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Learning history with animation: how animation based learning helps digital natives

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**Ethical Considerations (No Participants)**

This study did not involve the use of Human Participants in the collection of data. There was, therefore, no application made for ethical approval to the Module Coordinator.

**Plagiarism Statement**

I confirm that by signing, dating and submitting this dissertation, I have read, understood and accepted the University’s regulations in relation to Cheating and Plagiarism.

Signed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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# Introduction

 Animation-based learning is an educational teaching method that has been put into practice in many academic subjects within the last few decades. This paper will research the evolution of multimedia learning and the educational techniques implemented throughout different areas of study before focusing on the practice of animation-based learning and its educational aid to *digital natives*. The digital generations’ mind comprehends knowledge and facts in a different manner to those of older age groups (Prensky, 2001). This study aims to analyse and discuss the educational animations and their involvement in the modern-day learning process.

In order to explore the hypothesis that animation-based learning helps *digital natives* learn history, this paper examines three different animations; “Simple History”, “Historical People” and “The Simpsons”*.* Each cartoon applies a varied approach to implementing educational information about historical events and figures. These range from exclusively educational, partially educational/partially entertainment-based to then entirely produced for viewer enjoyment. This paper aims to address how each of these animated cartoons engage with their audience. Furthermore, the way they provoke independent rationalization and comprehension of the historical narrative whilst observing if the requirement of background knowledge is pivotal to viewer understanding of the content.

To assiduously demonstrate the thesis, the paper is structured into three main chapters: Chapter one presents a summary of academic discussion regarding multimedia and animation-based learning and the growth of these mediums throughout education. As well as the introduction of *digital natives* and how technology has influenced their day-to-day lives. Furthermore, explaining why this factor is an important element to the development of academic education. Chapter two offers a detailed analysis of the three previously mentioned case studies and if they provide a positive role in the education of history. The final chapter deliberates the research and findings in order to respond to the questions raised in the academic study. Additionally, this section aims to highlight any issues that may appear in order to review further research which will then strengthen the hypothesis.

Overall this paper aims to address how technological advancements have altered the way individuals learn and process information. Animation-based learning is the focal-point of the new era of education, hence, this study proposes to answer any questions and issues that occur during the academic discussion. Furthermore, to devise a structured research strategy for further analysis, designed to investigate thoroughly the implementation of educational animation within a classroom environment. Additionally, the study aims to sufficiently address the methods used within the animated media, in order to efficiently comprehend the cognitive learning process. Moreover, to explore supporting arguments as well as their vulnerability within education.

# Chapter 1: Literature Review

## 1.1 Multimedia Learning

Research into forward-thinking teaching methods have been underway for a number of years due to more practical based courses and job prospects, a more visual and multimedia approach to teaching seems only necessary. “Multimedia is the use of text, graphics, animation, pictures, video, and sound” to demonstrate instruction and information (Najjar, 1996).

Many research articles have shown that multimedia tasks can aid individuals’ understanding of academic learning. An example of this being a mathematics exercise consisting of one hundred and forty-seven high school students from Canada, which were split up into three different classes to undergo separate learning procedures and environments. Group one had a visually based lesson to educate them on drawing mathematical triangles using a compass. Group two had the use of still graphics whereas group three were taught with static textbook instructions. The results only legitimised the hypothesis that the students in the multimedia environment scored higher than those of the students learning through still graphics and both groups performing far better than the pupils undergoing static learning. (Poohkay et al, 1995). However, the study could be perceived as outdated due to the rapid advancements in technology since computer-aided lessons. The results of this experiment are still a reliable source to be noted for.

In 1985 the first educational video game “Oregon Trail” was published. It is primarily an adventure game which is aimed at teaching students geography through interactive paths and puzzles (Robison et al, 1990). It has been argued that this is the most successful educational video game to date as on its release it was used by pupils worldwide in elementary schools and is still relevant in some regions to this very day (Bouchard, 2017). Therefore, the benefits of educational multimedia on learning have not only been assessed, they have also been validated. Cognitive learning, as demonstrated here, can be applied to academic study as an efficient approach to enhancing the students’ understanding of the subject as a whole (Oxford Learning, 2019).

Video gaming is a very popular area of multimedia. It too has evolved rapidly over the past twenty odd years to the point where it is now an accessible feature on most if not all handheld smart devices such as tablets, mobile phones etc for the everyday person to enjoy, not just console gamers. Despite this aspect, education through video games is a lengthy process and with each individual having varied skill and understanding to this method, it potentially adds further time onto the learning and teaching elements (Gros, 2007). Consequently, this method requires more development if it is to be considered a suitable learning tool.

