A FORMATIVE EVALUATION STUDY OF DIGITAL VIDEO STORYTELLING AS A TEACHING TOOL IN INTERPROFESSIONAL EDUCATION FOR UNDERGRADUATE HEALTH PROFESSIONAL STUDENTS

by © Ben Goodness Chinazom A Thesis submitted

to the School of Graduate Studies in partial fulfillment of the

requirements for the degree of

Master of Education (Curriculum, Teaching and Learning Studies)

Faculty of Education

Memorial University of Newfoundland and Labrador

SEPTEMBER, 2024

St. John's Newfoundland and Labrador

Abstract

Interprofessional collaboration (IPC) occurs when health professionals from various disciplines work together to deliver comprehensive healthcare. Interprofessional education (IPE) aims to cultivate this collaboration among healthcare students from various disciplines. Digital video story (DVS) utilizes multimedia narratives to convey experiences and lessons, making it a valuable educational tool. This research evaluates digital storytelling as a teaching tool in IPE, focusing on how digital video stories influence the understanding and perception of IPC competencies among healthcare students and how these stories can be optimized. Ten participants from various health profession faculties who completed at least one IPE skill session at Memorial University of Newfoundland and Labrador participated. Using a qualitative formative evaluation methodology, data were collected through semi-structured interviews after participants viewed a four-minute digital video story about a health professional in an interprofessional collaborative health team. Thematic analysis identified 12 key themes. Findings suggest that digital video story enhances healthcare students' understanding and appreciation of interprofessional roles and collaborative patient-centered care. DVS also appeared to have influenced participants to perceive IPC as an opportunity for skill training and support for new professionals. The findings also addressed learners' preferences and possible ways to optimize DVS for educational impact and satisfaction in interprofessional learning environments.

General Summary

Interprofessional collaboration (IPC) is when health professionals from different fields work together to provide complete healthcare. To teach students how to work in teams, interprofessional education (IPE) is used. Digital video story (DVS) involves using stories and imagery in video format to share experiences. This study looks at how DVS helps students understand and appreciate IPC. Ten healthcare students from Memorial University of Newfoundland and Labrador, who had taken IPE training, participated. They watched a four-minute video about a health professional working in a team and then shared their thoughts in interviews. The results suggest that a digital video story helped students better understand and value working with other healthcare professionals. It also improved their views on IPC as an opportunity for learning skills, supporting new professionals, and promoting effective communication. Overall, DVS made learning about IPC more engaging and satisfying for students.

Acknowledgments

First, I would like to express my profound gratitude to God Almighty for granting me the strength, wisdom, and perseverance to complete this thesis.

I am deeply indebted to my thesis supervisor, Professor Vernon Curran, for his detailed guidance, insightful feedback, and unwavering support throughout this research journey. Your expertise and encouragement have been instrumental in shaping this work and my perception about teaching.

I extend my sincere thanks to the Family Care Team at Eastern Health, through whom the story was curated and narrated by one of the nurse practitioners. Your support and participation were crucial to this research.

Special thanks to the Media Department of the Centre for Innovation in Teaching and Learning at Memorial University of Newfoundland and Labrador for handling the production of the digital story. I am grateful to Mr. John Bonnell, who was the producer and director of the digital story used in this study. Thank you for your exceptional work and dedication.

I also wish to acknowledge the support from the IPE coordinators at the Centre for Collaborative Health Professional Education. Your commitment to interprofessional education has been an inspiration and a driving force behind this study.

I am also immensely grateful to the different health profession faculties that supported this study during the participant recruitment phase and the ten participants from the various faculties who took part in this study. Your willingness to share your experiences and insights made this research possible.

Finally, I would like to thank my husband Engr Umezinwa Chukwuebuka Ben, my three children; Jose, Jayden and Jenelle, for their unwavering love, patience, understanding and encouragement throughout this journey.

This thesis would not have been possible without the contributions and support of all these individuals. Thank you.

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Chapter 1

Introduction

Interprofessional collaboration (IPC) is a process where healthcare professionals work together to deliver patient care services (Hammick et al., 2007). This often involves a team of healthcare professionals with diverse backgrounds collaborating with patients, families, caregivers, and communities to provide the best possible care (Centre for the Advancement of Interprofessional Education [CAIPE], 2002). For IPC to be effective, healthcare professionals' communication, collaboration, coordination, and cooperation must be present in patient management (WHO, 2010). Interprofessional collaboration in healthcare is vital for providing high-quality patient care (WHO, 2010). However, healthcare professionals are often trained in silos, resulting in a lack of understanding of other professions' roles and responsibilities, which can lead to miscommunication, conflict, and suboptimal patient outcomes. To address this challenge, health professional education programs have incorporated interprofessional education (IPE) to train students from different healthcare professions to work collaboratively. While IPE has shown promise in enhancing interprofessional competencies and collaboration, traditional teaching methods may not be sufficient to prepare students for the complex realities of interprofessional practice.

Interprofessional education (IPE) is a collaborative approach in healthcare education where students from different health professions learn and work together to enhance patient care delivery (WHO, 2010). It involves integrating different healthcare professions' knowledge, skills, and values to improve healthcare outcomes (Hammick et al., 2007). When these healthcare students from various professions come together, they learn with, from, and about each other to enhance their collaborative competencies and patient outcomes (WHO, 2010). The World Health

Organization (WHO) recognizes the importance of collaborative practice and interprofessional education. In the "Framework for Action on Interprofessional Education & Collaborative Practice" report (WHO, 2010), interprofessional education is recognized as key element of action items for collaborative healthcare, as seen in Figure 1 below.

