The Impact of Storytelling on Adult Learning Retention through eLearning

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Abstract

This literature review describes themes from current work around the use of storytelling in eLearning and its impact on learning, memory, and retention. This research focuses on storytelling utilizing digital delivery (eLearning) through multimedia, which can include visuals, images, sound, videos, animations, etc. The researcher's perspective is founded in Multimedia Theory, which holds that educational information delivered via media containing at least two modalities (i.e,. aural and visual) is coded within the brain in two separate areas, thereby doubling the opportunity to be recalled (MLT, n.d.). Additional perspective is gained through Narrative Theory, which holds that humans learn best through story (Clarke & Rossiter, 2008). The following will explore the themes in the literature as they pertain to learning and storytelling through digital media.

Introduction

Storytelling itself may be the oldest form of delivering information known to humanity (Kromka & Goodboy, 2019). Marrying the oldest form of knowledge delivery (storytelling) with the newest (digital media) may be a unique way to deliver educational content to adult learners while ensuring learning retention. While modern digital storytelling (DS) has been around since 1994, when Joe Lambert is credited with its conceptualization (Lambert, J., & Hessler, H. B., 2018), it remains the newest form of storytelling, given that storytelling itself is as old as human speech. Essentially, DS utilizes media to convey a story (Robin, 2015). Traditional DS entails using digital media to express a *personal* story or experience, using visuals, music, and an emotional connection to tell the story of the lived experience (Lambert, J., & Hessler, H. B., 2018). Balaman (2018), Clarke (2017), Hull and Katz (2006), Jarrah et al. (2024), Lim et al. (2022), Prosser (2014), Rajendran and Yunus (2021), Robin (2011), Samosa et al. (2021), and Sell et al. (2023) collective research demonstrates the use of DS as a tool for students and storytellers to share their personal stories and lived experiences. This research mainly details the effects of students creating their own digital stories, primarily for language learning assessment. However, more research could be done around the use of DS as an educational delivery tool—allowing instructors to use DS to deliver educational content, whether the story is a case study, a personal experience (applicable to the content) from the instructor's life, or a fictional portrayal of a character representative of the learner persona acting out an example from the educational content through a plot-driven story. The expected result should be the same: that a student's emotional connection to a relevant story increases learning retention.

Since it is known that stories make content more memorable (Kromka & Goodboy, 2019) and are a powerful way to engage with an audience, if instructors used digital storytelling to convey learning content, it could be reasoned that learning retention would increase.

The purpose of this research is to support a further study toward creating a storytelling framework for instructional designers to use while creating their eLearning designs. This literature review will be the foundation for the Delphi study to determine the elements of storytelling needed to create successful education.

Background

My proposed research will draw on Multimedia Theory (which is based on dual coding) and Narrative Learning Theory. Multimedia Theory holds that students learn better when there are both visual and aural stimuli (founded on the dual coding theory that proposes information has twice the opportunity for recall when it's stored and coded by two means: visual and aural—because it's stored in two areas of the brain) (MLT, n.d.). Multimedia Theory also supports the cognitive overload theory, suggesting that students can only absorb so much information at a time. Therefore, short, concise videos are best. Narrative Learning Theory is an emerging concept positing that people learn through stories (Clark & Rossiter, 2008). Wyer (1995) suggests information is stored in a person's brain as a story or in story fragments. Therefore, all aspects of a person's reality are related through story, including the stories they tell themselves (and others), and those learned from others. While this researcher tends to lean toward Constructivism in practice, both Multimedia Theory and Narrative Theory stem from Cognitive Theory, speaking to how information is stored, assimilated, and retained for recall. Additionally, storytelling in learning could support constructivism because learners connect new information they hear through stories to their own previous experiences. In this way, the new information builds on old (known) information.

Methodology

To identify literature on this topic, I began by searching the ERIC database using the following keywords: *storytelling, digital storytelling, narrative theory, multimedia theory, visuals and learning, visual communication, story-based learning, dual-coding, digital learning, eLearning, and e-learning*. A total of 100 sources were collected and organized using Zotero. The researcher used a folder structure while reading through the sources, so once a source was completed, it was moved to a "read" folder, while those yet to be read were left in the main folder until they were completed. As reading progressed, the researcher took notes in Notion to keep track of all sources and information. Additionally, the researcher used Zotero on an iPad to read, highlight, and annotate sources. Notes could be synced to the computer on Zotero and copied into Notion. Working in this way, the researcher was able to essentially create a digital zettelkasten (or slip box as described in Sonke Ahrens's 2017 book, How to Take Smart Notes).