A research study was conducted in Northern Carolina which aimed to test the effectiveness of multimedia project-based learning (PBL) of American 19th-century history on eighth grade students. The results revealed that the pupils not only performed better than those who had been taught without multimedia aid but their interest in history as a subject had heightened substantially (Hernández-Ramos et al, 2009). Thus, supporting the presupposition that multimedia aid in education stimulates students’ interest in history as a subject in addition to proving to be an effective educational tool.

Virtual Reality (VR) and Mixed Reality (MR) - augmented reality and digital imaging - is the current state of the art interactive technology and a growing trend amongst consoles and devices (Pelham, 2018). This form of media also has the capability of allowing students to learn and even participate in historical events that would be impossible for them to interact with in the real world (Kerawalla et al, 2006). A research study on VR and MR was carried out in the United Kingdom at Nottingham Castle with the aim of teaching children and adults about the historical events that took place there. Each person also had to interact with objects and paper drawings which triggered the technologies, therefore, enabling the individuals to get involved practically. The results showed an extremely high enthusiasm level towards learning by both groups (Stanton et al, 2003). VR and MR deliver a vast amount of enjoyment towards learning history, however, with such advanced technology this also brings high cost rates (Stumbo, 2018). Thus, these technologies become an unmanageable method as the media here is less attainable.

Viewing historical events and figures through television and film is a method that has proven to be favoured by many students throughout schools as these media generally deliver a high entertainment factor (Scanlan et al, 2000). This learning technique can very easily be executed poorly, however, as many major blockbuster films and televised shows (TV) contain historical inaccuracies and/or exaggerations in order to boost amusement purposes (Marcus et al, 2018). Yet, between the 1960s – 1990s, media technology advanced and with that a higher volume of films were produced (Rosenstone, 1995). Robert A. Rosenstone also stated in his book, *“Visions of the Past: The Challenge of Film to Our Idea of History”*, that as a scholar even he, himself, could not predict the rise of film and media and its current correlation with educating and learning. With this being said, TV and film can help individuals vividly visualise a specific time period in a way that written text cannot, “film gives a face to what you are being told” (Sturma, 2001). For this reason, a film can prove to be an extremely effective medium when learning history as students are able to envision clothing, environments and way of life from a particular era that written text can only achieve to a certain extent. It could also be argued that visualising a time period before reading the description within the text enables the individual to attain a firmer grasp on the written content.

As film stimulates the viewers’ brain to conceive facts and figures more precisely, informative animated programs would be able to interoperate situations that is unattainable through film alone (Vernon et al, 2002).  *“Animation can promote learner understanding when used in ways that are consistent with the cognitive theory of multimedia learning”* (Mayer et al, 2002).

## 1.2 Animation-Based Learning

Animation is generally used for entertainment purposes as opposed to educational (Rieber, 1990), still, a positive and enjoyable approach to learning is a major factor in performance for many students. A more recent study argues that, “Animations have become an increasingly prominent feature of technology-based learning environments in recent years” (Lowe et al, 2008), thus, proving how significantly Animation-Based Learning (ABL) has grown over the last thirty to forty years.

 There are a wide variety of sub-categories within ABL which can be used to enhance the learner’s educational experience. These range from; “2D animation, 3D animation, motion graphics, infographic animation, typographic animation and stop-motion animation.” (F.Learning Studio, 2019). It has been surveyed and discussed that the use of 3D graphics and animation proved incredibly pragmatic with higher education students in China studying engineering. The colours, sound effects and shapes were inciting enough to not only keep the students focused but aided their understanding of the material. (Yu-bao et al, 2009). One major weakness with the practice of 3D animation within a learning environment is the lack of access to the software and the technical abilities to use them. (Kumar et al, 2016).

 Richard E. Clark disputes the significance of ‘media comparison” in his research paper (1983) as he argues that all teaching strategies have potential to be productive depending on the nature and quality of the instructions given. Nonetheless, in order for us to have a firmer view of the effectiveness of ABL, comparison studies are pivotal. A study was carried out in Israel to determine the effects of “BrainPOP Animations” on both elementary and secondary school students’ transfer of scientific and technological knowledge as well as their motivation to learning. The experiment lasted one week with a total of four hundred and eighteen pupils taking part. Both elementary and secondary school students’ performances and interest in the subject improved in an ABL environment as opposed to static textbook methods. (Rosen, 2009). Thus, proving yet again the advancement of animation technologies throughout the past four decades and its influence on education.

Historical and political cartoons are educational strategies that have surpassed time as technology was not always required for their creation. They appeal to an extensive range of age groups as they challenge and illustrate various topics (Christensen, 1983). Learning about historical figures and events is generally correlated with memorization (Steinbrink et al, 1988). John E. Steinbrink conducted a short, teacher assisted, social studies exercise on middle school students aiming to aid their thinking skills. The results showed that the student’s showed a heightened interest in the subject at hand and also improved their ability to identify symbols and name’s from past political eras. He did, however, urge the importance of teacher assistance for students of this age bracket as illustrative cartoons are commonly exaggerated which means the subject matter can be easily misinterpreted.