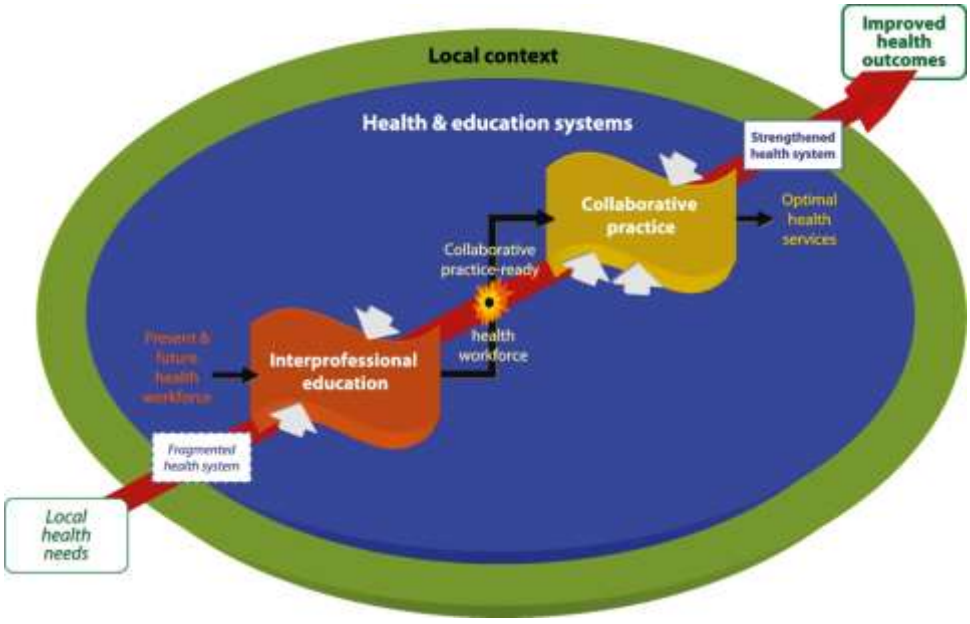

Figure 1. The WHO model of causes and effects in IPE and IPC WHO (2010) as seen in Neubauer et al. (2024)

Interprofessional education brings together both future and present health workforce and functions as a preparation ground for both learners and practitioners, so they can become a collaborative, practice-ready health workforce. This will lead to optimal health service, and a strengthened health system which will improve health outcomes (Gilbert et al., 2010).

According to Buring et al. (2009), interprofessional education is an important educational technique for training students in the health professions to offer patient care in a collaborative

team setting. Reeves et al. (2013) conducted a systematic review to investigate the impact of interprofessional education on collaboration in healthcare practice and highlight the importance of IPE in promoting effective collaboration among healthcare professionals and improving patient outcomes. The researchers reviewed 17 randomized controlled trials that assessed the impact of IPE on various outcomes, including interprofessional collaboration, patient outcomes, and healthcare professional attitudes. The findings indicated that IPE had a positive effect on interprofessional collaboration, with improvements in communication, teamwork, and patient-centered care. The study highlights the importance of IPE in promoting effective collaboration among healthcare professionals and improving patient outcomes. This aligns with Bashatah et al. (2020) work that suggests health outcomes are improved by collaborative interprofessional practice and as such, interprofessional education is crucial in raising the standard of care and fostering better teamwork. These ideas are all in line with the World Health Organization Framework for Action on Interprofessional Education and Collaborative practice, emphasizing that collaboration among healthcare professionals is essential to improving health outcomes (WHO, 2010). Overall, interprofessional education has become an important focus in healthcare education, as it promotes collaboration, communication, and teamwork among healthcare professionals to improve patient outcomes (Barr, 2013; WHO, 2010).

Memorial University of Newfoundland and Labrador is among the growing number of universities that has taken this step to teach interprofessional education. Memorial University's interprofessional education program developed its curricular structure in accordance with the core ideas and concepts of adult education, collaborative practice, and interprofessional education. In 1999, the Centre for Collaborative Health Professional Education (CCHPE) developed IPE activities in collaboration with IPE stakeholders from a variety of health and social care sectors.

For pre-licensure learners at Memorial, CCHPE provides two main IPE programs: the Case-based IPE Learning Modules and the IPE Skills Training Series. Some students may finish every educational activity outlined in both programs, while others may only do one, depending on their faculty. Focusing on collaborative processes and their effects on interprofessional team-based health and social care, the 2-year IPE Skills Training Series is an immersive and reflective learning program. The course consists of eight three-hour sessions spread over four semesters (students attend two sessions each semester), covering four subjects related to interprofessional collaboration. The importance of IPE and IPC in health professions education lies in the fact that they are essential for improving patient outcomes, reducing healthcare costs, and increasing patient satisfaction (Barr et al., 2016). By exposing healthcare students to interprofessional teamwork, they may learn the importance of effective communication with one another and collaborative practice, which are necessary skills for delivering quality patient care (Reeves et al., 2016). Additionally, IPE and IPC promote healthcare students' appreciation of the roles and responsibilities of other healthcare professions, which can enhance their ability to work together towards a common goal. This, in turn, leads to better patient outcomes, as patients receive comprehensive care from a team of competent healthcare providers (Hammick et al., 2007). The ultimate goal of these training series is to help learners acquire interprofessional competencies and prepare them for interprofessional collaboration.

Interprofessional competencies in health professions education are critical for healthcare providers to function effectively in interprofessional contexts. The compelling concept of IPE is that when healthcare providers begin to collaborate, patient care will improve (Buring et al., 2009). Interprofessional competencies include the skills and knowledge that healthcare providers need to collaborate effectively with other professionals. The IPE competencies from the

'Canadian Interprofessional Health Collaborative Framework' (CIHC, 2010) include the following: 1) Role clarification; 2) Team functioning; 3) Interprofessional communication; 4) Patient/client/family/community-centered care; 5) Interprofessional conflict resolution and 6) Collaborative leadership. It is important to explore teaching methods or tools that can be used to enhance learner's ability to gain these competencies, which are the key goals or purpose of interprofessional education. This is where the use of digital stories and digital storytelling becomes relevant. While traditional methods of interprofessional education have proven effective, there is a growing interest in innovative approaches like digital storytelling, which can present real-world experiences in a compelling, multimedia format.

Moreau et al. (2018) define digital stories as short videos that combine stand-alone and first-person narratives with multimedia. Technology in healthcare education has become increasingly popular, and technology is constantly transforming healthcare education (Kaple, 2022). Health professions educators are increasingly utilizing visual arts, such as digital story, film, and television, to deepen students' understanding of their patients' psychosocial needs and to improve students' communication skills, empathy, professionalism, self-reflection, and ethical decision-making (Kardiva et al., 2018; Law et al., 2015; Moreau et al., 2018; Nicholas et al., 2020). Many authors have defined digital stories differently and many have reported on the use of digital stories in health professions education. In a systematic review of how digital storytelling is applied in health profession education, Mojtahedzadeh et al. (2021) report on how digital storytelling has been applied across many themes in various domains of the health professions. Referring to the Centre for Digital Storytelling's definition of digital storytelling, Mojtahedzadeh et al. (2021) stated that there is a distinction between digital storytelling and digital story. Digital storytelling is the process of creating digital stories using technology. Digital storytelling is the

process, while digital story is the product. The process of telling a story using digital media such as images, text, music, and, audio narration is known as digital storytelling. However, a precise definition of the term is difficult to come by. This is because the definition of digital storytelling changes depending on factors such as context, audience, purpose, and philosophical stance (Snelson & Sheffield, 2009). As a result, it is important for researchers to think about how to utilize these phrases correctly in their research. The review by Mojtahedzadeh et al. (2021) demonstrated that in some studies, the digital story was created by one person or group and then used for educational purposes by another. In contrast, in some instances, the students themselves carried out the digital storytelling procedure; the learners designed the digital story. In this study, a digital story was designed by the researcher, while participants from different health professions at Memorial University of Newfoundland and Labrador viewed the story.

