education such as the role of the unconscious (Pound 17).

Sigmund Freud's "theory drew attention to the importance of early experience and the unconscious in relation to the development of personality" (Pound 20). Freud's theory in relation to everyday life is that when children develop their personalities there is nothing intentional about the development. They are learning something from their surroundings that influences their personalities unintentionally thus supporting his theory of the unconscious mind. This suggests that children gain or acquire information naturally without actively seeking to learn. Pound discusses, "Psychoanalytic theories, derived from the work of Sigmund Freud, have some place in education such as the idea of helping children come to terms with their fears through play" (17). Children tend to learn a great deal unintentionally, which is very different from adults' intentional learning driven by a purpose. Adults tend to actively and consciously seek learning, whereas children just pick up ideas easily and a great source of this unintentional learning is through play.

Most of the theories have influenced each other. One specific theme that seems to thread through most of these is the importance of early learning exposure and how children learn best when they feel free and enjoy what they are doing. There is great emphasis on allowing children the room to develop on their own and as such encouragement towards play.

In her book, Pound points out that there are several arguments that support play as a valuable source of learning for children, which are linked to various learning theories. The first one is the romantic argument that states that play is part of every child's nature and they are generally happy while they are playing and learning which adds to their motivation and promotes their understanding. This is closely linked to Froebel's theory of

learning.

The behaviourist argument states that play can be used as a form of reward that suggests that after learning children deserve to play (Pound 74). This is similar to Burrhus Skinner's theory that states that learning is a string of behaviours that children pick up from observing adults (Pound 43). This also supports Vygotsky's social learning theory. There is also the cognitive argument that states that more recent theories of play, such as Lev Vygotsky's theory, emphasize play's contribution to the development of communication skills, problem-solving skills and an understanding of social rules to mention a few (Pound 74).

All the findings above support play as a healthy source of learning for children, thereby making a strong case for interactive animation as a suitable medium to teach children if implemented in a certain manner. While educational interactive animated series do not quite fall under play it is a medium that children enjoy and by its nature of being interactive with children responding to calls of action as opposed to passively watching the content, it could then be considered play, as there is an active exchange of ideas.

In recent years the work of Howard Gardner, a professor of Cognition and Education at Harvard University, has also shed light on how children learn (Pound 63). Gardner's work focuses on how people are intelligent as opposed to how much intelligence they have. His work was named the multiple intelligence theory (Pound 64). Gardner suggested that intelligence could be split into different categories, which are linguistic intelligence, logical-mathematical intelligence, bodily-kinaesthetic intelligence, musical intelligence, spatial intelligence, naturalist intelligence and interpersonal and intrapersonal intelligence (Pound 65). This suggests that the different intelligences are exercised at different intervals and influenced by different sources.

Gardner considered that these intelligences are present in everyone depending on each individual's exposure to the different faculties. This means that language intelligence is present in everyone and levels of ability differ due to level of exposure. This is similar to Lev Vygotsky's theory of social interaction and differs in the source of exposure. It is

important to mention that Gardner's theory is part of the basis of *Dora's* curriculum (Gifford, Barista Kids).

In conclusion of the findings of the various educational theories, the information presented has provided an understanding as to how children generally learn and acquire language. The key aspects of the findings are that there is one specific theme that threads through most of the theories, which is the importance of early learning exposure, as a child's mind is a fresh slate with very little information occupying it and the LAD is still present. In addition, children learn best when they feel free and enjoy what they are doing as this fosters a low-pressure learning environment. There is great emphasis on allowing children room to develop on their own and encouragement towards play. The importance of social interaction and exposure is another important aspect as this contributes to a greater part of unintentional learning. Unintentional learning is cited in Davidson's film, *How Children Learn,* as the best way for children to learn as opposed to structured learning as it places less pressure on the child's mind and makes it easier to grasp concepts. This is vital information, as it will aid in the analysis of the case study to look out for specific applications and influence of the various theories in the development of educational interactive animated content.

# Chapter Two: Educational Animation

## 2.1. Learning with Animation

Mediums of imparting knowledge to children have changed over the years and this is mainly due to the ever-evolving technology of the contemporary world. The use of animation for the purposes of education has rapidly increased largely due to progression in information and communication technology.

VIA University in Denmark, on their website for their programme *Animation as a Learning Tool* promote the use of animation as a fun and effective tool to encourage learning among young children. They claim that by utilising animation, "children develop skills and competencies in storytelling, visual communication, cognition, emotional ethic and aesthetic aspects, observation and sensitive aspects, concentration, and problem solving and innovative aspects" ("Animation as a Learning Tool")

In the book *Learning with Animation – Research Implications for Design*, an internationally recognized expert in the field of multimedia learning, Richard E. Mayer, advocates that for educational animation to be beneficial to the learner, the designer of the instructional material needs to have an understanding of how the learner's mind works (Mayer 32). This is the reason it was relevant to delve into the methods of children's learning in the first chapter. Mayer's argument is based on the difference between technology-centered design versus learner-centered design approaches to educational technology (Lowe and Schnotz vii). Mayer poses an example that some designers take a technology-based approach in their eagerness to show off the latest technology and advances in the computer-based graphics and apply them to educational instructional material. This can result in instructional material that does not take into account how children learn and will overload the children's cognitive system (Mayer 32).

Mayer discusses the cognitive theory of multimedia learning. Cognition is defined as the mental action or process of acquiring knowledge and understanding through thought,

experience and the senses (Apple Dictionary). He emphasizes that understanding the role of the learner's cognitive processes during learning is particularly important for animation-based instruction because animation can easily overload the learner's information processing system. The cognitive theory of multimedia learning is based on three elements, which are dual channels, limited capacity and generative processing (Mayer 33). This is illustrated in Figure 1 below.

When animation is presented there are two channels that capture the information, which are audio and visual. The eyes and the ears capture the words (depending if they are spoken or displayed on screen) and the eyes capture the pictures. This means that learners possess two separate channels: one for processing verbal material and another for processing imagery. According to Mayer the amount of information that the two channels can capture in the form of words and visuals that is then stored in the sensory memory is limited. The process of selecting the words and images and organizing them for further processing takes place in the working memory and this is generative processing. The generative process is also where sounds are converted into images and images are converted into sounds. The integration of the two channels and prior knowledge from the long-term memory also takes place in the working memory and learning occurs (Mayer 34).

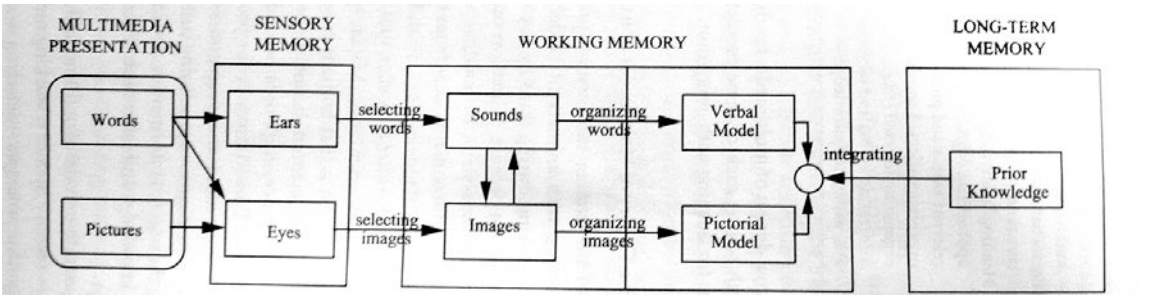


**Fig 1**: The cognitive theory of multimedia learning. Source: Richard Lowe and Wolfgang Schnotz, Eds. *Learning with Animation: Research Implications for Design* (New York: Cambridge University Press, 2008) 34. Print.

The first cognitive process takes place in the selection of the relevant sounds and imagery for further processing. The second cognitive process takes place when the selected words are organized into the verbal model and the selected imagery is organized into the pictorial model. The third and final cognitive process takes place during the integration of the pictorial model with the verbal model and prior knowledge. Meaningful learning takes place when a learner engages in an appropriate selection of words and imagery as a first step. Secondly they are then able to convert the words into imagery and the imagery into words. Finally the learner is able to process that information with prior knowledge. When there is insufficient selection of appropriate words and imagery, the learning outcome is that no learning has taken place (Mayer 33).

This is similar to the behaviorist theory of how a child is able to associate first the word 'ball' with a visual of a spherical object and is then able to convert that imagery into audio and mixes it with prior knowledge by saying the word 'ball' in an effort to imitate.

Mayer discusses that in any learning situation a learner has a limited capacity to acquire knowledge that must be split among three competing demands: extraneous processing, which involves acquiring knowledge which is purely entertainment and not related to the educational outcome; essential processing which involves acquiring knowledge that is relevant to the lesson's objective (such as selection and early stages of organizing relevant images and sounds); and generative processing which involves deep processing of the relevant images and words that are relevant to the lesson's outcome (Mayer 36).

Mayer's principles for learning with animation are based on understanding these three processes and learning how to split proportionally the limited capacity to aid in better learning outcomes (Mayer 36). The principles are divided into three categories of learning challenges and how to overcome them dealing with the different demanding processes. The first one is reducing extraneous overload, which means managing the entertainment elements of the lesson plan that are not related to the intended outcome (Mayer 41). The second one is managing essential overload, which means children "may have difficulty in learning with animation because the to-be-learned material is too complex, thereby requiring too much essential processing" (Mayer 41). The third and final one is fostering a generative process which means building a sense of social partnership between the

animation and the learner during the selection of relevant portions of the animation and narration, mentally organizing the material into pictorial and verbal mental modes and integrating the models with each other and with prior knowledge (Mayer 44).