Brenda Holub also conducted a study in 1988 on educating middle school students in American history. “Students need to develop information-processing skills to analyse and think about historical and contemporary data.” (Holub et al, 1988). Therefore, by using political cartoons in a classroom environment, which include promoting controversial issues and convoluted ideas, drives the student to think independently and conclude their own thoughts onto the topic. To do this adequately, Holub also implores teacher assistance for students at this age. Moreover, pupils at this time required patience to develop the dexterity to interpret the context of the cartoon (Heitzmann, 1998).

*The National Council for History Education* (NCHE) presume that historical reasoning and thinking helps individuals assimilate “human situations, challenges and interactions.” (NCHE, 2019). Nowadays, cartoons are able to be animated as technology has advanced significantly. Political and historical cartoons are animated through suggesting a correspondence between the affair depicted in the illustration and the topic which the artist is discussing (Werner, 2004). A research study was carried out in 2011 to educate students on the former President of South Africa, Jacob Gedleyihlekisa Zumas’, rise to power in 2009. With the content of the animated cartoon being powerful, yet, contentious, the study was an efficient approach to test the students’ memorization and comprehensive proficiency (Hammett et al, 2011). The article concludes that cartoons do, in fact, provide a valuable resource for students in higher education. Albeit, admitting that implementing adequate background knowledge drives the students to produce their own, individual opinions and provokes further discussion alongside this. This outcome demonstrates that historical cartoons benefit mature individuals as well as pupils at an elementary age.

Research so far has confirmed that background information is crucial in aiding students’ understanding and reasoning with political and historical cartoons, thus, stating that it is merely an aid alongside teacher assisted classes unless the students have prior factual insight and/or education.

1.3 Digital Natives

“Digital Natives” is a phrase contrived by Marc Prensky as he established they were “native speakers” of the digital dialect of computing technology and the internet (Prensky, 2001). This collective group of individuals may also be recognised as the “Net Generation” (Roodt et al, 2013) which is another term given to describe the digital generation, as collectively, these individuals grew up with and use technology in their day to day lives through the means of mobile devices, laptops and personal computers (PC). A grosser generalisation would be to suggest that this is anyone born from 1980 onwards (Palfrey et al, 2008). Due to this, technology now plays a large part in how *digital natives* not only acknowledge but also comprehend the world around them.

According to a number of reports, schools and universities constantly receive feedback from students over their preference on using Information and Communication Technologies (ICT) in classroom environments (Jones et al, 2011). This study highlights student demand for a more progressive means of education, furthermore, that individuals undergoing academic schooling believe that information technologies are a more convenient method of implication knowledge.

The *digital natives’* world moves so fast and they are continuously dealing with multitasking substantial amounts of information at once on devices that they enjoy and rely on in everyday life. The image(s) at the start of the content prove much more appealing to them than the text itself (Prensky, 2001). This shows that visual aids make the topic more appealing, therefore, individuals will be more willing to engage with the subject matter. Kirschner and Bruyckere, who collectively composed the article *The Myths of the Digital Native and the Multitasker*, however, deny Prensky’s theory that individuals who grew up with digital technology are better at multitasking a number of sources and information. They both argue that the human brain is naturally designed to multitask regardless of societal evolvement and influence (Kirschner et al, 2017). Further in-depth research is thereby necessary to analyse if digital technologies have, in fact, aided the *digital natives’* ability to process a multiple number of information and tasks simultaneously.

It has been reported that 40 percent of all *digital natives’* writing is conducted out with school or university (Thompson, 2013). With this study, Thompson highlights that due to current technologies, *digital natives* partake in “life writing”, which includes concepts such as; texting, e-mailing, blogging etc. Moreover, with the ability to interact online, they have the power to answer back to media as opposed to solely consuming it.

As students of the last four decades have a high degree of technical literacy, their learning behaviours have altered from previous generations (Roodt et al, 2013). Newer technologies such as YouTube and Web 2.0 have been recommended as learning tools to help digital natives engage with education (Duffy, 2008). YouTube is a website and mobile application that is widely used for uploading and sharing videos as well as viewing video content that other users have (Duffy, 2008). Web 2.0 is the term given to the new era of world wide web (www), from basic HTML to a more progressive and interactive website experience (Techopedia, 2019). Its main component is social media as individuals are able to express their own opinions on everything from product reviews to major world events and much more . Marsh and Rajaram (2019), reviewed in their paper that a vast number of sources and factual publications are available online. This then prompted the question - if individuals, for this reason, approach reading information “superficially”? It is then stressed within the article that this method of processing and retaining information alters the way students perceive educational written textbooks (Marsh et al, 219). This study depicts a more comprehensive analysis of cognitive learning through Web 2.0 and its effects on rationalization and memory.