Digital stories may also work better for current generations of learners as they have grown up with smartphones, TikTok, and other social media with multimedia, making them digital natives. Therefore, this method may be suitable for them. The advent of multimedia on social media platforms has ushered in a new era in education, redefining the nature of how learners engage with information. No longer confined to traditional text-based learning, the new generation is immersed in a visual tapestry where images, videos, and interactive content weave a rich and diverse learning experience (Gee, 2004). According to Prensky (2001), the traditional teaching approach has fallen short of addressing the demands and expectations of today's learners and looking at all these, the need to explore options like digital storytelling and its great potential becomes more important. In this study, a digital video story was used as a teaching tool in IPE. According to Boydell et al. (2012), approaches to knowledge translation based on the arts, such as digital stories, can elicit complex meanings that would otherwise be inaccessible to various

audiences. The emergence of COVID-19 has drastically altered many aspects of our existence, including how we teach and learn, and there has been a massive transition toward online-based video learning (Lee et al., 2021). While digital video storytelling as a modality is the focus of the research described in this thesis report, online learning offers an accessible and flexible platform for delivering digital video stories, making it possible to reach a broader audience of healthcare students across different disciplines, regardless of their physical location or schedule. Online learning has become a key way in which much interprofessional education curriculum is now offered across health professional education programs around the world.

Although online learning has become the new norm, some scholars have reported issues with this mode of learning, such as maintaining motivation and attention (Lee et al., 2021). Because online learning is flexible and open, learners require a higher level of intentionality and monitoring of their learning process to maintain motivation throughout the duration of their learning (Lee et al., 2021). This has been attributed to the fact that there is less face-to-face connection, social presence, and emotional support when studying online; learners need help maintaining motivation during online learning than in-person (Hartnett, 2016). Lee et al. (2021) suggests the need for the strategic design of video lecture content to induce learners' positive emotions. According to Kallinikou and Nicolaidou (2019), research has shown that 'digital storytelling', including text, images, audio, music, and video, enhances learners' motivation, autonomy, and speaking skills. This is consistent with the work carried out by Hung et al. (2012) and Sadik (2008); therefore, exploring the use of digital storytelling as a teaching tool in interprofessional education is timely.

Two core learning theories support the adoption and use of digital stories as a teaching and learning modality in post-secondary education; the first is transformative learning theory, and

the second is situational learning theory. According to Jack Mezirow's transformational learning theory, learning is a transforming process that entails changing one's viewpoint, beliefs, and modes of thought rather than only acquiring new knowledge. According to Marrocco (2013), in Cranton's 'Guide for Adult Educators,' Cranton makes references to John Dirkx's (2000) ideas about the role of imagination and spirituality in transformation and addresses the power of the affective, as elicited through the use of poetry, music, or the visual arts, to enrich learning, even on topics not obviously arts related. According to Marrocco (2013), Cranton suggests that strategies that connect learners to soul work should be encouraged. As a teaching tool, digital stories may offer the potential as a catalyst that can foster transformative learning experiences, especially in interprofessional education, by exposing students to real interprofessional scenarios, thus influencing their perspectives on collaboration and interprofessional competencies (Szafran et al., 2021). This is an essential element that is relevant to interprofessional education because the most fundamental goal is for health professional students to learn and be able to demonstrate interprofessional competence during their practice. Also, through this reflective practice, students can audit themselves, their level of knowledge or understanding, and their skills and make appropriate changes to help them improve their skills. The digital stories theoretically should not just foster critical reflection for the learner but also challenge perspectives around the importance and value of working together collaboratively.

The second learning theory is situational learning theory. In this context, digital storytelling can also portray a situated learning environment, enabling healthcare professionals to develop their interprofessional competencies with complex healthcare issues (Lave & Wenger, 1991). This theory is highly relevant to exploring the use of digital video storytelling to enhance interprofessional competencies and collaboration in healthcare education. According to

Herrington and Oliver (2000), situated learning theory suggests that learning is most effective when it is contextualized, that is when it takes place within a specific environment that reflects the real-world experiences of learners. In the case of healthcare education, students need to learn how to work collaboratively with other healthcare professionals in a clinical setting. Therefore, the use of digital video storytelling in the classroom can provide students with a way to contextualize their learning by simulating real-world scenarios and creating a sense of situatedness (Herrington & Oliver, 2000). James Paul Gee's work on situated language and learning suggests that learners actively construct knowledge through their engagement with diverse multimedia elements (Gee, 2004). Mayer's cognitive theory of multimedia learning provides insights into how the combination of visual and auditory elements enhances learning outcomes (Mayer, 2021).

Based on how digital stories align with these learning theories and because many of the learners who participate in the interprofessional education course demonstrate characteristics of the adult learner, it is important to consider how digital stories play a role in adult education and learning. Many students in health professional education programs are typically developing advanced professional skills, and often have unique learning needs, such as the desire for practical, real-world applications, self-directed learning, and collaborative experiences. Malcom Knowles had two ways of defining individuals as adults, first is the social context where he states that “a person is an adult to the extent that that individual is performing social roles typically assigned by our culture to those it considers to be adult-spouse, parent, responsible citizen, soldier and the like” (Knowles, 1980, p. 24). Then the next definition is based on their psychological responsibility “a person is an adult the extent that individual perceives themselves to be essentially responsible for their own life” (p.24).

Adult education is radically transforming in the digital era due to technological advancements that are changing how people learn and use information. The impact of Information and Communication Technology (ICT) on the learning process is already significant, and it is expected to grow further in the future (Karanasiou et al., 2021). Information and communication technology has been seen as a catalyst for change that supports innovation and enables learning in both formal and informal contexts (Ranieri, 2019). In this era, the digital story has become part of the innovative digital tools available for adult educators, a potent and dynamic teaching tool that harnesses the power of narratives, multimedia, and voice. It is uniquely positioned as it taps into the innate human affinity for stories. Storytelling is not only effective in early childhood education, but also effective in all areas of higher education (Wang & Zhan 2012). Digital story is a blend of modern digital technology and traditional narrative strategies.