### 2.1.1. Research-Based Principles for Learning with Animation

The following are the research-based principles for creating effective educational animation formulated by Richard Mayer, the main focus of the first five being to reduce extraneous overload.

*1. Coherence Principle*

The first principle is the coherence principle, which states "people learn better when extraneous animation or narration elements are excluded rather than included" (Mayer 37). This means that children have a limited processing capacity and if too much of that processing power is dedicated to unnecessary and distracting elements there will be very little processing power left for the important elements. This creates an imbalance and reduces the learning outcome for the children. Mayer provides an example that a major design flaw in educational animated content occurs when the designer includes too many background sounds, instrumental music and unnecessary animation in an effort to spice up the content and this will in-turn distract the learner from the focus of the learning outcome (Mayer 37).

*2. Signaling Principle*

The second principle is the signaling principle, which states "people learn better when cues are added that highlight the organization of the animation or narration" (Mayer 37). This suggests that the use of some extraneous elements might be useful to support essential processing. For example the use of pointer words such as "first…second…third" or the use of directional arrows to attract or direct attention can help the learner allocate cognitive processing to the essential material rather than to the extraneous material (Mayer 39). Below is a screenshot from *Blues Clues* (See fig. 2) an educational animated series, where they utilize arrows to help the viewer follow the animation. In addition the

arrows are highlighted by a glow to make them easily identifiable for the young viewer.




**Fig 2***:* Screenshot of Blues Clues 1. Source: "Meet Blue's Baby Brother", *Nick Jr*. Nickelodeon, n.d. Web. 6 Jan. 2015.

*3. Redundancy Principle*

The third principle is the principle of redundancy, which states "people learn better from animation and narration than from animation, narration and onscreen text at the same time" (Mayer 37). Mayer states, "in an effort to accommodate the learning styles of all learners, instructional designers might be tempted to add concurrent on-screen text to a narrated animation" (Mayer 39). While this might be a noble idea, including this might be very distracting and extraneous in which the learner wastes valuable cognitive capacity on attempting to try and understand the two verbal streams at the same time. This principle instructs the designer to avoid presenting identical streams of written words at the same time as spoken words together with corresponding animation (Mayer 39). For example, as seen in Fig. 3 from *Blues Clues,* if the speech bubble was shown at the same time as a voice over together with some animation, the speech bubble would be very distracting. It creates too much unnecessary work for the viewers, as they would be trying to read, listen and understand the animation at the same time. This would be regarded as repetition as opposed to just listening and watching.




**Fig 3***:* Screenshot of Blues Clues 2. Source: "Periwinkle Blues Clues", *Pixgood*. Pixgood, n.d. Web. 6 Jan. 2015.

*4. Spatial Contiguity Principle*

The fourth principle is the spatial contiguity principle that states "people learn better when corresponding elements of the animation and on-screen text are presented near rather than far from each other on the screen" (Mayer 37). This suggests that layout is an extremely important element of design. On-screen elements need to be laid out in a chronological manner that does not confuse the learner. A confusing layout will add to extraneous overload by wasting the learner's limited capacity trying to understand the layout versus the learning outcome. This principle implies that printed words are to be placed near corresponding parts of the animation to reduce visual scanning as illustrated in a screenshot of *Blues Clues* in Fig. 4.




**Fig 4***:* Screenshot of Blues Clues 3. Source: "Blues Clues Art Time Activities", *Moby Games*. Moby Games, n.d. Web. 6 Jan. 2015.

*5. Temporal Contiguity Principle*

The fifth principle is the temporal contiguity principle. This states that "people learn better when corresponding animation and narration are presented simultaneously rather than successively" (Mayer 37). This further supports the spatial contiguity principle on the importance of layout and suggests that spoken words and visuals should be presented at the same time. For example, when a new word is being introduced verbally it should be simultaneously presented with the corresponding visual, be it an image or an animation to allow the learner to immediately associate the visual with the new word. According to the cognitive theory of multimedia learning sequential presentation of animation and narration creates a form of extraneous overload because the learner must allocate limited cognitive capacity to mentally hold the words in working memory until the visual is presented or vice versa (Mayer 40).

This principle implies that presenting corresponding imagery and narration at the same time is a vital design consideration for instructional designers so as to minimize the need to hold representations in the working memory and thereby adding extra work for the learner to match the corresponding information (Mayer 41).

The second half of the principles is split between managing essential load and fostering generative processing successively.

*6. Segmenting Principle*

The segmenting principle states that "people learn better when a narrated animation is presented in learner paced segments than as a continuous unit" (Mayer 37). This suggests there is a need to break up a lesson into smaller blocks of information at any given time to allow the learner time to absorb information and allow the learner to control the onset of each one. Too much information in one segment can overwhelm the learner thereby overloading their essential processing. This principle encourages the designer to segment the learning outcomes in the same way that facts are presented in point form instead of one long paragraph (Mayer 41).

*7. Pre-training Principle*

The pre-training principle states that "people learn better from a narrated animation when they have had training in the names and characteristics of the main concepts" (Mayer 37). This suggests that in watching a narrated animation learners must engage in two demanding tasks: building component models, for example knowledge of first language, and building a casual model, for example the new language being introduced (Mayer 42). An example of utilization of this principle is in an animated series called *Pocoyo* ("Pocoyo"). At the beginning of every episode the narrator introduces the title character and his friends and gives a general brief of the task at hand, which is pre-training for the viewers.

*8. Modality Principle*

The modality principle states that "people learn better from animation and narration than from animation and on-screen text" (Mayer 37). This suggests that the learner's visual channel maybe overloaded by essential processing demands as the learner's eyes must pay attention to the essential material in the animation at the same time paying attention to essential printed text on-screen. It is therefore encouraged to

offload some of the essential processing from the visual channel to the audio channel by presenting words in spoken form as opposed to written form. In this scenario the audio channel and the visual channel are sharing the task to process the essential information as opposed to overloading one channel (Mayer 43).

The last two principles foster the generative process.

*9. Personalization Principle*

The ninth principle, which states "people learn better when narration is conversational rather than formal style" (Mayer 37). This suggests that information that is presented in an informal structure is more likely to be memorable to the learner as opposed to structured, formal sentences. This also applies to utilization of simple words, rather than words that are rarely used in day-to-day conversations and require one to refer to a dictionary, which will help the learner understand immediately and avoid confusion (Mayer 44).

*10. Voice Principle*

The last principle states, "people learn better when the narration is spoken in a standard-accented human voice than a machine voice or accented human voice" (Mayer 37). This suggests that if the information is presented in a mechanical voice, learners might be less likely to accept the lesson as a social conversation. This can prove to be very distracting and make it difficult for the learner to process the information (Mayer 45). For example in *Blues Clues* and *Pocoyo* they utilize children's voices for the title characters to forge a personal relationship with the young viewers and make them feel as if they are friends.

Mayer criticizes the principles briefly citing the limitations and future directions. Most of the limitations, however, do not apply to this particular research as he comments the need for further research to test the principles in more authentic learning situations – that is with longer lessons, in educational settings and on delayed tests (Mayer 46). This does not apply to this research as we are investigating how children learn in an informal educational setting. Nevertheless, it is useful information as it guides and informs the research on how to create effective educational animation and provides a critical theoretical framework to analyze the case study.

### 2.1.2. Learning Risks with Animation

In the past decade there have been many arguments over the effectiveness of edutainment for children, mostly edutainment delivered through the television. Zühal Okan, a professor at Çukurova University in Turkey, in her paper titled *Edutainment: is learning at risk?* published in the British Journal of Educational technology, discusses the various arguments and concerns that have been put forward over the years. She defines edutainment as a hybrid genre that relies heavily on visual material, on narrative or game-like formats, and on more informal, less didactic styles of address (Okan 255). Educational animation is regarded as edutainment as it is entertainment with the purpose to educate.

The major concern amongst parents and educators is that the entertainment will overshadow the learning and Okan raises the question of whether learning should be fun. Research shows that if Mayer's principle of reducing extraneous overload and managing essential overload are observed and implemented, entertainment overshadowing the educational value can be avoided. It is all about maintaining that balance of the extraneous processing to be just enough to keep the attention span of the learner and maximize on the essential processing without overloading it. Okan further comments that the focus of edutainment design should not be on appeal "instead, it should be well grounded in constructivist learning theory and consider the findings of research on educational technology and educational psychology" (Okan 262). She said that there is a need for parents' critical awareness of a deeper understanding of the role of edutainment products before making assumptions. This awareness requires that before parents make decisions as whether or not to adopt edutainment for the purposes of education for their children, parents need to question the pedagogical and didactic philosophy the software design incorporates (Okan 263). This refers back to the evidence previously cited for the need of the educational animation designers to have thorough knowledge and understanding of how children learn so as to create content that is truly of educational value.

## 2.2. Educational Animation and Language Development

Television media has been cited as one of the biggest influences of language development in children in the last two decades. There have been several studies that have analyzed television's influence on language development. Dr. Kaoruko Kondo and Professor Jeanette Steemers' research paper *Can Television be Good For Children*, cited an article titled *Television and language development in the early years* in the National Literacy Trust Journal in Britain based on the benefits of educational television, in which it is mentioned that most discussions surrounding the issue of television's impact on children, focus only on its negative influence in relation to violence and advertising, for example, and not necessarily on edutainment.