Roodt and Peier conducted a research study to determine if student engagement would increase due to the use of YouTube in the classroom on a subject that has seen interest deteriorate over the last five to ten years. The pupils’ learning experience was constructive as well as entertaining, moreover, they requested for more YouTube videos to be present within their time in education. Thus, proving here that ABL helps digital natives, not only understand but enjoy a once mundane subject. Careful consideration must be implemented into choosing reliable content, however, if YouTube is to be used as an educational resource (Jones et al, 2011). Troy Jones’ research paper, “*YouTube: Educational Potentials and Pitfalls*”, also warns that the website can be unreliable as the content is supplied by users, therefore, can be withdrawn at any moment.

Chapter 2: Sources and Methodology
2.1 Overview of Methodology

In order to test the hypothesis that the use of animated cartoons can improve learning of digital natives, several research methods have been used. These methods provide mainly qualitative data about the analysed animated multimedia and how it influences the learning process of the viewers. The initial plan of this research included a focus group followed by a series of in-depth interviews. However, in order to be able to analyse in greater depth the animations themselves, the use of case studies will be implemented initially. This method allows a more profound insight of the connection between animations and digital natives’ learning processes. Furthermore, the findings will aid in producing a hypothesis which can later be tested through the means of human participants for qualitative data. The three case studies aim to answer some of the theories raised by the academic discussion:

1. Does the use of animated cartoons heighten the viewers’ interest in learning history?
2. Is a sufficient amount of background knowledge crucial to the viewers’ understanding of the content?
3. Does the use of animated media, when describing a controversial area of the subject, provoke the viewer to rationalise and think independently?

Current educational animations vary from basic animating text, motion graphics, 2D animation and 3D animation. This research focuses on the analysis of:

1. An educational, online YouTube channel that incorporates basic 2D animation with a factual narrative.
2. An educational, televised 2D animation about historical figures.
3. A popular, animated television series that includes exaggerated, historical events and references.

Altogether, these three animations were analysed to provide a deeper insight into how *digital natives* respond to animation-based learning and if this method aids their memorization skills when learning history. Looking back on the literature review, this research aims to explore cognitive learning when applied to an academic study (history), and if it then enhances the viewer’s comprehension of the subject as a whole. The case studies were carefully chosen as they represent three diverse educational techniques within the animations. Despite their contrasting methods, these animations all aim to educate their viewers alongside providing them with entertainment.

## 2.2 Case Studies

 The following sub-chapters present the case studies analysed for the purpose of this paper. Each animation is briefly introduced and its significance within the academic discussion is evaluated. The specific style of animations and the software used to create them are described in full to offer a deeper insight into how technology has advanced in reference to creating animation - as stated in the literature review.

### 2.1.1 YouTube Channel – “Simple History”

 “Simple History” is a YouTube channel created in the United States of America on the 14th October 2014. The channel itself has over 1.9 million subscribers and their videos, collectively, have reached an impressive total of 310,261,829 views. They currently have 279 educational videos, the length of these animations generally range between 2 to 10 minutes long, with only the preeminent facts of events and figures being illustrated. The time frame of the animations has increased the longer the channel, itself, has been running. The medium originally consisted of 2D characters and theatrical property (props) with animated text across the screen, describing the events taking place. Over time, this technique has evolved to 2D animation with factual audio narrative. This helps the viewer to maintain all their attention onto the animation itself, without having to read the text describing the backstory and names of the historical figures.

The videos uploaded contain basic 2D animation, the process of creating the characters and props for the media is considerably straightforward. Adobe Phtotoshop and Adobe Illustrator, which have been used to digitally construct the artwork for these media, are the leading industry standard for character and background design as they possess the necessary tools within each software for illustration as well as to prepare the completed designs for animation. With these two programs, the artist is able to scan in paper sketches to then trace digitally or alternatively draw straight onto the screen. Once this section is accomplished, the saved file is prepared for importing into Adobe After Effects. This software is yet another industry standard for animation as it obtains the tools for basic animation and motion graphics. The character(s) created in Illustrator and/or Photoshop are imported into After Effects to then prepare for the next step, character rigging. This term is the name given to the process of creating the skeletal bone structure within your character, instructing the program as to which body part it is currently animating (Petty, 2018). Once the character is rigged, it is then placed onto the composition where the artist will combine all the artwork and animate the graphics within the software.