According to Robin (2018), digital storytelling has emerged over the last few years as a powerful teaching and learning tool that engages both teachers and their students. This innovative approach to education has gained popularity due to its ability to engage both teachers and students in a way that traditional methods often struggle to achieve. For example, digital storytelling combines visual and auditory elements, catering to diverse learning styles (Robin, 2008). This multimedia approach enhances engagement by providing a richer and more immersive learning experience (Robin, 2008). In some cases, students are equipped to tell their own stories for learning; this scenario allows students to express themselves creatively. It enables them to choose topics that resonate with their interests and experiences, fostering a sense of ownership over their learning process (Lambert, 2013). This process also requires students to develop digital literacy skills, including media creation, editing, and presentation. These skills are

increasingly crucial in the digital age and contribute to students' overall communication proficiency (Ohler, 2008).

Its development in adult education has been a reaction to the growing use of technology in teaching methods. The significance of digital storytelling in adult learning lies in its ability to align with the principles of andragogy, which recognize adults as self-directed learners with unique learning styles and preferences (Ferreira & Maclean, 2017). Digital stories can be viewed as a platform that combines the practicality of real-world experiences with the engagement of multimedia elements; as such, digital storytelling addresses the evolving landscape of adult education. The nature of the digital story gives room for some of the principles of adult education to be manifested; for example, the principle of critical reflective thinking is implemented when learners interact with a digital story designed for educational purposes or when learners create a story as part of their learning process. Lastly, because adult learners are characterized by their self-directed nature, digital stories provide a practical and experiential learning approach for these learners and convey complex concepts in relatable and applicable ways. According to Wang and Zhan (2012), digital storytelling is a teaching tool that takes seriously students' need to make sense of their experiences and find meaning in their lives. It positions itself as a bridge between theoretical knowledge and real-world application, providing adult learners with a tangible and engaging learning experience. Some benefits of digital stories that collectively make them relevant as a teaching tool for adult learners include:

Engagement: Using multimedia elements within digital stories appeals to various learning preferences, enhancing engagement by catering to visual, auditory, and kinesthetic styles (Robin, 2016).

Flexibility: Because of asynchronous access to digital stories, it accommodates diverse learning schedules, promoting accessibility (Lambert, 2013). Adult learners are known for their varied programs and learning paces, and this flexibility benefits them.

Creativity and Expression: Digital storytelling platforms empower adult learners to express themselves creatively. When adult learners are involved in the creation process, these tools promote a sense of ownership and personal connection to the learning content (Ohler, 2013).

Real-World Application: The narrative structure inherent in digital stories facilitates the application of theoretical knowledge to practical scenarios, reinforcing the relevance of the content in adult learners' lives (Lambert, 2013).

A formative evaluation of the implementation of digital video storytelling as a teaching tool in interprofessional education will help validate whether these benefits of digital video story will have any influence on learners when they watch an already created digital video story implemented as a teaching tool in interprofessional education. This research is relevant because, despite its potential, there is limited research on how digital stories can be effectively implemented as a teaching method or instructional material within IPE to enhance learning outcomes, improve attitudes towards interprofessional collaboration, and increase satisfaction with educational experiences among health professions students. Furthermore, there is insufficient understanding of the specific attributes of digital stories that resonate with learners from diverse healthcare backgrounds and how these attributes can be optimized to enhance interprofessional learning experiences.

This research aims to perform a formative evaluation of digital storytelling as a teaching tool in IPE, focusing on understanding how the use of digital video stories influences the understanding and perception of interprofessional competencies among healthcare students, as well as their perception of interprofessional collaboration with other healthcare providers from different professions. The study also seeks to explore how digital video stories can be optimized to enhance attitudes toward interprofessional collaboration and improve students' satisfaction with interprofessional learning. This research is significant because it explores the use of digital video stories as a teaching tool to enhance learning about interprofessional collaboration in health professional education. The findings from this study will contribute to the growing body of knowledge on the use of innovative technologies in healthcare education and can inform the development of evidence-based educational practices. Furthermore, the study's results will help health professions education programs to improve their curricula and enhance the preparation of students for interprofessional practice. This research will also provide some guidelines for healthcare educators on how to design and incorporate digital video in health professions education and in IPE. Ultimately, this research aims to improve patient outcomes by enhancing how healthcare professionals are taught and learn the skills and knowledge needed to work collaboratively and effectively in interprofessional teams.

According to Fusco et al (2020), although written case studies are typically used as teaching material in health professions education, video case studies can vividly depict difficult issues faced by patients and families. The following research combined the power of videos and stories to depict vividly, how health professionals come together to manage patients and their health conditions, leveraging this as a tool in teaching interprofessional education. A video digital story was used to portray real life collaboration and the roles each health professional plays in

healthcare management. There are some exploratory studies on the use of digital stories, but in the review of literature, there were no studies on the use of digital stories as instructional material in an interprofessional education program. Many of the studies that implemented digital stories in health education focused on using digital stories as a narrative tool to depict patient conditions. There appear to be no studies that have reportedly used digital video stories to depict patient management for health professionals, most especially to prepare them for interprofessional collaboration. These are gaps that this thesis intends to address.

1.2 Purpose

The purpose of this research was to conduct a formative evaluation of the use of digital video storytelling as a teaching tool in interprofessional education and the influence of digital video story on pre-licensure health profession students' understanding and attitude towards interprofessional collaboration. The research questions included:

1) How does the use of digital video stories influence the understanding and perception of interprofessional competencies among pre-licensure healthcare students?

2) How does digital video story influence the way students perceive interprofessional collaboration amongst and with other healthcare providers from different professions?

3) How can the use of digital video story be optimized to enhance attitudes towards interprofessional collaboration and improve their satisfaction with interprofessional learning?

The aim of this study was to explore the impact of a digital video story on students' understanding of interprofessional competencies, assess their perceptions of interprofessional collaboration, and examine ways to optimize the use of digital video stories to improve attitudes

toward collaboration and satisfaction with interprofessional learning. According to Robin (2015), when we use technology to tell a story, it has become a digital story, and in this research technology was used to tell a story of a real interprofessional collaborative experience of a health professional. The story depicts how health professionals work together as a health team in order to manage a patient. The study was undertaken by using a qualitative phenomenological research design to explore the lived experiences of undergraduate students in healthcare education at Memorial University of Newfoundland and Labrador (MUNL) who have engaged in interprofessional education and have experienced a digital video story about interprofessional collaboration.