They also said that "given the right conditions, children between the ages of two and five may experience benefits from good-quality educational television. For this group of children there is evidence that attention and comprehension, receptive vocabulary, some expressive language, letter-sound knowledge, and knowledge of narrative and storytelling all benefit from high-quality and age-appropriate educational programming" (Kondo and Steemers 6).

Kondo and Steemers also cite Naigles and Mayeux (2001) who found that in certain circumstances children can learn words and their meanings from educational programmes specifically designed for them (Kondo and Steemers 5). Many studies have shown how young children's language acquisition can benefit from television. However, this seems to be limited primarily to age appropriate programmes with specific educational purposes for three to five year olds (Kondo and Steemers 5). This view refers back to the critical period theory, where there is a great encouragement of language exposure to younger children. Evidence to support the above view was cited in a longitudinal study of children and *Sesame Street*. The parents of children aged three or five years of age kept diaries of their children's viewing over a two and a half year span so that the degree of children's vocabulary growth could be assessed. This study revealed that the younger children (aged three) who viewed more *Sesame Street* between the age of three and five had greater vocabulary growth than those who watched fewer hours (Kondo and Steemers 6). Programmes like *Blue's Clues* and *Dora* in particular were cited to be inviting children to actively solve problems and communicate while they watched thereby encouraging interaction (Kondo and

Steemers 8). This encouragement of interaction gives children the freedom to explore without fearing judgement.

Dr Robin Close also analysed the research surrounding the relationship between television and language development in a research paper on behalf of the National Literacy Trust. Many of the views she expresses in this paper tie back to educational theories and their applicability in modern day society. The general acknowledgement of television as a learning tool has been supported by the growing body of research surrounding educational programming, particularly arising from the *Sesame Street* phenomenon and its thirty years of supporting research (Close 10).

She discusses that the optimal television viewing experience for language development is one that includes exposure to age-appropriate content, to new and familiar words, and which offers possibilities for interaction and adult co-viewing and teaching (Close, 6).
Co-viewing with adults is mentioned not as a necessity but as an added benefit for vocabulary development when children are viewing high-quality and age-appropriate programming and confronted with familiar words and their meanings. Some evidence also suggests that co-viewing aids oral ability and comprehension of unfamiliar words and meanings (Close 6). This co-viewing gives the adult an opportunity to reinforce the child's development and foster encouragement.

Close discusses that repetition of content within each episode by video has been shown to support learning from educational programming. The optimal quantity of video viewing, however, is yet to be identified (Close 6). This further supports the behaviorist theory that encourages constant repetition of learning material for children. This is evident in edutainment series on television as there is plenty of episodic repetition.

Research on language learning in naturalistic settings (as opposed to television) has demonstrated the importance of children's verbal interaction with adults at each stage of development (Close 9). This is supportive of the social interaction theory, which promotes children's constant interaction with their surroundings, as this is a great source of learning for them. She said that language will develop in a child regardless of this input, but current brain development theory argues that adult input stimulates

the brain activity necessary for developing language and enables individuals to fulfill their potential regardless of their genetic makeup (Close 9). This supports the innatist theorists who believe that children are naturally born with ability for language acquisition.

Another commonly cited study reporting significant vocabulary gains is the Rice, Huston, Truglio and Wright in 1990, longitudinal analysis of children's vocabulary development while watching *Sesame Street.* The study utilized one-week diaries of children's television viewing over two years from two cohorts of children, aged three to five and five to seven. Child and family measures were taken of children's vocabulary skills, gender, presence of siblings, parent education, parent encouragement of *Sesame Street* and parent attitudes about television. From their findings they concluded that it appeared that children aged three to three-and-a-half who watched *Sesame Street* could learn new words from the programme independent of adult co-viewing and that this predicted language scores at age five (Close 17-18).

St Peters, Huston and Wright, in their earlier two-year study of 271 children between the ages of three and seven, also watching *Sesame Street,* concluded similar findings. St Peters et al. in 1989 also found that receptive vocabulary in three to five-year- olds, is encouraged by age-appropriate educational television independent of parent co-viewing (Close 18).

Advocates of educational television argue that many language-enhancing activities thought to be associated with parent-child interaction can be replicated at least in part by educational television where there is lack of adult co-viewing. Mabel Rice cited by Close identified many similar characteristics of book reading in *Sesame Street.* She said about *Sesame Street's* educational success that it "closely resembles that of a mother talking to her child, with simple sentences, much talk about the here and now, repeated emphasis on key terms, and an avoidance of abstract terminology" (Close 10)

There is also a discussion about the critical age period but she suggests that edutainment is only of real value to children over two years old as the under-twos are not able to comprehend language or their surroundings very well and have very little crucial prior knowledge to understand context. Citing Anderson and Evans in 2001,

she says that “a reading of research for under-twos points to low attention and little benefit from television for children under one. They suggest that children’s ability to acquire information from television appears at age three” (Close 14).

These findings and reports of the link between language development and edutainment also reveal the importance of understanding the theories on how children learn for educational animation content creators. The ability to understand the link can allow the content creators to create animation that fosters the children’s learning instead of creating the opposite effect. This in-turn provides empirical evidence for the value of edutainment and promoting its use in enhancement of language acquisition in young children.

# Chapter Three: Case Study - Dora the Explorer

## 3.1. History of Dora

In order to critically analyse the case study of the animated series *Dora* there is a need to take a more in depth look into the history and the making of the series so as to get a better understanding of the process of creating a series of this nature and the considerations made to finally arrive to public broadcast. The series was selected for this research because it fits several aspects of the current study. It targets a similar age group of the research, which are preschool children between the ages of three to seven years. Dora is a bilingual young girl and part of the series outcome goals is to expose children to the Spanish culture through language and thereby teaching them the Spanish language. It is an interactive animated series as the title character continually encourages children to actively participate throughout each episode. This makes the content interactive as the children are not just passively watching but are actively interacting with Dora to help her through the adventure.

### 3.1.1. Synopsis

*Dora* is an animated series based on a seven-year-old Latin American girl named Dora. Each episode is twenty-four minutes in duration and is considered interactive with the viewer. Dora is a friendly bilingual girl who has a ‘can do it’ spirit. She is supportive and teaches her young viewers that it is acceptable to ask for help when you need it and constantly asks her audience for assistance. Dora has her friends Boots the monkey, Backpack and Map who accompany her and she invites her young audience to join her on the adventure of a lifetime. The series is targeted at preschool children aged three to seven years (Kabir 5).

In every episode Dora goes on an adventure where she asks for audience participation to help her overcome various obstacles throughout the journey to achieve her end goal. This is done through singing, dancing, clapping, counting and a wide variety of other activities. At the end of every episode Dora and her friends celebrate with song and dance as a reward to accomplishing the set goal. This encourages physical and verbal responses from the children. The encouragement to actively participate constantly makes the series interactive, as the children are not just passively watching

the screen. The communication line becomes a two way street. The interactive aspect of the series made it particularly unique, as there were very few series that encourage this kind of active participation at the time of conception. *Dora* is a ground breaking and extremely successful animated series which was measured in viewership and the successive spin offs and merchandising ("About Dora"). It owes much of its success to this play-along viewing which provides every viewer with a personalised conversation with Dora ("About Dora"). Another aspect that sets the series apart is the fact that Dora is a bilingual girl who constantly mixes the Spanish and English languages in her conversations with the audience and her friends. During the course of an episode the creators are attempting to teach the young viewers the Spanish Language (Hammamy 40).

### 3.1.2. Series Development History

Nickelodeon Studios in New York commissioned the series, which made its debut in the year 2000 on the Nick Jr. Channel. The series has become one of the longest running shows in the history of Nickelodeon (Gifford, "InterAksyon"). Nick Jr. is the studios' associated channel that produces and airs shows that are directly targeted at preschool children (Gifford, "Barista Kids"). Chris Gifford, Valerie Walsh-Valdes and Eric Weiner created the series. In an online interview with Edwin P. Sallan, Chris Gifford shared that for him the inspiration behind the series were his two children. He compares the relationship between the characters Boots and Dora as being very similar to that of his son and daughter's relationship.

In another interview with Kathryn Rao, Gifford mentioned that he saw how difficult it was for his children to problem solve on their own so he thought he could create a show that would help them cope with this challenge. Gifford attributes the success of the show to the fact that Dora makes an effort to include the child viewers in her adventure by asking for their help. He believes that this empowers the children and grabs their attention.

A great deal of research was undertaken to conceptualise and develop the series. According to an interview with Valerie Walsh-Valdes and Chris Gifford published online by the Pittsburgh Post Gazette, even though *Dora* debuted on the screen in

August 2000 work on the series commenced in 1997. This means that three years were dedicated to conceptualisation, research, development, production and testing to find a working formula. During this interview Walsh-Valdes and Gifford shared information regarding the history of the formulation of the series.

Walsh-Valdes and Gifford were approached by Nickelodeon to create a new children's programme (Walsh-Valdes, Gifford). At the time Gifford was an executive producer at Nick Jr. in charge of production and development for the channel's shows. Gifford had previous experience having worked on children's shows such as *3-2-1 Contact* at Public Broadcasting Services (PBS), which is the same network that produced *Sesame Street* (Gifford, "Barista Kids").