Although the videos that are uploaded onto the YouTube channel contain basic animation, which would imply that they are aimed at children, the violent graphic elements and large vocabulary used would suggest that the historical educational content is targeted towards a more mature audience. With this being said, the informational values of the medias could still be implemented on a younger audience. The channel covers many historical topics such as; World War I, World War II, The Russian Revolution, The Cold War and The Vietnam War. It also educates viewers on historical figures such as; Grigori Rasputin, Joseph Stalin, Ned Kelly, Yuri Gagarin and George Washington. With such a wide variety of content, “Simple History” provides viewers with a vast amount of knowledge on different eras throughout time, furthermore, the channel prioritizes education over entertainment.

2.1.2 BBC Bitesize – “Historical People”
 “Historical People” is a short, animated series created for televisions’ BBC Bitesize program by the animation company *Arcus Animation Studios.* The studio, itself, is located in Newcastle, England and specialise in 2D animation. They have worked with many big-name clients including; *Sega*, *Channel 4’s – E4*, the *National Health Service* (NHS) and the *British Broadcasting Corporation* (BBC). Similar to the previous case study, the “Historical People” run time is between 1 to 3 minutes long. The channel produces short, animated briefs on historical figures, supplying viewers with the fundamental facts that will aid them through education or add to current existing knowledge they have of an era. The medium consists of fluid, 2D animation as the workflow is abundantly smoother than other simplified animations. The videos include animated characters and backgrounds, as well as, voice actors who are impersonating the figures, therefore, building on their character. The content is created using the same software as mentioned previously – Adobe Photoshop, Adobe Illustrator and Adobe After Effects. As these programs are the industry standard, most animation studios will utilize them when creating animations. In order for the media to run smoothly, however, additional plugins are necessary for a more refined appearance. Through an e-mail with James Taylor, CEO of Arcus Animation Studios, I learned of the After Effects plugins and scripts used for the creation of *Historical People*. As stated, Photoshop and Illustrator were used for; asset creation, backgrounds, props and character parts. All the animation is completed using After Effects with the use of “DUIK” and “RubberHose 2”, which aid the creation of puppet rigging within After Effects (Taylor, 2019). *DUIK* is an extensive rigging tool made specifically for After Effects, created by Rainbox Productions, compiled with all the necessary functions that 3D software’s operate with for the means of character animation, compiled into one program that utilizes these behaviours for 2D animation (Dufresne, 2018). The plugin is free for download from Rainbox’s own website. *RubberHose 2* produced their own take on character rigging by offering users the ability to make the bone structure of their illustrated character more flexible. Rainbox brand this method, *RubberPin* and *RubberRig*, as the script enables the body parts to stretch, giving the creations a smoother and more energized presence (Battle Axe, 2018). The cost for this extension is a one-off payment of forty-five US Dollars.

The completed animations are produced for BBC Bitesize which is a televised program and also an online resource for individuals undergoing education. Due to the more relaxed vocabulary used, *Arcus* maintain a level of entertainment within the medium, implying that young adolescents are the main demographic for the animations. Their website also has various learning sections for primary, secondary and higher education. *Arcus’* own animated features cover historical figures such as; Neil Armstrong, Mary Anning, Guy Fawkes and Emmeline Pankhurst. Although the amount of content does not match the previous case studies, the animation that is produced includes more structure, detail and emphasis on character design, furthermore, the animated shorts attempt to engage the viewers with animation alongside entertainment.

### 2.1.3 “The Simpsons” – “Tales from the Public Domain”

 “The Simpsons” 2D animated television series is a household name as the show, itself, has been running for over thirty years with a total of six hundred and thirty-nine episodes (Sky, 2019). The cartoon is a *Gracie Films Production* (GFP) in association with *20th Century Fox Television* (Fox), GFP develops and produces the animation for “The Simpsons” (Fox, 2019). Each episode has a runtime of twenty-two minutes, during which, the content contains entertaining storylines and comedic humour in order to engage with a broad public audience. The cultural jokes and references throughout the show are aimed at mature viewers, however, the subtlety of the context within the script, alongside memorable catchphrases, allows individuals of a younger generation to enjoy the sitcom.

As the show has been airing for the past three decades, the animation methods have evolved over time. Eric Tran, who has been the head artist for “The Simpsons” for the last fifteen years, explained how current animation software has aided the production company in creating episodes more efficiently, as opposed to drawing frame-by-frame using pencil and paper (YouTube, 2012). He also states that *Toon Boom* is the current animation software, in preference to After Effects, used by GFP and many other high-end animation companies. *Toon Boom* animation offers three different software options; *Harmony*, *Storyboard Pro* and *Producer* (Toon Boom Animation, 2019). Simultaneously, these three products offer animators and companies all the essential tools for creating incomparable animated cartoons.