Interprofessional education has been integrated into health professional programs to prepare students from various healthcare fields to collaborate effectively, addressing the often-siloed nature of healthcare training that can lead to communication gaps and suboptimal patient outcomes. While the implementation of interprofessional education at Memorial University of Newfoundland and Labrador is an important step, there is still much to learn regarding effective ways to design and facilitate interprofessional learning with pre-licensure health professional learners, especially in regard to understanding methods that will effectively facilitate interprofessional learning.

Chapter 2

Literature Review

Many researchers have used digital stories in different studies and forms, including audio, storyboards, and videos. A number of studies have explored the use of digital stories in health professions education; however, a literature review suggests a gap in using it as a teaching tool in interprofessional education and its possible influence on interprofessional learning. Interest in arts-based pedagogy (including digital story) has been growing in health professions education (Moreau et al., 2018). Students engage with subject-specific topics by creating or responding to art (e.g., digital story), which fosters more profound learning and understanding (Moreau et al., 2018). The visual arts, including digital story, film, and television, have increasingly been used by health professions educators to deepen students' understanding of their patients' psychosocial needs and to improve student's communication skills, empathy, professionalism, self-reflection, and ethical decision-making (Kardiva et al., 2018; Law et al., 2015; Moreau et al., 2018).

2.1 How is Digital Story Being Used in Education?

Studies have shown that digital stories have been used across various educational levels and disciplines to improve student engagement, motivation, communication skills, learning outcomes, and achievement by creating more interactive and exciting learning environments (Allawansah & Omar, 2023; McLellan, 2007; Svendsen et al., 2021). According to a comprehensive review by Allawansah and Omar (2023), digital stories are an important educational strategy due to their compatibility with students' needs and characteristics, enhancing interaction and motivation through multiple senses. These authors, as well as others, have suggested that digital storytelling has a moderately positive impact on students' attitudes toward learning and fosters receptivity and enthusiasm (Allawansah & Omar, 2023; Şahin, 2022). It is

not surprising to see that digital storytelling is applicable from preschool to higher education and it is used across a wide range of fields, including history, business, leadership, and health (McLellan, 2007; Wu, & Chen, 2020;Yilmaz & Sığirtmaç, 2020).

In today's educational system, there are different and creative ways that digital stories have been used as a teaching and learning tool (Wang & Zhan, 2012). Teachers can use digital stories to introduce concepts as instructional material, demonstrate procedures, and evaluate learner's level of understanding. As a learning tool, students can create their own stories, use digital stories to reflect on their knowledge, their report results, share their experiences, and help them derive more meaning from their learning experiences (Wang & Zhan, 2012). Rossiter and Garcia (2010) identified three core ways through which digital storytelling can be implemented as a narrative method of education: (a) using digital storytelling to illustrate content; (b) 'storying' the curriculum, which involves using digital story to interpret or construct the curriculum; and (c) autobiographical learning, which is about learning through one's own stories of lived experience (Rossiter & Clark, 2007 as cited in Rossiter & Garcia, 2010). The literature review suggests that digital stories are compelling, regardless of how they are implemented in a study.

A study by Morehead et al. (2007) found digital storytelling compelling in teacher preparation programs for developing personal narratives into a powerful and emotional tool for employability portfolio development. In this study, the participants created a digital story. The Lynx program at Cornell University also required students to create personal digital stories as part of their certification in order to integrate various skills learned throughout the program (EDUCAUSE, 2004). It was designed to help instructors incorporate instructional technology into their classes. To complete the certification process, students were expected to create a

personal digital story. Through the process of developing these digital stories, students were encouraged to integrate the various skills they had learned, and as such, these digital stories served as the capstone of the students' Lynx training experience (EDUCAUSE, 2004).

Karanasiou et al. (2021) also evaluated the impact of digital storytelling in adult education, describing how the learners were the creators of the digital story. This study suggests that digital storytelling is an effective learning tool in adult education and can improve learners' performance. Lambert (2013) presented how a community education program had also implemented a digital story to address language barriers among adult learners. The program created an inclusive learning environment by sharing stories in multiple languages, fostering cultural exchange and understanding. This case study highlighted the potential of digital stories to promote diversity and inclusivity in adult education (Lambert, 2013).

Digital stories have also been used in the field of health promotion and education. Fiddian-Green et al. (2017) and Gilliam et al. (2012) used digital story to create awareness of sexuality and health promotion. Fiddian-Green et al. (2017) conducted case study research to promote health, with LGBTQ identified Puerto Rican Latina youths as the participants. This study suggests that digital story can support meaningful and culturally relevant health promotion efforts for LGBTQ youth by addressing health inequities and promoting education and awareness. This is also like the study carried out by Gilliam et al. (2012), which was carried out as a result of a partnership between the University of Chicago and the University of Ibadan Nigeria. In this study, digital story and game design initiatives were found to be beneficial as they improved adolescent sexual health education by incorporating digital storytelling, new media, and game design. These studies suggest that digital storytelling is particularly effective in teaching complex and sensitive topics and in helping to raise awareness and foster understanding

(Akdağ & Altınay, 2021; Svendsen et al., 2021). A common factor among these various studies was that they reported positive effects when learners were involved in digital storytelling and when they watched already-created stories. Research by Hewson et al. (2015) and Loe (2013) found that digital stories are particularly valuable in education when students collaborate with older adults to co-create stories and engage with their digital stories. This approach serves as an effective method for promoting intergenerational learning and raising awareness about aging. The co-creation of digital stories, as well as viewing them for educational purposes, enhanced students' awareness of both working with and caring for older people.