They exchanged a number of ideas in the first few months and their first pitch was a live action series that was supposed to incorporate actors in costumes due to budget constraints, but over time their ideas evolved (Walsh-Valdes, Gifford).
The series was later awarded an animation budget and that changed the scope of the project. According to Walsh-Valdes animation allowed them to tap into the 'magical realism' that is in Latin American literature. "We could go to strawberry mountains and have rainbow waterfalls and chocolate lakes" (Walsh-Valdes).

The lead character, Dora, did not start off as a Latin American girl. Initially, 'Dora' was a little girl named 'Nina'. There were a number of reasons for the change of the little girl's name, heritage background and the premise of the series. The first one was that at the time of the development there was a huge population explosion of Latin Americans who were considered under represented in the media (Gifford, "Barista Kids"). At the same time the president of Nickelodeon Studios was Herb Scannel who coincidentally was Latin American and he was keen to support the production of shows that featured his culture in a positive light as their minimal exposure on prime time shows was usually negative (Gifford, "InterAksyon"). At the same time a few of the Nickelodeon top executives just returned from a children's conference in California, where there had been a running debate and discussion about the population explosion of Latin Americans and the under representation of this change in population dynamics in the media (Gifford, "InterAksyon"). "According to the year 2000 United States census Latino communities were not only the fastest growing

population in the nation but they also had the highest population of infant to preschool age children (Havrilla). However, Latino television characters both in children's programming and in prime time are under-represented" (Havrilla). Nickelodeon thus desired to have their on-air programming reflective of their audience and the series came into being (Gifford, "InterAksyon").

It was going to be a first in children's television to have a Latin American female heroine and this was considered ground breaking. There had not been many female heroines in children's television let alone one who was Latin American. The creators of the show were not opposed to this change and welcomed it. They had learnt in their years of developing children's television that their target audience did not have it set in their minds that a person of colour could not be the hero. Children did not come with a prejudice and are very open minded as opposed to adult viewers (Walsh-Valdes, Gifford).

One of the challenges for the team was that none of them was Latin American so they had to hire a team of bilingual writers and consultants, as this became a huge part of the show. Due to the sensitivity of the subject matter they had to make sure that all the small aspects of the culture that were included would be received well by the audience. (Walsh-Valdes, Gifford).

Clara Rodriguez was one of the consultants hired by the team. She was hired as a sociological consultant based on her research on racial/ethnical classifications, the media and Latin Americans as well as her analysis of the representation of Latin Americans on prime time television. She had previous experience as a consultant on *Sesame Street* (Havrilla). Rodriguez provided expert input on various elements of the show such as language, character development, choice of music and many other aspects. This was all in an effort to ensure that the social implications were accurately reflected in the larger society and so what children should see. Any misrepresentations of the culture no matter how small could have a negative backlash on the show. "Using her sociological perspective, her role is to provide the creators of the programme with a greater 'understanding of the historical and structural contexts that influence events, movements and change'" (Havrilla). This assisted the producers of the show, as they tended to focus most of their energy on the final product to be

shown to the viewers and less time on the small details and connotations considered by consultants such as Rodriguez. This collaboration helped create a better and richer final product.

According to an interview of Valerie Walsh-Valdes by Amanda Rock, Nickelodeon's primary curriculum goals for each episode were to:

> "1. Increase viewers' appreciation and awareness of Latino culture, introduce the Spanish language and enhance preschoolers' appreciation for the value of communication in another language.
> 2. Encourage and reinforce preschoolers' emerging cognitive skills in multiple areas of intelligence.
> 3. Support children's problem solving skills.
> 4. Familiarize young children with computers by introducing and using conventions and vocabulary of computer games" (Walsh-Valdes).

Valeria Lovelace designed the curriculum (Gifford, "Barista Kids"). She was the head researcher on *Sesame Street* for many years (Gifford, "Barista Kids"). The educational curriculum of the series is based on Howard Gardner's educational theory of multiple intelligences. As previously discussed, this states that intelligence is not just one body but is split up into different categories. All children possess intelligence, but the levels differ due to exposure that exercises these different categories. The different categories are linguistic intelligence, mathematical/logical intelligence, kinaesthetic intelligence, spatial intelligence, naturalistic intelligence and interpersonal and intrapersonal intelligence (Pound 64).

Gifford highlighted that the team was initially resistant, as they could not imagine how they would be able to fit all the educational aspects into every episode, but eventually they discovered that it actually made it easier to create stories as they used it as a skeleton on which to build (Gifford, "Barista Kids").

Inclusion of Gardner's theory into the curriculum of the show supports the interaction aspect, which the creators had always mentioned was a crucial component of the show. Gifford mentioned

> "one of the things I love most about the show and something

> that makes it unique is that viewers are asked to be active participants – not only by answering questions but by getting off the couch and moving their bodies. Parents tell us they know when *Dora* is on because they'll see and hear their kids playing along with the show: counting, speaking Spanish, jumping, rowing, clapping etc." (Hynd 37).

Examples of Gardner's theory in practice during an interaction exercise is when the child is encouraged to count out loud to assist with a spatial task as one of the intelligences is spatial intelligence. Another example is when the child is encouraged to jump up and down on the spot to help Dora move to the next level; this would be kinaesthetic intelligence being exercised (Hynd 37).

These educational aspects of the show are what interested Walsh-Valdes and Gifford the most when they were brainstorming and creating the show. This also reveals that language was a huge component of the show as well. Walsh-Valdes mentioned,

> "We felt if this show was going to get out there, we had a great responsibility… If you are a really good teacher and present content in an entertaining way, kids will go for it. For preschoolers learning is a great way to pass the time as much as being at the playground. We knew that having an educational hook and using it the right way would be powerful" (Walsh-Valdes).

The audience interaction was heavily influenced by another Nickelodeon show *Blues Clues*. Walsh-Valdes mentioned in an interview that from the beginning they were thinking of breaking the fourth wall[1] as it had previously been done in shows like *Mr Rodgers* and *Blues Clues* (Walsh-Valdes). Gifford also mentioned "plenty of characters had spoken to kids in the past, going back to Captain Kangaroo and Mister Rodgers…but waiting for the answer to a question is something that hadn't been seen as much" (Walsh-Valdes, Gifford). The reason for that seven-second pause is to allow time for the young audience to process and respond. Many adults do not understand the pause but they do realise that they are not the target audience. Gifford highlighted that some of the network executives complained about the pause during their first

[1] Breaking the fourth wall is when characters appear to be aware and interact with the audience (Walsh-Valdes)

screen test pitch. For Dora to wait for a response shows that she cares about what the children have to say in a similar way when Dora says “we did it!” at the end of every episode, this reassures the young viewers that they were part of the journey and that they should rightfully celebrate with her. This is clearly empowering for the children and one of the main reasons why they love Dora so much. All these little gestures are part of her forging and fostering a bond with her viewers (Walsh-Valdes, Gifford).

## 3.2. Production Workflow of an Episode of *Dora*

The general workflow of creating an episode starts with writers generating several general outlines based on the premise of what *Dora* wants to do. This is then storyboarded and transformed into a printed storybook for children to enjoy and interact with. It is then tested on groups of children. The story is read out loud to them, their reactions are noted and changes are made based on the observations. Once it has been shaped enough times through research and testing. It is then turned into a script and then into a storyboard and then into an animatic[2]. The animatic is taken for testing, yet again to the children. After incorporating suggested changes from the testing, finally an episode is born into production (Gifford, “MakChic”). The purpose of testing the animatic with the children after the storybook testing is to make sure there are no details lost in translation of the two mediums (Walsh-Valdes, Gifford).

A key aspect when the outlines are being formulated is that the writers have to state how each of the intelligences will be included and exercised in the episode (Hynd 37). The testing phase is one of the most important stages of the whole workflow process. This allows them a preview to airing and gives them insight into making the best possible product for their audience. They go out to different preschools and spend at least an hour with a group of children. In the first testing phase after sharing the storybook, each researcher takes a child and asks them how they feel about the episode. To help them express their feelings they show the children smiley faces with a wide variety of expressions ranging from very happy, ok to sad. The child has to point to a smiley face and say what it means out loud. Gifford declares that he goes with them on every first day they take a story out (Gifford, “Barista Kids”).

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[2] An animatic is a preliminary version of a film, produced by shooting successive sections of a storyboard and adding a soundtrack (Apple Dictionary)

The researchers also evaluate which parts of the story were well understood and which ones were too difficult. “For example, if there is a counting task in the episode, a researcher will evaluate the counting ability of individual children to ensure that the task in the episode is developmentally appropriate…any sections of the episode that were too difficult or elicited negative feelings during this initial evaluation are removed or re-written” (Hynd 38). During the animatic testing the researchers are interested in levels of attention. They take note of the areas that catch the most and the least attention of the children as well as which participatory tasks the children responded to. During the viewing of the animatic the children are provided with toys. This is an effort to avoid an artificially high attention environment where in a normal situation when the children are at home there is room for distractions (Hynd 38).

Gifford comments that “they can be brutal; if they are not liking something, they’ll go play with Mr. Potato head. When you watch them watching your story and you see kids so excited by it they can’t turn away, it’s inspiring. And it’s motivating (when they pay less attention) to get that story in shape” (Walsh-Valdes, Gifford). A common phenomenon is that a story can test very well during the storybook phase and test poorly during the animatic phase. It just means that there are some details that were lost between the two mediums (Walsh-Valdes, Gifford). This is where the artists need to pay attention to Richard Mayer’s principles of learning with animation as the artists can get lost in an effort to create beautiful pictures and might be over-loading the children’s processing ability. Any portions of the animatic that are associated with low attention are altered or removed. Attention is important to measure as this signals viewer comprehension and enjoyment. The testing is repeated once more when the episode has been animated in full colour (Hynd 39).