“The Simpsons” episodes are aired worldwide, they contain an abundance of cultural and historical references throughout each season. *“Tales from the Public Domain”* is a specific episode from season thirteen that has been analysed for the purpose of this paper. Aired on March 17th, 2002, it contains three short, historical narratives. These include historical figures; Odysseus, Joan of Arc and Hamlet, all of which are portrayed through characters from “The Simpsons” series. The episode begins with an immediate jest to a cultural reference, thus, setting the tone of the episode. In order to retain from illustrating distasteful details, comedic and satirical humour is supplied throughout the episode, hence, maintaining a level of animation appropriate for all audiences. The episode finishes with a quip concerning the degree of inaccuracies and exaggeration implemented throughout the chapter. “The Simpsons” have always maintained a high level of entertainment throughout the last three decades, with some educational values applied, still, factual information is not at the forefront of the creators’ objective.

# Chapter 3: Findings and Discussion

## 3.1 The Use of Animated Cartoons in Order to Heighten the Viewers’ Interest in Learning History

Engaging with the audience is the primary objective for most animations, even those which aim to educate through this medium. “Simple History” applies a mix of bold and contrasting colours to highlight certain features of the animation. Referring back to the literature review, Yu-bao (2009), stated that the colours and shapes of the graphics within the media aided the individuals’ comprehension of the subject in addition to heightening concentration levels (Yu-bao et al, 2009). Furthermore, the channel does not edit out nor censor any graphic elements - such as blood, weapons etc – adding to the shapes and colourization of the animation, therefore, further engaging with the audience. As the online channel is formed of basic illustration, the content itself lacks consistency and continuity as certain images and animated scenes are recycled throughout the animation, thus, creating a monotonous tone that could potentially disengage the viewers’ interest. The voice-over narration within the “Simple History” videos add an overall soothing and captivating element with emphasis on words that hold importance to the event(s) taking place. These are generally accompanied by animated text across the screen, placed in-front of the illustrations. Referring back to the literature review, Sturma (2001), claimed that written text was not as effective as graphic elements or film (Sturma, 2001), however, using animated text as implemented here adds to the emphasis of the important facts and information. The findings here prove that text can be combined with an animated sequence if specific words are chosen and placed correctly in time with the corresponding illustrations.

BBC Bitesize’s - “Historical People” - consists of more advanced animation than the previous case study. The frame by frame ratio appears much smoother, thus, a greater amount of work and detail has gone into the production. Referring back to the literature review, Rosen (2009), argues that advancements in animation technologies throughout the last forty years has increased students’ interest in learning as ABL has a more prominent place in the classroom, moving aside static textbook methods (Rosen, 2009). Thus, concluding that with animation software now capable of producing high-end animated cartoons, students will engage more with the subject at hand. The televised media here also contains a more relaxed vocabulary with several jokes included throughout the segment. Alluding back to the literature review, Thompson (2013), reveals that *digital natives* participate in “life writing”, where they possess the ability to communicate with individuals through a number of different means, therefore, have become accustomed to answering back to media (Thompson, 2013). Hence, with the animation containing relaxed terminology, it engages the viewers on their level of articulating and comprehending information. With this being said, vocal impressions of historical figures may possibly distract viewers from the factual message being portrayed as the comedic. For example, during the Neil Armstrong animation, there was a humorous vocal impersonation of John F. Kennedy. This comedic addition to the animation proved entertaining, however, it did divert from what the character was saying and the statement of history he was attempting to define.

As“The Simpsons”has been airing since the late 80s/early 90s, it has become a popular sitcom through households worldwide. Albeit, the ratings have reduced over the last ten years, yet, the show is still regarded as one of the most successful scripted series in US television history and still vastly popular throughout the rest of the world (Schneider, 2016). For that reason, individuals are more inclined to watch the cartoon simply because they wish to. Therefore, “The Simpsons”possess a greater ability to engage with an audience solely through their title. In regard to educating viewers through the animation, implicit learning is a technique often associated with non-educational focused mediums. This is where individuals gain knowledge in an “incidental manner” (Seger, 1994). Therefore, “The Simpsons” obtain the capability of entertaining their viewers as well as educating them through comedic, animated illustration. This method may then influence the audiences’ interest on the historical event(s) being displayed. For example, in the episode, *“Tales from the Public Domain”*, during the execution of Joan of Arc the viewers are subjected to a vast number of jokes and interactions between Lisa Simpson – who portrays Joan of Arc - and the rest of the Simpsons family. This illustrates a horrific section of the historic story in an enjoyable manner, moreover, altering the way this historical event would be interpreted through factual textbook or novel.

The findings in this chapter determine that all three case studies hold the ability to engage with viewers on dissimilar levels, therefore, are able to heighten the viewers’ interest on historical events through captivating animation techniques and strategies.