When it comes to the creation of a digital story, different authors have created different conceptual frameworks for digital storytelling (Kaun et al., 2011; Lambert 2010; Najat et al., 2012; Paul & Fiebich, 2005; Porter, 2004; Salpeter, 2005), but most of the elements in each of these frameworks align with each other with little variation (Kaun et al., 2011). Although they have similar elements, they all offer different perspectives on digital storytelling. For example, Lambert's (2010) framework is more prescriptive, providing concrete steps for creating digital stories with an emphasis on personal insights and emotions, making the storytelling process more intimate and reflective. As such, this makes Lambert (2010) framework more ideal for studies in which the participants or students are the ones creating their own digital story as part of their learning process. However, Kaun et al. (2011) focus more on educational content and structured narratives. The conceptual framework for a linear digital story by Kaun et al. (2011) outlines the components and structure necessary for creating effective digital narratives that are non-interactive. This framework emphasizes a straightforward, sequential storytelling approach designed to convey information clearly and engagingly without requiring user involvement. Given the practical nature of this framework, the work of Kaun et al. (2011) was adopted and

applied in the current study to inform the design of the digital story. The key components of the Kaun et al. (2011) framework start with the beginning, which introduces the context, characters, and setting. This is followed by the middle which develops the storyline with key events and conflicts. Finally, the end is the last component which resolves the storyline and concludes the narrative. The visual and audio involve the use of relevant images or video clips to illustrate the story, and the audio, which includes voice-overs, sound effects, and background music, enhances the narrative. Scriptwriting is required to be a clear and concise story to guide the narrative flow, with clearly defined educational goals that the digital story aims to achieve. The use of emotional hooks to engage viewers and make the story memorable is also a key principle.

2.2 Digital Storytelling in Health Professions Education

As healthcare education evolves, digital video storytelling may play an increasingly significant role in enhancing interprofessional competencies and fostering collaboration in healthcare delivery. Several studies have implemented the use of digital storytelling in health care professions education. Tatliet al. (2017) used digital storytelling in health professions education by creating a digital storyboard. This study found that nurse candidates who used digital storyboards in their learning process reported that this method was entertaining and interesting, enhanced their empathic skills, and facilitated easy case analysis. Similarly, D'Alessandro et al. (2004) developed computer-based patient simulations of a virtual pediatric patient and used them to create a digital story in teaching third-year medical students. According to the researchers, respondents felt they could begin to evaluate a similar case presentation (95.4%) and would remember the case in the future (91%). This study suggests that digital storytelling creation helped build a level of confidence amongst health professions students,

while preparing and encouraging these pre-licensure students to embrace interprofessional collaboration.

Trish et al. (2018) used digital storytelling to encourage collaboration among students from various health professions, leading to improved interprofessional collaboration and enriched exchange of ideas. This study involved participants from social work, midwifery, nursing, occupational therapy, and dietetics creating digital stories. The use of digital stories was found to improve and foster curiosity about interprofessional collaboration, which served as a vehicle for enriching interprofessional exchange. In another study, Cueva et al. (2013) evaluated how Community Health Workers (CHWs) in Alaska perceived digital storytelling as a component of a cancer education curriculum and a culturally respectful tool for sharing cancer-related health messages. Each participant created a personal 2–3 minute cancer-related digital story. All CHWs, regardless of computer skills, successfully created a digital story as part of the cancer education course. The CHWs reported that digital stories enhanced their learning, and the use of digital stories was a culturally respectful way to share cancer-related information. According to the researchers, digital storytelling gave the power of the media to the CHWs to increase their cancer knowledge by combining digital storytelling with cancer education to support their learning.

A number of other exciting studies have explored the use of digital stories in health professions education like the work done by Rimando et al. (2015) and the work by Park et al. (2021). While Rimando et al. (2015) incorporated digital storytelling in the teaching of undergraduate health promotion theory, Park et al. (2021) evaluated an on-site patient-centered care (PCC) training program for nurses using a digital patient storytelling approach. Both studies found that creating digital stories helped students better understand theoretical concepts and improved their perceptions of and compassion for patient care. Creating digital stories influenced

students' knowledge and understanding of health promotion theories and models. According to Park et al. (2021) and Rimando et al. (2015), in contrast to the typical lecture structure, which focuses on memorizing theoretical ideas and terminology, digital storytelling provides a novel approach to teaching health promotion theory. They recommended that digital storytelling offered opportunities for health promotion faculty and teachers to redesign their curriculum and design innovative methods to teach health promotion theory to their students.

Gazarian (2010) emphasized the role of digital stories in enhancing clinical thinking strategies from a narrative pedagogy perspective. Some of these clinical thinking strategies are developed when digital stories act as a trigger for reflection and discussion; some studies reported that digital stories promoted effective reflective thinking about compassionate care and other clinical experiences among participants (Rasmor, 2016; Waugh & Donaldson, 2016). The study by Zarei et al. (2021), reported an increase in critical thinking and deep learning among medical students who participated in digital storytelling. Digital storytelling encouraged them to analyze, synthesize, and communicate information effectively, leading to improved critical thinking skills and a deeper understanding of the subject matter. This aligns with other results suggesting that video is a valuable teaching tool for enhancing learning outcomes in medical education (Hurtubise et al., 2013). Many of the current studies that implemented digital storytelling have applied it as a learning activity where learners were taught to create a digital story. Gazarian et al. (2016) implemented digital storytelling by asking nursing students to create a digital story about an ethical concern they had encountered in their practice, similar to the work of Zarei et al. (2021). Christiansen's (2011) study titled 'Storytelling and Professional Learning: A Phenomenographic Study of Students' Experience of Patient Digital Stories in Nurse Education' reported the implementation of digital story as instructional material in nursing education. In this

study, 20 participants were recruited and a patient digital story from www.patientvoices.org.uk was played for participants. Semi-structured interviews were conducted to evaluate how students approach and make sense of patient digital stories. As a phenomenographical study, the data analysis focused on developing categories of description to represent the different ways a phenomenon was experienced and explain how the categories were logically related to one another.

Another similar study was by Fusco et al. (2020), in which the researchers created a short film (not a digital story) to teach students in the health professions the importance of interprofessional collaboration. Students watched the film in groups and this study was carried out as a form of program evaluation, with students and faculty members completing an assessment of the program. While Christiansen (2011) embarked on a qualitative study to evaluate participants' experience of the digital story, the study by Fusco et al. (2020) was a quantitative study that aimed at assessing the implementation of the short film among IPE students. A study by Frost (2016) carried out an investigation titled 'Using Digital Storytelling to Assess Health Students' Knowledge of Interprofessional Roles in the Care of Older Adults'. In this study, a digital story was presented in a 3-minute video format and consisted of the case file of an older adult character called 'Elsie'. Elsie was a Mask-Ed character depicting an older adult with health conditions. Mask-Ed is a simulation approach by Kerry Reid-Searl, which allows students to interact with the 'characters' in humanistic ways that promote person-centered care and therapeutic communication (Reid-Searl et al, 2012). The digital story was used to examine healthcare students' knowledge of other disciplines' roles in the care of an older adult. The Mask-Ed was used to depict an older adult, and a digital story was created. The researchers stated that this can enhance classroom interaction and produce a better understanding of interprofessional

roles. Although this study was not part of an interprofessional education course or program, the researchers recruited participants from four different health professions, both undergraduate and graduate programs.