The amount of research that goes into creating an episode is quite intense and might be more or less than the research that goes into other shows for Sesame Workshop especially having minds like Valeria Lovelace, who was the head researcher at *Sesame Street* for many years, as part of the production team. Gifford comments that he does not know if anybody does as much research as they do and they are still learning everyday (Gifford, “Barista Kids”). The duration of this whole process takes

approximately one year and more than 70 children evaluate each episode before it is aired (Hynd 39).

## 3.3. Episode Analysis of the first three episodes of Season One

This section analyses individual episodes of *Dora* and the chosen episodes are the first three episodes of the first season. These episodes were selected based on their symbolism as the beginning of the series. This serves to inform the aim of the research, which is to encourage development of series similar in nature for southern Africa. The episode analysis will be guided by Richard Mayer's principles of learning with animation as well as Howard Gardner's multiple intelligence theory. Identification of the applications of Gardner's theory and Mayer's principles in the content of the series will be the focus for the analysis of each episode.

### 3.3.1. Episode One – *Big Red Chicken*

The following is based on an analysis of the first episode of Season One, titled *Big Red Chicken*. The general storyline of the episode is that Dora and Boots venture to find the Big Red Chicken after reading a story about him. They want to figure out if he really exists. The series starts off with the opening billboard sequence. It is accompanied by a musical jingle that is very simple, upbeat and repetitive. The repetition of Dora's name in the jingle plays to the theory of behaviourism so that the title character's name will remain the most memorable aspect of the jingle and the audience will always remember the title characters name. This also falls under Mayer's pre-training principle as it introduces the main characters preparing them for the content in the episode. This makes it enjoyable, very easy to remember and employs the musical intelligence.

There is very little text used in the opening sequence, which enables the children to concentrate on following the animation and listen to the jingle alone. This follows the modality principle that states that children learn better from animation and narration rather than animation and on screen text. The jingle is performed by natural voices of preschool children that is inviting for the young viewers to join in and sing along. This is reminiscent of Mayer's voice principle that children learn better when narration is in a natural voice. The opening title sequence remains the same

throughout the first three episodes.

The episode begins by starting a conversation with the young audience, with Dora introducing herself as part of the pre-training. She goes on to ask for the viewer's name followed by a pause to allow time for the viewer to respond. This falls under Mayer's personalization theory where the format of the narration is more conversational rather than formal. Asking for the viewer's name creates a virtual personal bond between Dora and the child. It is similar to when a child meets a new friend on the first day of school and they introduce themselves to each other. This is also an intrapersonal intelligence exercise. The voice of Dora is natural and that of a typical preschool child. Her accent is very clear. Her sentences are very short, well paced and easy to understand. Dora's dialogue with both the audience and fellow characters is conversational, for example when she asks Boots if he would like to read a story with her.

An introduction of the character Backpack and its role in the series follows in song and dance. As Dora and Boots introduce Backpack, Boots uses his hands through gesture as visual cues to point out Backpack to the viewers. When Backpack asks the viewers to identify a red book there is utilization of a blue arrow as well as a glowing effect. These fall under the signalling principle as they are visual cues to highlight the object and help the viewer follow the animation. The temporal contiguity principle is also employed as animation and narration are presented simultaneously during the process of identifying the big red book. The blue arrow is used throughout the episode as a visual cue to highlight objects and help the viewer follow the animation. Sound is also utilized as a cue to let the viewer know the correct answer, as when the correct big red book is picked. As Dora is telling the story about the big red chicken glowing stars are used to grab the attention of the viewer and highlight the formation of the chicken in the sky. This helps the viewer follow the narration much better.

Once Dora finishes reading the story, an introduction of the character Map follows the reading. Dora asks for the young viewers to devise a strategy on how to get to the big red hill. This is a logical intelligence exercise. When Map is giving directions on how to get to the big red hill, the narration and animation are presented at the same time. This makes it easier to follow and provides better understanding of the directions.

This follows the principle of temporal contiguity. During Map's presentation of the directions, the background is simple and static and only Map is animated. This places all the focus and attention on Map. It is a visual cue implementation that makes it easier for the viewer to follow the animation. Map constantly repeats the directions over and over again with a melody. This is an effort to make the directions memorable and exercising the viewers musical intelligence. Dora and Boots follow suit as they also repeat the directions in the form of song and dance.

Map's directions highlight three major checkpoints. These are the bridge, the gate and the big red hill. This breaks the episode into three segments of targeted checkpoints. This employs the segmenting principle where information is presented in small blocks of content. In this episode each checkpoint represents one of the three different segments. At every checkpoint there is always an obstacle to overcome. Various different intelligences are exercised to overcome the challenges. For example spatial visual intelligence is exercised when Dora asks the audience to help her find the character Swiper the fox. Bodily Kinaesthetic intelligence is exercised through dialogue and physical gestures when the audience is encouraged by Dora to help her stop Swiper from swiping. After every checkpoint is achieved it is marked by a signalling sound of celebration.

The animation style utilized is limited animation. Limited animation is the process of making animated cartoons that do not redraw entire frames but variably reuse common parts between frames. This aims to reduce the number of drawings normally to reduce the cost of production. This style of animation limits the movement to only storytelling poses. This leaves very little room for extraneous animation. Overall the backgrounds are very simple in pastel colours. The characters are sharp, bright and bold. This separates the characters from the background. The background music and sound effects are very subtle. They are only used to support the animation. This abides by the coherence principle that states that children learn better when complex and unnecessary elements are excluded. This reduces extraneous processing.

Spanish language lessons are presented in different ways throughout the episode. These are linguistic intelligence exercises. General conversational words like greetings are mentioned in passing, mixed with English as part of the conversation.

The meaning of the word is easily translated through the context of the conversation. When it comes to complex words Dora takes the time to explain the meaning of the new words. Animated gestures are presented simultaneously with the Spanish words. This makes it easier for the young viewers to associate the words with the gestures. For example, when Dora and Boots introduce the Spanish words for 'big' and 'small', they use their hands to provide gestures at the same time as they say the words.

During the last segment of the episode Boots and Dora find the big red hill. They ask the audience to join them in doing the chicken dance. This is an example of when the bodily kinaesthetic intelligence and intrapersonal intelligence are exercised. Dora and Boots celebrate their achieving the target goal of the adventure with song and dance. This celebration is a musical intelligence exercise. They include the audience by saying "we did it!" inviting the audience to celebrate with them. In the closing credits Dora introduces a new character, Benny the Bull. She asks the audience to find Benny. This falls under the pre-training principle by making the audience aware of the character Benny for possible future episodes. It is also a spatial intelligence task by asking the audience to look for Benny.

### 3.3.2. Episode Two – *Lost and Found*

The following is based on an analysis of the second episode of season one titled *Lost and Found*. The general storyline of the episode is that Dora and Boots find a lost little blue bird. They go on an adventure to reunite the little bird with its mother. The general format of the next two episodes has a similar structure to that of episode one.

The episode begins with the opening billboard from episode one with the same jingle, followed by Dora greeting and introducing herself to the audience again. This is a shorter introduction compared to the first episode as she only mentions her name. This is pre-training for the audience who are watching the series for the first time and a reminder for those who had watched it before. She proceeds to ask the audience if they want to play, presenting a trigger for a conversation between Dora and the audience. This creates a relaxed environment for the young viewers and falls under the personalization principle.

Dora asks the audience to help her look for Boots, which exercises their spatial visual intelligence. When Dora finds Boots they hear a sound. To find out where the sound is coming from, Dora uses her hands to point out to the audience where the sound is coming from. This acts as a signal and helps the audience follow the animation better. When Dora and Boots find the little blue bird, it is wet. This prompts Dora to look for something in Backpack to dry off the bird. An introduction of Backpack follows, with Backpack asking the viewers what can be used to dry off the little bird. The blue arrow, a glow effect and clicking sound are used to highlight the different objects inside Backpack and help the viewer follow the animation. Narration and animation are presented simultaneously during Backpack's presentation, which falls under the temporal contiguity principle.

When Dora asks the little bird where it lives, she discovers that it speaks Spanish. For the duration of their conversation the little bird speaks in Spanish and Dora translates in English. This is an exercise of linguistic intelligence. This helps the young audience understand what the little bird is saying and learn Spanish words and their meaning. Dora asks the audience how they can find the little blue tree where the bird lives, and here Map makes an introduction. Map sings about its role in the episode, how it helps to find directions to go anywhere. This is pre-training for new viewers. The highlight of the pathway to get to the little blue tree is animated to help the viewers follow the animation. Narration of the directions is presented at the same time as the animation of the highlighted pathway. This helps the audience get a better understanding of the directions. The directions are very easy, as they comprise three checkpoints. Map repeats the directions three times to make sure the audience remembers.