## 3.2 Background Knowledge and its’ Relevance to the Viewers’ Understanding of the Content

 “Simple History” YouTube animations include a vast amount of information throughout each of the uploaded segments. Each animated short describes in detail the characters and events taking place, moreover, the narrator offers additional information during each scene on specific items and props which retain their own significance throughout history as well as accentuating pertinent time and dates. For these reasons, “Simple History” provides viewers of all ages enough information throughout the animations for background knowledge to be required. As mentioned in the literature review, Roodt and Peier (2013), revealed that YouTube videos within a classroom environment were gaining higher demand from pupils as this medium was perceived as an enjoyable source for learning (Roodt et al, 2013). Yet, they equally acknowledged that caution must be implemented when selecting educational material through YouTube as a wide variety of the content is unreliable.

The “Horrible People” animations offer a good amount of knowledge throughout each episode, however, due to the limited time constraints of the videos only the crucial facts and figures are illustrated. Citing back to the literature review, Steinbrink (1988), urged the importance of teacher assisted classrooms when learning through this medium as the exaggerated media can often lead to students misreading the factual content provided (Steinbrink et al, 1988). As “Horrible People” contribute a number of entertaining quips and character impersonations within a very short time scale, some historical facts may be overlooked by many students. For example, at the beginning of the Guy Fawkes animated cartoon, the narrator adopts an exaggerated English accent and starts to describe the religious battle within parliament at that time whilst a number of other audible events take place on screen. A vast amount of on-screen content and sounds can overwhelm the audience which may lead to confusion and misinterpretation. Still, the animation is structured in a professional manner with enough information for individuals to comprehend the significance of the figure and events taking place.

A favourable amount of knowledge is required to understand a great deal of the historical events “The Simpsons” demonstrate within their episodes, particularly *“Tales from the Public Domain”*. This is due to the vast amount of cultural references the screen writers apply to enhance viewer entertainment. As mentioned previously, an extensive amount of jokes can lead viewers to misunderstand the factual information applied within the media (Steinbrink et al, 1988). The episode in question combines an array of jests, cultural references and historical figures, some of which are added in from different time periods for comedic value. Referring back to the literature review, Heitzmann (1998), suggested that viewers of a younger generation required time and patience to develop an aptitude towards construing the context of the animation (Heitzmann, 1998). This reflects on “The Simpsons”as younger viewers growing up with the sitcom are often educated through implicit learning. Furthermore, the jokes and references used embed specific components and details that individuals then recall later in life (Von der Goltz, 2011). This research suggests that “The Simpsons” can implement knowledge onto their audience through entertainment-focused animation style without viewers being aware they are learning. Which as a result, provides individuals with background cultural and historical knowledge for undertaking future education.

The findings in this section conclude that the initial two case studies - “Simple History” and “Historical People” - incorporate enough factual information throughout their content, thus, educating the audience without the requirement of background knowledge. The third case study - “The Simpsons” -, however, deduces that the sitcom itself can be utilized by viewers as a means of implicitly learning background knowledge and information of historical events.

## 3.3 Provoking the Viewer to Rationalize and Think Independently through the use of Animation

 YouTube channel “Simple History” animations upload short videos containing a vast amount of information about historical figures and events. Additionally, a small variety of their segments depict strange occurrences throughout history, leaving viewers in a state of confusion with unanswered questions.

The narrator encourages viewers to leave comments below all the animated features in order to discuss their own thoughts and opinions. As stated in the literature review, Prensky (2001), *digital natives* grew up with and now operate technology in their everyday lives through devices such as mobile phones, tablets and laptops (Prensky, 2001). Therefore, viewers of this YouTube channel can interact with the comments section and get involved in the discussions, implementing their own views and opinions of the historical events and figures. Referring back to the same area of the literature review, Prensky (2001), also expresses that *digital natives* are constantly multitasking a considerable amount of information directly through these portable devices (Prensky, 2001). With the animations consisting of a large volume of historical facts within a short time scale, this study demonstrates that *digital natives* are capable of comprehending this multitude of knowledge due to being technology literate.

“Historical People” cartoon animations present the audience with facts concerning the historical figure that the specific media is focusing on. These segments are maximum three minutes in length leaving room for only the most pivotal details. As the animations incorporate solely the main facts of the historical figures, viewers can retain and process the information through this medium to a greater degree enabling them to promulgate their own judgement. Citing back to the literature review, Holub (1988), states that the use of political and/or historical cartoons in the classroom, which involve controversial topics, motivates independent reasoning and stimulates self-sufficient rationale of the material (Holub et al, 1988). “Historical People” depict figures such as Guy Fawkes and Emmeline Pankhurst whose significant inputs define a controversial era in human history. For example, the Emmeline Pankhurst animated segment depicts a time in human history where women had little rights and were not allowed to vote in government decisions. The animation goes on to describe the contentious methods used by the suffragettes – the group of female activists who protested parliament in order to defend women’s rights and challenge the male only voting system that was in place. This was a pinnacle moment in time for female rights which incites powerful emotions for viewers. Hence, the animated cartoons provoke individuals to challenge and debate the content. Looking back on the literature review, Hammett (2011), maintained the notion that animated cartoons aided individuals memorization and understanding skills (Hammett et al, 2011). Furthermore, he stated that the inclusion of adequate background knowledge incites individual assessment and generates further discussion.