The list of total sources also includes some of the recommended reading from BSU's EDTECH doctoral classes as they relate to my topic. Of the 100 sources, 27 were selected for inclusion in this literature review. Selection was based on relevance to the topic, whether the article specifically addressed storytelling and digital media, or the use of stories with visuals or additional media. Some sources were included based on an aspect of social learning, which

connects to storytelling because social connection is a key factor in making storytelling successful. Some sources were excluded for lack of reference detail (such as no year of publication), others were excluded because the article was a position or opinion piece and less of a substantial piece of research. While many studies focused on children, they were not automatically rejected. If the study results showed that learning was improved, I considered whether the results were limited to the age of the study participants or if they had wider scalability to perhaps an adult population. If the results seemed to speak more widely to humanity (rather than a certain age range), I chose to include the source.

Results

Storytelling has emerged in modern times in a variety of ways, such as digital storytelling, videos, visuals that accompany spoken presentations (PowerPoint slides), visuals that themselves tell a story by sequential viewing (comics), and more. Multimedia is common, and many people are accustomed to viewing short stories on social media simply by scrolling on their smartphones. Given the age-old compatibility of storytelling with visual media, several themes emerged from the research, including visuals, digital storytelling and multimedia, social connection, agency and meaning making, learner engagement, and recommended research methods. Discussion of these themes follows.

Visuals

The cliché that a picture is worth a thousand words became such because it is true. Visuals bring clarity and speak to a different part of the brain, almost superseding language (source). One can be in another country and communicate through pictures and symbols which hold a common understanding without speaking a common language. AminAfshar & Mojavezi (2017) and Vanichvasin (2021) found that inclusion of visuals with aural instructional content improved learning retention. Samosa (2021), rather than simply including visuals within the instruction, had students create animations (which constitutes visuals), resulting in improved writing skills.

Cohn (2013) wrote a dissertation on visual communication and how understanding can be gained by viewing images in sequential order. Think of comic books, which are images that tell a story. Words do not always have to be present in order to gain an understanding of what is happening in the images. Aligning with multimedia theory, visuals convey meaning without words to add another layer of understanding to educational content and provide an additional informational input stored separately in the brain from aural information (source). Thorn (2023) chose to implement comic-style characters and visuals in his implementation of video-based training for rural neonatal nurses in India, which shows that the style of visuals isn't as important as the connection to the learner. If a learner can imagine themselves in the scenario, see someone who looks like them, they feel connected and engaged. Grossman (2019) demonstrated similar results in her skill demonstration video production in The Gambia—the visuals were of villagers

performing the skills. While not comic-based, the representation of the learner was accurate and created a connection between the visual and the learner.

Pulling this concept a step further, Jewett et al (2001) discuss the multimodal nature of learning and meaning making in that learning occurs in the interaction across communication modalities (visual, written, and spoken word, contextual actions or movement, and body language). While Jewett et al's work mainly focused on the context of a science classroom, the strong reliance on multimedia theory and the multimodal communication methodology could lend clarity to why the works of Grossman, Thorn, Vanichvasin, and AminAfshar & Mojavezi all demonstrate the strength of visuals in learning.

Digital Storytelling (multimedia) as a learning device

Similar to Samosa's results of animations improving student writing, Balaman (2018) also found that by using digital storytelling, students improved their writing skills. Rajendran and Yanus (2021) report that the use of digital storytelling increases the motivation and self-confidence of students. Of the sources on this topic, many employ digital storytelling as something the students create in order to increase engagement and writing skills. Additionally, the digital storytelling projects are typically aligned with English writing or literature classes. Digital storytelling has been around since the early 1990s (since Dana Atchley and Joe Lambert opened the doors of the Center for Digital Storytelling-source), and it seems, at least in secondary school settings, to be relegated to mostly student project use. For example, Balaman (2018) sees digital storytelling as a "multimodal narrative writing genre" and focuses their work on how when students created digital stories, their English writing skills improved.

More than for literary improvement, Hull and Katz (2006) used digital storytelling as a way of developing identity and agency through the DUSTY program at a local library. The DUSTY program taught inner city teens and adults not only to develop narrative, but also helped improve computer literacy, and, like Rajendran & Yanus (2021) found, improved participant motivation and self-confidence.