The three checkpoints are bananas, cornfield and the little blue tree. These form the three main segments of the episode. This is an implementation of the segmenting principle. At each of the segments they encounter various challenges to pass each checkpoint. For example, when they reach the banana tree they are hungry and ask the audience to help them count the number of bananas they need. This exercises the audience's logical intelligence. At this point they also encounter Swiper the fox. They ask the audience to help them stop Swiper from swiping by saying "Swiper no swiping" and utilizing their hand gestures towards Swiper. This encourages the

audiences to perform a physical and verbal exercise utilizing their bodily kinaesthetic intelligence. When they reach the cornfield, they come across a scarecrow. This scares the little bird and it starts to cry. Dora suggests the audience help her by doing the monkey dance with them to cheer up the little bird. This is another bodily kinaesthetic intelligence exercise that Dora encourages the audience to utilize. The scarecrow advises them that to get through the cornfield they have to use the blue path and avoid the red path. The little bird runs ahead alone excited to get through the cornfield. The team is worried the little bird will take the red path with ants. Dora asks the audience to shout out loud "*azul*" and explains that it means 'blue' in Spanish. This is a linguistic intelligence exercise. As the little bird follows the blue path it is highlighted by a glowing effect, which helps the audience follow the animation.

When the team reaches the little blue tree, the little bird's mother says to Dora "*muchas gracias*" and Dora immediately replies, "you are most welcome". The meaning of the little bird's mother's dialogue is understood to mean, "thank you very much" through the context of Dora's reply. The young audience learns the Spanish words by listening to the conversation. At the end they celebrate helping the little bird find its way back home and ask the audience about their favourite part of the trip. There is a long pause while Dora waits for a response as a way to encourage a verbal response from the audience and engage in conversation. She goes on to say "we couldn't have done it without you" in an effort to reassure the audience that they were part of the adventure. In the closing credits Dora introduces another character, Tica the squirrel. She gives the audience a final visual spatial intelligence task to find Tica. The introduction of a new character also serves as pre-training for future episodes.

Limited animation is utilized throughout the episode with very few elements animated at a time. This is the animation style used for the series. The background elements are static for the greater part of the episode. They are only animated for a specific purpose that serves the story. The background music and sound effects are very subtle to avoid unnecessary distractions. They are only used to support the animation. This abides by the coherence principle that states that children learn better when complex and unnecessary elements are excluded. This helps the children concentrate on the storytelling elements.

### 3.3.3. Episode Three – *Hic-Boom-Ohhh*

The following is based on an analysis of the third episode of season one titled *Hic-Boom-Ohhh*. The general storyline of the episode is that Dora and Boots go on an adventure to investigate the source of a funny sound.

The episode begins with the opening billboard from episode one with the same jingle. Again Dora greets and introduces herself to the audience. She asks the audience if they can hear her. This is a conversation trigger to connect her to her viewers. She introduces the premise of the episode, which is based on loud and soft sounds. Shortly after she sees Boots they hear a sound that goes "Hic-Boom-Ohhh" and that immediately makes them curious to find out what is making this sound. They set about to find out where the sound is coming from and what is making the sound. Unlike the first two episodes where they consulted Backpack first, in this episode they consult Map first. This is because Map can help them find where the sound is coming from.

In the same structure as the first two episodes, Map performs an introduction reminding the audience of his purpose to help find directions. Map says the sound is coming from the yellow valley. To get to the yellow valley they have to cross the noisy river and through the quiet forest. In the same way as the previous episodes this divides this episode into three segments marked by the three checkpoints on the map. The narration of the directions is presented at the same time with highlighted animation to help the young viewers follow the animation and understand the directions better. This is a combination of the signalling and temporal contiguity principles being implemented.

Similar to the previous two episodes it has become a set pattern that in-between travelling to the different checkpoints Dora and Boots sing and dance repeating the main goal of the episode. This keeps the young viewers entertained and excited about the adventure. The song is usually made up of a repeated sentence that is easy to remember, in an effort to encourage the viewers to sing along and exercise their

musical intelligence. It has also become a pattern from the previous episodes that Dora and Boots encounter various challenges at the various checkpoints. Each time they encounter a challenge they ask the audience for help to overcome the challenges. When Dora and Boots arrive at the noisy river they realize they need a boat to cross the river, but the boats are on the other side of the river. Tico the squirrel, a previously introduced character from episode two, is on the other side of the river. Since the river is so noisy they seek the help of the audience to call Tico to help them. Tico speaks Spanish, so to tell him which boat to pick they have to describe it in Spanish. Dora encourages the audience to help her say "*azul*" to Tico, which means blue in Spanish. This describes the boat that Dora would like Tico to pick, as there are three different boats. The word "*azul*" is a repetition from episode two. It has, however, been used to describe two different objects. Repetition makes the word memorable.

As Dora and Boots arrive at the forest the big red chicken blocks their pathway. This is another character from a previous episode. The big red chicken is unfortunately sleeping. At this point they realize they need the help of Backpack to give them something loud to wake up the chicken. An introduction of Backpack follows with Backpack asking the viewers what can be used to make a loud noise to wake up the chicken. This is an effort to engage the audience in a conversation and include them in overcoming the challenge. The blue arrow and a glowing animated effect are used to highlight the different objects inside Backpack and help the viewer follow the animation. A clicking sound is used to signal the correct object. Narration and animation are presented simultaneously during Backpack's presentation that falls under the temporal contiguity principle. As Dora gets the horn to wake up the chicken, distinct background music is played, which always signals the presence of Swiper. They ask the audience to help them stop Swiper from swiping by saying "Swiper no swiping" and utilizing their hand gestures towards Swiper. This encourages the audiences to perform a physical and verbal exercise utilizing their bodily kinaesthetic intelligence.

When Dora and Boots arrive at the yellow valley they meet Benny the Bull. This is yet another character that had previously been introduced at the end of episode one. They discover that Benny has been making the sound they where curious about due to hiccups. Dora suggests to Benny that counting up to ten out loud could help with the

hiccups. Unfortunately Benny doesn't know how to count. Dora seeks the help of the audience to help her and Benny count out loud up to ten using their fingers. Benny's hiccups are cured and they all celebrate with their usual "we did it" song and dance, encouraging the audience to join in. Dora asks the audience about their favourite part of the trip. There is a long pause while Dora waits for a response as a way to encourage a verbal response from the audience and engage in conversation.

Similar to the previous two episodes limited animation is utilized throughout the episode with very few elements animated at a time. The background elements are static for the greater part of the episode. They are only animated for a specific purpose that serves the story. The background music and sound effects are very subtle to avoid unnecessary distractions. They are only used to support the animation. This abides by the coherence principle that states that children learn better when complex and unnecessary elements are excluded. This helps the children concentrate on the storytelling elements.

# Chapter 4: Southern African Educational Television

Children's education content development in southern Africa is still very much in its infancy compared to developed nations such as the US (Bulbulia). Due to this fact there has been very little written around the subject matter. South Africa, being the most developed nation in southern Africa, has taken the lead by producing the most animated children's educational series in the region. The first part of this chapter takes a look at the current content that has been developed focusing on the South African productions *Takalani Sesame* and *Magic Cellar*. While *Takalani Sesame* is not a fully animated series it is necessary to look at it because it does have some aspects of animation and it is one of the most successful children's educational series in southern Africa. The roots of the series also stem from the beginnings of children's educational television.

## 4.1. Takalani Sesame

*Takalani Sesame* is the South African adapted version of the US's extremely successful series *Sesame Street*. *Takalani Sesame* is the longest running and most successful children's educational series in South Africa (Kangong 37). Since it was modelled after the highly successful *Sesame Street* it is vital to take a brief look at the development of *Sesame Street* because it was the first children's programme to have an educational curriculum. Due to its success it influenced and paved the way for much of the children's educational programming currently being produced (Coertze 27).

### 4.1.1. The Development of *Sesame Street*

*Sesame Street* is a children's educational series developed and created in the US. The series was commissioned by the Children's Television Workshop (later known as the Sesame Workshop) (Coertze 27). It was first aired in 1969 and it is currently still in production and on the air (Coertze 28). It was the brainchild of Joan Ganz Cooney, a television producer in the USA (Kangong 39). Cooney joined forces with Lloyd Morrisette in 1966 and their mission was to answer the question of whether television could be used to teach young children. In the same year Cooney conducted a study on

children and television for the Carnegie Corporation focusing on how to help young children to prepare for school in under privileged communities in the US ("40 years and Counting").

Much research went into the development of *Sesame Street*. Cooney invited and involved many different expert professionals in various different specialisations that she thought would help create the best possible product for the target audience. This included preschool teachers, television and film producers, paediatricians, psychologists and educators who had studied subjects covering the development of children (Kangong 41). This is very similar to the development process of *Dora,* where the producers hired different consultants in various areas of the anticipated content of the show. The series' main educational goals were language and reading, social, moral and emotional development, numeracy skills, problem solving, logic and perception (Coertze 27).

It was the first children's programme to have an educational curriculum as its foundation with detailed specific goals (Coertze 27). The series "is made up of many different segments with various production features – these are namely animation, muppets, nature and documentaries, dramatic episodes with actors and actresses and the use of various stage settings which are familiar to viewers. Characteristics include fast tempo, humor, colourfulness, music and special effects" (Coertze 28). Each episode is split into short segments that deal with a variety of different topics, which is similar to Mayer's principle of segmenting. This allows the child to absorb the information gradually in smaller blocks as opposed to one long episode with concepts intercepting each other (Coertze 28). This is also known as the magazine format where the content is constantly repeated throughout each episode along with the new content and is mixed with knowledge likely to be already inherent in the viewer (Coertze 28). This is reminiscent of the theories of behaviourism where it is suggested that children learn through repetition.