“The Simpsons”illustrate historical figures in the episode *“Tales from the Public Domain”* by having the popular characters in the series adopt the roles. This method of storytelling increases the viewers’ amusement as it addresses topics through an informal narrative, thereby, allowing viewers to respond nonchalantly. Referring back to the literature review, Thompson (2013), again affirms that *digital natives* engage in “life writing”, hereby, inciting them to rationalize and respond to “The Simpsons”in their own words (Thompson, 2013). This animation style provokes viewers to discuss and challenge on screen events as the vocabulary used corresponds with their everyday life terminology. The sitcom also implements cultural and historical figures from different time periods throughout history. Referring back to the literature review, Roodt and Peier (2013), expressed that the use of animated videos in the classroom was becoming a more requested source of education with many pupils as they produced a high entertainment factor. As a result of this, individuals can respond to the animated cartoon light-heartedly, provoking further discussion for the sake of repartee.

The three findings here conclude that all three case studies – “Simple History”, “Horrible History” and “The Simpsons” - animation characteristics provoke their audience to rationalize and think independently in response to the media. Each case study educates viewers in divergent manners and as a result of this, individuals react differently to each animation style. Moreover, through these differing animation methods, individuals respond appropriately to the facts and content presented to them.

# Chapter 4: Conclusion and Further Study

## 4.1 Conclusion

 This paper is set to explore cognitive learning when applied to an academic study (history), and if it then enhances the viewer’s comprehension of the subject as a whole. The research demonstrated that animation-based learning has become an ever-growing method in classroom environments. Student’s interest levels and comprehension of academic subjects develop due to the digital medium and all the entertaining aspects it entails. The findings throughout the paper have expressed how animations have aided viewers’ memorization skills. This factor is a valuable discovery as the process of learning history involves a great deal of academic comprehension along with the ability to memorize and retain information that is being delivered. The paper concluded that the animated media not only engaged and raised viewers’ interest in learning history, they also provoked the audience to rationalize and reflect independently due to the varied methods and techniques used through the diverse animation styles.

Some minor issues were revealed during this paper, however, as a vast number of sources and articles stressed the practice of teacher assisted classrooms, whilst conducting ABL lessons, was crucial in aiding the students’ comprehension of the subject. Nonetheless, the research established that this method was only necessary if the educational content was not conscientiously chosen. The study also analysed that entertainment-based animations that contain exaggerated historical events implement varied background knowledge - cultural as well as historical. Therefore, viewers are educated through an implicit learning means, which will prove beneficial throughout future education, moreover, in learning history.

## 4.2 Further Study

 Overall this paper has analysed in great depth the animated cartoons and with this, generated a more profound insight into the connection between the animated media and *digital natives’* learning processes. In order to now expedite the hypothesis that animation-based learning helps *digital natives* learn history, further extensive research is required in specific areas of this study.

The *digital native* generation dates back from the 1980s to the present day. This paper summarizes that ABL is an effective learning tool for individuals of this era learning history. However, the study fails to recognise which specific age groups respond better to educational animations. For that reason, research consisting of four disparate age groups throughout the *digital natives’* time period should be compared. The age categories will consist of; eleven to sixteen, seventeen to twenty-two, twenty-three to thirty and thirty-one to forty-year olds. Each group will then be divided into one focus group and one control group. The focus group undertaking ABL using educational animation as researched and analysed in this paper. The control group engaging in static textbook methods, attempting to learn and memorize the same information as the focus group. The central areas of interest throughout this research method will be:

1. Engagement and interest of individuals learning history through ABL.
2. Memorization skills with ABL compared to static learning.
3. Comprehension of the animation and history as a whole.

Further research into the current study should depict the correlation between *digital natives* and their education of history through animation-based learning. As previously stated in this paper, technology has advanced so far that individuals now rely on handheld devices in their everyday lives. This progression has led to static educational methods no-longer being pragmatic. The *digital native* generation responds better to technology as this means has helped develop their thinking and comprehensive skills through day-to-day interaction with digital devices. Therefore, further research to test the hypothesis of this paper is imperative to understand how much recent advancements in technology can continue to aid the learning of *digital natives* and other generations to come.

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