Another study that used stories for teaching, although not in health professions education, was conducted by Wieland et al. (2017) and reported on the use of digital stories to teach refugees and immigrants to improve diabetes self-management. The final intervention consisted of a 12-minute video featuring four stories from individuals with similar backgrounds, followed by an educational message. The stories were crafted to reflect common experiences and challenges in diabetes management, aiming to increase self-efficacy and motivation among viewers. Participants reported high levels of engagement and found the intervention to be interesting and useful. There was a significant increase in participants' confidence and motivation to manage their diabetes after viewing the video (Wieland et al, 2017). Another similar study was a diabetes digital storytelling investigation by Njeru et al. (2015). The study population was Somali and Latino adults with type II diabetes and involved community-based participatory research. This study reported that a diabetes digital storytelling intervention developed through community-based participatory research was successful in improving diabetes self-management for Somali and Latino adults.

Moreau et al. (2018) have stated that research on digital storytelling in health professional education is still in an emerging phase with limited amounts of empirical literature on the topic; however, their analysis demonstrates that many digital storytelling investigations are taking place in the undergraduate nursing context. Several articles uncovered for this review where the digital story was used in teaching were mainly in nursing education (Eggenberger et al. 2016; Gazarian, 2010; Paliadelis & Wood, 2016; Petty & Treves, 2017; Tatli et al.,2017). Tatli et al. (2017)

evaluated the effects of nurse candidates' digital storytelling boards and hand-drawn storytelling boards on the processes of empathizing with patients and analyzing the case. This was a controlled experimental study, and the participants were first-year nursing students in Turkey. The results suggest that digital storytelling in nursing education improves empathy and case analysis compared to hand-drawn storytelling, making it an effective alternative teaching method. Gazarian (2010) explored the integration of digital stories within a senior-level synthesis and clinical decision-making course for nurses, using narrative pedagogy as the foundational framework. This study suggests that digital stories incorporating narrative pedagogy enhance students' clinical thinking strategies and enhance their ability to synthesize multiple sources of knowledge in healthcare courses. This result is also like that of the study carried out by Eggenberger et al. (2016) which explored the impact of an educational intervention on nurses' confidence and families' perceptions of support in a critical care setting. The intervention utilized digital storytelling as an educational strategy, guided by the 'Knowledge to Action Process Framework'. The study population was family members of critically ill patients and critical care nurses, and the results suggest that digital storytelling improved nurses' confidence, knowledge, and skill in providing family care in adult critical care settings and improved families' perception of support from nurses. Paliadelis and Wood (2016) also explored the use of digital storytelling as a reflective tool for nursing students to analyze their clinical placement experiences. The study focused on the final reflections of nursing students who participated in a digital storytelling activity, aiming to understand how this method can enhance learning and personal development. It was a descriptive qualitative study with 92 participants who were final-year nursing students. The study suggested that reflective activities in nursing education help students better understand and prepare for clinical experiences, enhancing their readiness to practice as Registered Nurses.

Together, these various studies support the idea that nursing frequently focuses on lived experiences, the use of constructive frameworks, and collaborative learning (Peters, 2000). Adamson and Dewar (2015) suggest that reflective learning and the use of stories in nursing education curricula can enhance student nurses' knowledge, skill, and confidence in providing compassionate relationship-centered care in practice. According to Singh and Matthees (2021), with the COVID-19 crisis and the fast growth of cases, there is a greater need than ever for interprofessional education (IPE) and collaborative practice. Instructors and health experts are looking for new ways to conduct IPE programs through online education. As Robin (2008) stated, "Teacher-created digital stories may also be used to enhance current lessons within a larger unit, as a way to facilitate discussion about the topics presented in a story and as a way to make abstract or conceptual content more understandable" (p.10). Thus, exploring the use of digital stories as a teaching tool in interprofessional education is highly relevant and important.

2.3 Theories of Learning and Digital Storytelling

Several learning theories that stress the value of interaction, narrative, and multimedia in the learning process provide the foundation for using digital storytelling as a teaching tool. According to John Sweller's 'Cognitive Load Theory', learning is more successful when the cognitive load is controlled to prevent the learner's working memory from becoming overwhelmed. Cognitive burden is influenced by three factors: relevant, extraneous, and intrinsic. Digital stories can help manage cognitive load by presenting information in a coherent and engaging manner. By integrating visuals, audio, and narrative elements, digital stories can reduce extraneous cognitive load, making it easier for students to process and understand complex information (Sweller et al., 2011). The structured nature of stories helps to chunk information, making it more manageable and memorable for learners. Another theory, 'Dual Coding Theory'

proposed by Allan Paivio suggests that information is better understood and remembered when it is presented in both verbal and visual forms. According to this theory, verbal and non-verbal systems work together to enhance cognitive processing. Digital stories leverage both visual and auditory channels to convey information, aligning perfectly with Dual Coding Theory. The combination of spoken words, written text, images, and videos helps to reinforce learning by engaging multiple cognitive pathways. This multimodal approach can improve comprehension and retention of information (Paivio, 1986).

Narrative theory also focuses on the power of stories to shape understanding and convey complex ideas (Bruner, 1991). Digital storytelling leverages narrative theory by using stories to engage learners, making abstract or complex concepts more relatable and easier to understand. Bruner (1991) argued that narratives help individuals make sense of the world by organizing experiences and events in a meaningful way. Digital storytelling uses this principle to help learners construct knowledge and develop critical thinking skills through storytelling. According to Mayer's (2009) multimedia learning theory, learning occurs more efficiently when words and visuals are combined than when words are used alone. This idea is put into practice by digital video storytelling, which blends text, audio, and images to produce a rich, engaging learning environment. Mayer (2009) outlined several principles for effective multimedia learning, such as the coherence principle (removing extraneous information) and the modality principle (using both auditory and visual channels). Digital video storytelling adheres to these principles by integrating relevant multimedia elements to support learning. According to Mayer (2003), with well-designed multimedia communications that combine words and graphics, students can potentially learn more deeply than they would from more conventional forms of communication that only use words. This is the promise of multimedia learning. Mayer (2003) also stated that multimedia

learning benefits students more deeply when using the same instructional design methods across different media, including book-based and computer-based environments.