The series was a huge success with half of the US preschool children believed to be viewing the series at least three times per week in 1998 (Coertze 29). It is estimated that by the year 2004, 120 million children in 40 countries watched *Sesame Street* regularly (Coertze 29). *Sesame Street* has won many awards and is probably the most

researched series ever made (Coertze 29). Due to this success the Children's Television Workshop went on to create what they termed the 'Sesame Workshop Model'that was formulated to assist in the development of educational media (Coertze 29). This is now their foundation for every children's educational series that they produce. The key ingredient in the 'Sesame Workshop Model' is the collaboration and research with the input of various stakeholders who combine their expertise throughout the life of the series. This includes both formative research (research in the development stage) and summative research (research post airing). The team normally includes educators, psychologists, television producers, educational researchers and content producers. The Children's Television Workshop believes that this helps them create the best and most effective educational children's shows (Coertze 29).

According to Fisch and Truglio (cited in Cortze), there are five stages of the model, which are briefly outlined below:

> "Stage 1 – begins with the needs and feasibility assessment stage during which expert advice is sought on the target audience and the media landscape in general.
> Stage 2 – involves the development of a curriculum for the series.
> Stage 3 – includes production and formative research; stories and scripts are written, with some prototypes designed and developed in order to allow for formative testing to take place. This research enables the producers to determine how the target markets are likely to find the series (in terms of entertainment), as well as whether the embedded messages are being decoded in the expected way.
> Stage 4 – involves the distribution of the series.
> Stage 5 – involves, where possible, the process of summative research taking place, in order to determine the effects and impact of the series, with the results being used to make necessary changes in future productions" (Coertze 29-30).
> (See fig. 5)

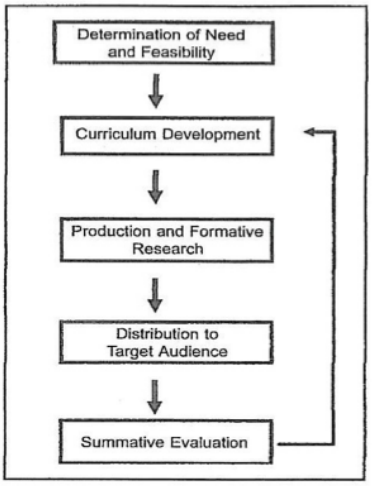


**Fig 5***:* Sesame Workshop Model. Source: Geraldine Coertze, *Open Sesame! Learning Life skills from Takalani Sesame: A Reception Study of Selected Grade One Learners in Pietermaritzburg, South Africa.* (University of KwaZulu-Natal, 2011) 30. Web. 6 Jan. 2015. PDF

Through this 'Sesame Workshop model', *Sesame Street* has been adapted in over 20 countries to local versions across the globe. The content of the country specific co-productions are localized to specifically tackle local issues relevant to the target market (Coertze 31). Adaptations of *Sesame Street* differ from adaptations of other international shows in this respect. Where other shows simply dub the audio to a local language or present subtitles, *Sesame Street* goes the extra mile to create local storylines, new characters, settings and animations specific to the adapted country (Coertze 31). This is how *Takalani Sesame* was born in South Africa. *Sesame Street* in this respect paved the way for many children's educational programming including *Dora*. Many of the development structures are evidently similar to the development structures of *Dora* as discussed in the last chapter.

## 4.1.2. The Development of Takalani Sesame

*Takalani Sesame* was created in the year 2000 through the collaboration between the Sesame Workshop, the Department of Education of South Africa (DoE), South African Broadcasting Corporation of South Africa (SABC), Sanlam (a local financial services provider) and the United States Agency for International Development (USAID). There were other organisations that contributed financially to the development of the series such as The Rockefeller Foundation and the South African Airways Corporation (SAA), which made this a public and private sector partnership.

This was one of the initiatives by the Sesame Workshop to create an adaptation of *Sesame Street* to address issues that affected South Africa (Sithole 2).

The conceptualisation process began in 1993. The motivating factor was the lack of preschool education available in the country as only one in six children had access to a formal preschool at the time (Sithole 1). *Sesame Street* by this time had been regarded as a substitute preschool for those less privileged and not able to afford a formal preschool. The first step in the conceptualisation phase was to send six black South Africans to the Sesame Workshop in New York. They received training in various aspects of the children's educational media. The trip was facilitated by grants received from the Ford and Kellogg foundations through the Sesame Workshop fellowship programme (Sithole 2). USAID followed by providing substantial financial support due to the success of the fellowship programme through a bi-lateral agreement with the DoE to create *Takalani Sesame* (Sithole 2).

The series is based on Kami, a female puppet who is HIV positive. Due to South Africa being heavily affected by the HIV/AIDS pandemic, *Takalani Sesame* aimed to support the DoE's HIV/AIDS curriculum for preschool children. This was an effort to desensitise the stigma attached to the subject of HIV/AIDS and break the silence in the communities ("Takalani Sesame"). It was estimated in 2010 that a total of 5.6 million people were living with HIV/AIDS in South Africa. This represents 15% of the total population and is recognised as one of the world's largest populations of people living with HIV/AIDS. In 2006 UNICEF and UNAIDS published reports of approximately 1.2 million young children to be orphaned as a direct result of HIV/AIDS (Coertze 40). South African educators developed the curriculum for the programme. This was done with the collaboration and consultation with various child development experts and specialists in HIV/AIDS education ("Takalani Sesame"). This resulted in the first ever HIV/AIDS curriculum for preschool children (Sithole 2). While the subject of HIV/AIDS took the lead in the curriculum, *Sesame Street's* main educational goal remained a part of *Takalani Sesame* as well.

In TshiVenda *Takalani* means, "be happy". TshiVenda is one of the eleven official languages in South Africa. Inclusion of local languages was an important aspect from the beginning of the development of the series. In the first few seasons the language

strategy started off with all the eleven languages interspersed into the different segments of one episode. Summative research later revealed that this was confusing for children who did not speak the particular language being used in a particular segment. As a result their attention would drift for that particular segment (Coertze 39). In late 2007, due to the DoE's introduction of their policy to encourage mother tongue learning, the development team at *Takalani Sesame* changed their language strategy. Seasons four and five were in production at the time of the policy introduction and, for the most part, episodes included only one language from start to finish. Different days of the week offered a rotation of languages.

Many summative empirical studies have been conducted in an effort to continuously improve upon the quality, content and production of the show. The Sesame workshop has taken a step further to publicly publish the results of these studies on their website. This is in an effort to convince critics of the effectiveness of the 'Sesame Workshop Model'. It is reported that South African children exposed to *Takalani Sesame* are four times more likely to have some knowledge of HIV/AIDS than those who are not ("Our Results").

This reveals a successful adaptation of an effective US children's educational series in an African setting and context. Sesame Workshop has proved that adaptations need to go beyond the scope of a mere language translation and that the messages need to be relatable to the target audience.

## 4.2. *Magic Cellar*

*Magic Cellar* is a South African-based animated series developed by Mfundi Vundla, the founder of Morula Pictures. Vundla is a well-known television producer in South Africa as he has produced numerous local productions such as the successful long running local soap opera, *Generations*. *Magic Cellar* takes its young viewers on an imaginary journey through the world of folktales (Kangong 17).

*Magic Cellar* is made up of a series of short stories that are based on African folktales. In the past, folktales were used as an educational tool to pass on tradition

and culture, as well as life lessons. The sources of the folktales were the grandparents in society, but due to rural urban migration this was a fading tradition. The short stories were designed to give African children an understanding of their own culture. It was Africa's first 3D animated series production. It also marked the first time South African children saw their own image reflected in an animated series ("Magic Cellar"). This is an important aspect as this fosters a bond between the young viewers and the series. The show's main characters are five young children, all from different ethnic backgrounds. This was an effort to represent all the different cultures in South Africa and celebrate the "Rainbow Nation". According to Clara Rodriguez, the sociologist on *Dora,* children relate well to characters that look like them (Havrilla).

### 4.2.1. The Development of *Magic Cellar*

There is very little documentation on the development process of *Magic Cellar*. The following is heavily reliant on the interview conducted by Roland Kangong with the producer of *Magic Cellar,* Adeelah Carrim. The information tends to be very basic and lacks intense detail. Mfundi Vundla alone conceived the general premise of the series. His vision was to help disadvantaged children develop an interest in storytelling and educate them about their rich culture while learning some life lessons in the process. He thought a great way of achieving his goal was through folktales as this was how children learnt about their culture as he was growing up. He wanted to revive this tradition of imparting knowledge through folktales (Kangong 16). The show was initially meant to be live action with a little bit of animation, but the producer, Carrim, suggested and changed it to full-scale animation. She thought animation would be a better medium as opposed to live action because of its longevity. Her argument was that with live action they would have to change actors as they grew up but with animation the characters would be ageless (Kangong 17).

The project was funded in partnership with the SABC and the Department of Communication through the National Electronic Media Institute of South Africa (NEMISA). Andile Ngcaba, who was the Director General of NEMISA at the time, believed in the potential of animation as a great medium of communication with young children and gave the project his full support. He encouraged Vundla to produce more animated series (Kangong 18). The target audience was initially five to

eight year old children, but it changed to three to seven year old children as they realized that younger children could benefit from the series as well (Kangong 17).

A research company[3] was hired to go out into the villages to source stories from traditional men and women over the ages of sixty (Kangong 17). Details of how exactly the research company set about their research is not clearly detailed. These stories would then be passed on to a team of writers. Story selection was a challenge for the writers as some of the stories collected would not be suitable for young children as they contained adult themes. Some details in the inappropriate stories had to be changed or omitted to make them child friendly (Kangong 18).