Digital storytelling should not be limited to student projects or even limited to literary class assignments—while it is still a great use of the methodology. However, if instructors used digital storytelling as a content delivery method, students would be more engaged in learning because they would see real-life examples of the content being played out on-screen in a visual manner. Thorn and Grossman did just this in their projects by providing videos that connected to the learner culture and context, demonstrating the skills learners needed. By using digital storytelling as an educational modality, students could get immersed in the story, which automatically increases engagement. Kromka and Goodboy (2019) state that students felt more connected and had positive feelings toward the instructor when instructors shared personal stories. In this study, the instruction was delivered via video, which included the instructor's face as a cameo in the lower corner of the screen while presenting visual content on screen. While aligning with the concept of digital storytelling as an instructional device, the use of video and personal stories can be seen as a type of digital storytelling, although not in its truest form. The

results—that inclusion of stories increased student engagement and made the content more memorable—imply that digital storytelling as an instructional delivery method would be effective.

Social Connection

Storytelling has always been a social sport. Stories cannot be told without another person to play the part of the listener and receive the story. According to adult learning theory, adults bring experiences to the learning opportunity and in sharing those experiences with the group, adults connect the new information to previous experience—whether that of someone else or their own (source). Butcher (2006) leads with researching storytelling as a teaching methodology (although this supports the previous statements of digital storytelling being a great option for instructional delivery, Butcher does not actually use any media—simply conversing and sharing stories in a group as people have done for ages). Butcher, like Kromka and Goodboy, finds that stories positively connect instructors and students alike, and through discussion, stories validate learner experiences and uncover practical application of those experiences among the group. Similarly, Grossman (2019) and Thorn (2023) demonstrate the importance of social connection through their video-based instructional work. Both Thron and Grossman's work focuses on learners who belong to a specific shared cultural identity, and by visually aligning with their audience's culture, they can connect with their learners.

In agreement with Kromka and Goodboy's stance on learners connecting to instructors when stories are shared (2019), GuramatunhuCooper and Headrick "[defines] storytelling as an instructional strategy that invites members of a learning community (both learners and instructors) to use their personal experiences and varied identities to make meaning of and interrogate concepts and theories. As such, storytelling is a conduit for applying individual and communal meaning and value…" (GuramatunhuCooper & Headrick, 2022, p. 25).

Another aspect of social connection is through using instructor videos in online courses to create social presence, as Lowenthal (2022) describes. Similar to Kromka and Goodboy's (2019) findings of learners feeling more connected by being able to see the instructor's face during the video presentation, Lowenthal (2022) finds that when instructors share videos (introduction videos, instructional videos, or video feedback) in asynchronous online classes, students feel more connected to the instructor and the instructor is able to establish a sense of being present, even in a disconnected online environment.

Agency and Meaning Making

The act of narrating an experience allows the narrator to not only assign meaning to the experience or increase understanding of the situation. However, it paves the way for agency and future changes in life. While narrative in the sense of one's life story provides this as Goodson et al (2010) demonstrate in their Learning Lives project, narrative also allows learners to more easily ascribe meaning (meaning making) in educational contexts like Jewett et al (2001) and Winston (2017) who both used narrative as a teaching methodology in science classes.

Goodson's Learning Lives project studied how people make meaning through narrative, which demonstrated that the act of retelling their story—narrating their life experiences—caused participants to organize events in their life chronologically in order to tell the story. This simple act of retelling the story, in some cases, created new understanding and new realizations. One participant realized, through telling her story, that she was unhappy in her current circumstances, which led to agency in that she began to make new choices in her life to lead her in a new direction. Meaning making and agency seem to work together in this way through narrative. Similarly, in the DUSTY program, young adults participating in the program created digital stories about their life and through this act—similar to narrating—came to new understandings about their life which led to agency and new directions in their life (Hull & Katz, 2006). This also led to positive feelings toward the future that they may not have had before the experience.