The director of the project was Firdaus Kharas, an Indian television producer previously based in Canada. He engaged an animation studio in India to work on the production named UTV Logo (formally Ulster Television). Kharas was a partner in the studio and he ran a division in Canada (Kangong 28). Kharas and Vundla met while Kharas was visiting the country and attending the Sithengi film festival. Vundla shared his ideas about the project and Kharas immediately got on board as he had a passion for animation (Kangong 28). The original character designs were done in South Africa. According to Kharas, the drawings were not in the correct proportions for the purposes of translating them into 3D. New characters were developed in India utilizing the original drawings as reference. The backgrounds were also created in India with the input of six South African students who had been sent to India for training. The students also helped in researching South African tribes in an effort to create authentic settings and costumes (Kangong 29).

The research, development and production took about two years to get the series ready for airing. The series premiered on SABC 2[4] on the 26th of March in 2006 (Kangong 29). This gives the impression that the whole production process was rushed, compared to the production processes previously analyzed. The producer said they failed to secure the participation of the DoE due to time constraints thus it was not considered an education series (Kangong 59-60). The production process of

[3] The name of the research company could not be recalled at the time of the interview and thus was not provided.

[4] SABC 2 is one of the three SABC's broadcasting channels

*Magic Cellar* in comparison to *Takalani Sesame* and *Dora* was very poor. This comparison will be detailed in the conclusion.

## 4.3. The SABC Education Department

It is important to take a brief look at the SABC Education Department as it has heavily supported most of the children's educational programmes that have come out of South Africa so far. The SABC has been a significant partner either financially or as a distribution partner. The productions they have supported include *Takalani Sesame* and *Magic Cellar* among many other initiatives (Kangong 18, Sithole 2)

SABC Education is a sub-business unit of the SABC. It was established in 1996, two years after South Africa gained its independence after the Apartheid era. The mandate of the SABC Education unit is to deliver compelling educational content for diverse audiences in South Africa and the rest of Africa ("SABC Education").

Early Childhood Development (ECD) is one of the most important focuses of the SABC Education unit. They believe that "through the children's unit programming stimulates early learning and helps bring preschool children to a level of school preparedness by providing basic numeracy, literacy, language, learning, communication, problem solving life skills" ("SABC Education"). This is of great importance, as South Africa has a very young population by world standards. According to studies in 1995, 13% of the total population in South Africa was under the age of four and 18% was under the age of seven (April, et al. 2). In 1993 government expenditure on ECD was very low. About 30% of white children under seven had access to some form of preschool compared to ten point seven percent of Black, Coloured and Indian children (April, et al. 3). The SABC, being largely controlled by the government in 1996 when the unit was setup, recognised that there was a need to address this issue through the public broadcaster. Delivering preschool educational content was a way to compensate exposure to some form of preschool education for those underprivileged and without access to formal preschool education.

The SABC has played a significant role in trying to increase the amount of children's

educational content though both funding and distribution. The SABC was a common partner in both *Takalane Sesame* and *Magic Cellar* educational series' in southern Africa. As the aim of this report is to encourage research and development of a new series to enhance language development in southern Africa it was vital to look at the mandate of the SABC. The corporation is also one of the largest distributors of children's educational content in southern Africa; it was therefore necessary to understand the reasons why it supported the two previously examined series.

# Conclusion

In this concluding chapter there is an in-depth analysis of the various findings in relation to the current research. There is also a presentation of recommendations for possible improvements for future development of educational animated series for children in southern Africa.

In the first chapter it was revealed that there are various theories on how children acquire a second language. One of the major discoveries is the relationship between age and language. It was explained how it is so much easier to learn a new language at an early age due to the presence of the Language Acquisition Device (Nap-Kolhoff 6). This discovery supports the target audience, of three to seven year old children as the prime age to expose children to new languages, as the device is believed to disappear over time (Nap-Kolhoff 15). This explains why adults, as opposed to young children, find it challenging to learn a new language. In a world where being bilingual is an added advantage later in life it is vital to take advantage of this critical period and expose children to as many languages as possible.

Unintentional learning was suggested to be the best form of learning for children (Davidson). The greatest sources of unintentional learning for children are social interaction and play. Interactive Animated Series such as *Dora* and *Blues Clues* both provide social interaction and play. The interactivity of the content when the characters ask the children to participate verbally or physically give the young viewers an opportunity to respond freely without fear of judgement. It enhances their ability and confidence to communicate. Encouragement of social interaction also promotes imitation and repetition that are aspects of the theory of behaviourism and this aids language development. It was also revealed that how children acquire a second language is similar to how they acquire their first language. In this respect social interaction offers the child a platform to be given corrections when they use language incorrectly.

It was reported that children learn best when they enjoy what they are doing. There is encouragement to utilize play as a form of learning because during play children's

attention span is at an all time high. While animation is not quite play it is considered a medium that children enjoy and has therefore been labelled/classified as a form of play. In any event this supports the thinking that animation is a good choice of medium that can enhance children's learning.

In the second chapter it was revealed that educational animation is not always beneficial to the end user. The problem stems from the content mostly being design-centred as opposed to being learner-centred. This makes the findings in chapter one relevant in the current research, as there is a need to understand how the intended audience learns so as to nurture that process during content creation. The principles of learning with animation were presented. Mayer's principles provide an insight into how educational animation can be developed to be effective learning material. "Each principle is based on an experimental test of a prediction of the theory concerning how to reduce extraneous processing, manage essential processing, or promote generative processing" (Lowe and Schnotz 45). This assists in the process of uncovering how animation is not inherently effective, but can be successful in aiding learning only if the design follows the principles outlined by Mayer.

Animation as a technique and style has become an increasingly prominent feature of technology-based learning environments in recent years. However, much of the animation now used for the purposes of education and training may be far less effective than is generally supposed. "This is because the design is not based on an understanding of what is required for people to learn from animation" (Lowe and Schnotz vii). There are numerous studies on how to design educational animation, but most of them are based on an author's wisdom as opposed to empirical evidence or the cognitive theory. Mayer's principles provide a "modest starting point for the evolution of evidence-based practice in multimedia design" (Lowe and Schnotz 45). Mayer's principles provide a framework to guide content producers on how to create effective educational animation.

The analysis of the case study *Dora* covered how the series was conceptualized, developed and the production processes. It was uncovered that there was extensive research that went into the development of the series. This included consultation with various experts in child development, child education, language experts etc. The

process of development took over three years, which shows that it takes time to make a successful educational series. It was revealed that the series curriculum was based on Howard Gardner's multiple intelligence theory. An individual analysis of the first three episodes of the series revealed the implementation of Gardner's theory in many aspects of each episode. Even though there is no official connection between Mayer's principles and the series, many of the principles are noted to be in practice during this analysis of the individual episodes. This adds to the many reasons why the *Dora* is so successful.

The analysis of some of the current children's edutainment productions in southern Africa revealed some challenges and gaps. A look at *Takalani Sesame* presented a successful adaptation of the popular US series *Sesame Street* in southern Africa. This prompted a brief look at *Sesame Street* and the conception of the 'Sesame Workshop Model'. The main reason why *Takalani Sesame* is so successful is because it was born out of the 'Sesame Workshop Model', which is a proven successful framework that was created from the immense formative and summative research of *Sesame Street* accumulated over many years. The Children's Television Workshop now uses this as a foundation for all their children's educational productions. The Children's Television Workshop simply used the 'Sesame Workshop Model' and collaborated with local partners to localize the content for the targeted local audience. Many aspects of the 'Sesame Workshop Model' are similar to the way *Dora* was developed.

An analysis of *Magic Cellar* was extremely insightful in light of this particular study. The analysis of the development from Kangong's interview with the producer raises gaps and questions specifically when Kangong says "a research company was hired to go into South African villages to collect stories from old people. These were later handed to a team of writers charged with developing scripts for the series" (Kangong 42). Compared to the content development of *Dora* where research was done to understand how children learn and basing the curriculum on Howard Gardner's theory, to testing out storylines on children, it does not seem likely that enough research was carried out in the development of *Magic Cellar*. Kangong says, "Some critics believe that the production was poorly handled in view of the fact that it was animated in India, and suggested that there were managerial or policy implementation problems at the SABC" (Kangong 29). Kangong's interview with the producer of

*Magic Cellar* gave the impression that during development the creators of the series meant for it to be classified as an educational animated series but were restricted by time constraints. “The producer of *Magic Cellar* says they were unable to secure the DoE’s participation in the production: this would have required some lobbying, which they were unable to do because of the timing of the production process” (Kangong 60). This also gives the impression that the series was rushed to production without allocating a long enough research period compared to *Dora* and *Sesame Street*. Research has proved to be an important factor for a successful children’s edutainment series as it is a common factor to the success of both *Dora* and *Sesame Street*. It is also the central component of the ‘Sesame Workshop Model’. Kangong’s research reveals that there is a need for educational animation in Africa as “UNESCO’s concern that children’s programmes, especially computer-animated ones, are imported from abroad to African countries” (Kangong 31). Currently there is no children’s educational animated series in southern Africa with the specific goal to teach languages. This is a gap that needs to be filled due to the regional migration patterns that have been taking place in the past decade.

This research paper not only adds to the discourse on the role of animation in education but specifically to how children can learn a second language from an educational animated series. From the analysis of the various findings above, lessons can be drawn on how to create a successful educational interactive animated series for a local setting to enhance second language learning.

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