Contrasting personal agency in life, agency within an educational story game, which allows learners to make choices that affect the outcome of the story or consequences for the character, creates a vicarious learning experience for the learner. Sell et al (2023) let students create their own story-based games, while Gillespie (2022) used a story-based game to teach journalism students about real-world situations they may face after graduation. In Sell's study, students created fictitious stories and choices which were more entertaining in nature and the educational value was more in the learning experience of programming the games and writing the stories. In Gillespie's study, the instructor created the game, and the educational value was learning through the main character's journey (via the choices the learner made for the character) and the positive or negative results therein.

Learner Engagement

As Stephen Peters says, "The shortest distance to someone's heart is a story." (Peters, 2018, p. 3). Storytelling engages the learner. As seen through previous themes, storytelling creates a connection between the learner's previous experience and the new information (Caminotti & Gray, 2012). Learners become immersed in the story and are able to imagine themselves in the scenario (source). For adult learners, storytelling is a way of packaging and delivering their experience with the group, and since their story is of their experience, it is essentially expressing their life; their identity (Caminotti & Gray, 2012). Further, Caminotti and Gray (2012) note as an adult shares their experience, they become a more active participant, which is another way of saying it enhances learner engagement. Caminotti and Gray go on to discuss the implications of storytelling in eLearning and how it could be an effective engagement device.

As previously mentioned, Grossman's work (2019) also demonstrates learning engagement through visual, cultural, and social angles in a small village in The Gambia, West Africa. Grossman's skill demonstration videos connect with her audience in part because she used real villagers performing relevant skills. The learner audience connects not only visually by seeing familiar faces and contexts, but the skills being demonstrated are such that the villagers can get involved with to help support the commerce and revitalization of their community. It

connects with a community need as well as a cultural impact. This reaches straight to the heart of the learners which fosters engagement with the learning.

Gillespie (2022) and Jarrah et al (2024) also discuss learner engagement through storytelling within eLearning but also add the element of gamification. Gillespie relies on the multimodal foundation of digital storytelling and gamification and Jarrah et al simply notes that storytelling within gamified eLearning is immersive (fun) and engaging.

Winston (2017) and Jewitt et al (2001) both discuss how stories make the content more engaging for learners because it assists in meaning making and avoids content overload. Winston (2017), a secondary chemistry teacher, suggests looking at the school year curriculum outline as a story arc and finding ways to tell the story of the curriculum across the year. He even included a traditional story structure framework diagram in his article to discuss how teachers could transpose their curriculum on the framework and create a story structure for their topic. By doing this, it not only supports cognitive load, but also makes content more memorable when framed within the context of a story.

Research Methods

Research methods as a theme emerged in two sources—while this did not come up across the breadth of sources reviewed, this helps make the case for further research into this area. Friesen (2008) points out that the qualitative narrative research methodology is underutilized in eLearning research as much research is focused on quantitative data, giving little credence to learner experience or even instructor experience with eLearning. Not only could more qualitative research be done in this area, but Friesen advocates for a balance of meta-narratives—the quantitative overarching story of the research—with strategic use of micro-narratives—personalized qualitative stories based on a single or a few individual experience(s). Micro-narratives lend a personal, story-based connection to the research.

Additionally, Lim et al (2022) conducted a literature review of 58 sources concerning eLearning and digital storytelling. Their conclusion is that many reports lacked rigor and theoretical foundation. In fact, Lim et al (2022) found that "90% of studies in the DST dataset did not report the reliability of the instruments used." Therefore, there is room for more intentional qualitative research studies utilizing the narrative framework and rigorously grounded in multimedia theory. Further, these studies could be designed to focus on the emotional connection, visuals, or storytelling aspects of eLearning.

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Conclusion

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Storytelling, while being one of humanity's primary methods of passing information from one to another since ancient times, has now been proven as an effective learning tool through numerous studies. Not only is storytelling simply an effective tool, but it can also be even more impactful through its synergy with multimedia. These studies above demonstrate the impact of storytelling on learning in a variety of educational contexts including eLearning, video, classroom, and even on the people of a small village in The Gambia, West Africa. The impact of

storytelling on learning is far-reaching beyond mere national borders; it touches the very heart of humanity. While some of these studies overlap thematically, they lack the specific connection of eLearning and storytelling combined. This is a gap that could certainly allow for more research. eLearning has been on the rise for some time, but especially now in our post-COVID society, virtual learning is an expectation, perhaps even a demand. More employees work remotely than ever before, and thus, even corporations must be prepared to provide virtual training. This demand, the research gap, and the proven track record of storytelling all point to the clear need for this Delphi study.

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