Situated learning theory, proposed by Jean Lave and Etienne Wenger, suggests that learning is inherently social and occurs through participation in authentic contexts, where learners become part of a "community of practice." Digital stories provide authentic contexts and scenarios, helping students to understand and engage with real-world interprofessional practices, fostering a sense of community and shared practice (Lave & Wenger, 1991). Transformative learning theory proposed by Jack Mezirow (1991) focuses on how learning can transform an individual's worldview through critical reflection on experiences, leading to a more inclusive and discriminating perspective. Digital stories can trigger critical reflection among students, leading to a deeper understanding and appreciation of interprofessional roles and the value of collaboration, thereby transforming their perspectives. Finally, social learning theory developed by Albert Bandura (1977) posits that people learn from one another via observation, imitation, and modeling. It emphasizes the importance of learning through social context and interaction. Social learning theory may help explain how observing digital stories depicting interprofessional collaboration helps students internalize the roles, responsibilities, and behaviors of different healthcare professionals.

2.4 Formative Evaluation in Health Education Programs

Formative evaluation is a dynamic and important process in program development and improvement, particularly in fields like education and health care. It involves ongoing assessment and feedback aimed at enhancing the quality and effectiveness of interventions during their development phase. Formative evaluations provide ongoing feedback to instructors, allowing for continuous course improvements that benefit current and future students (Healy, 1982;

Peterson, 2016). Unlike summative evaluation, which occurs after the completion of a program to assess its overall impact, formative evaluation focuses on providing real-time insights and making adjustments to optimize the program outcomes (Stufflebeam & Shinkfield, 2007). Formative evaluation can play an important role in the development and implementation of interprofessional education curriculum and new instructional modalities by ensuring that educational interventions meet the evolving needs of learners and promote interprofessional collaboration competencies. In the context of this study, formative evaluation was implemented to gain valuable insights into the effectiveness of digital video storytelling as an instructional tool in interprofessional education, which will contribute to the advancement of educational practices, especially at Memorial University of Newfoundland and Labrador. In the current study, Martin Tessmer's (1994) formative evaluation method was adopted to evaluate the use of digital storytelling in interprofessional education.

In health professions education, formative evaluation is a useful approach to improve instructional methods and learning outcomes through ongoing assessment and feedback of these programs. Formative evaluation is normally implemented to evaluate the effectiveness of programs, and in some studies like Yoon et al. (2015), formative evaluation has also been evaluated itself to determine how effective it is in the improvement of programs. Yoon et al.'s (2015) study titled 'The Effect of Formative Program Evaluation on Continuous Program Improvement' involved a case study of a clinical training program in Lao People's Democratic Republic (PDR). An observational study was carried out involving an evaluation using a questionnaire survey and data analysis of a focus group interview. The key findings suggest that formative evaluation positively impacts the continuous improvement of clinical training programs by increasing training satisfaction and transfer. Monitoring the implementation of

health education programs through formative evaluation helps in understanding the relationship between program delivery and outcomes, thereby avoiding Type III errors (evaluating a program that has not been adequately implemented) (Basch et al., 1985; Dehar et al., 1993; Elwy et al., 2020)

The essence of this formative evaluation of digital video storytelling as a teaching tool in IPE is to understand the impact of this innovative approach, ensure that it is appropriately tailored for learning in IPE, and that it plays a relevant role in helping to achieve the IPE competencies. Some studies have suggested that effective formative evaluation involves tailoring health professions education programs to the unique properties of the setting, such as schools or clinical environments, by using a feedback loop that channels both quantitative and qualitative data to adapt the program to changing conditions (Evans et al., 1989; Elwy et al., 2020; Dehar et al., 1993; O'Hara et al., 2014). In health professions education, many experts have implemented Tessmer's formative evaluation methods (Tessmer, 1994), like expert review involving a panel of medical educators and healthcare professionals reviewing a new training module on interprofessional collaboration to ensure it accurately reflects the latest best practices and theoretical frameworks (Thistlethwaite et al., 2014). Motola et al. (2013) carried out a one-to-one evaluation involving nursing students being observed using a digital simulation of a patient care scenario, providing insights into how effectively the simulation conveys the necessary skills and knowledge. The third stage or method of evaluation by Martin Tessmer was demonstrated in a study by Harden and Gleeson (1979) involving a group of pharmacy, medical, and nursing students using a case study module designed to foster interprofessional collaboration, and their interactions provided valuable feedback on the module's effectiveness. Some studies have suggested that formative evaluation can significantly enhance the continuous improvement of

health education programs by incorporating feedback from stakeholders, such as trainees and trainers, to refine program elements and increase satisfaction and effectiveness (Basch et al., 1985; Evans et al., 1989; O'Hara et al., 2014; Yoon et al., 2015).

2.5 Summary of Chapter

The research and literature discussed in this chapter highlight how digital storytelling is becoming more widely acknowledged and used as an effective teaching method in a variety of sectors, most notably health professions education. There is still a noticeable void in its application for interprofessional education (IPE) and the improvement of interprofessional learning, despite its many uses and stated advantages. Digital storytelling has been shown to be an effective means of engaging students, enhancing empathy, and improving communication skills, critical thinking, and understanding of complex, culturally relevant health issues. The potential of digital storytelling to facilitate profound learning experiences, foster reflective practice, and promote collaborative interprofessional practice is well documented. As health education continues to evolve, the integration of digital video storytelling offers a promising avenue for advancing interprofessional education and preparing future healthcare professionals to work effectively in team-based care environments. This chapter highlights the need for further exploration and formative evaluation of digital video storytelling within IPE to harness its full potential in achieving interprofessional competencies in interprofessional education.

Chapter 3

Methodology

3.1 Introduction

Interprofessional education has been integrated into health professional programs to prepare students from various healthcare fields to collaborate effectively, addressing the often-siloed nature of healthcare training that can lead to communication gaps and suboptimal patient outcomes. Digital storytelling, a method that combines narrative with digital media, is emerging as a promising educational tool within interprofessional education aimed at enriching learning experiences and improving interprofessional competencies. This research included a formative evaluation of digital video storytelling in interprofessional education. The study examines the effectiveness of digital video storytelling in improving students' understanding of interprofessional collaboration, shaping their attitudes toward working with other health professionals, and exploring ways to optimize these digital narratives for better educational outcomes.

This formative evaluation research explores the use of digital video storytelling in teaching and the effect of digital video story on enhancing understanding and learning of interprofessional competencies amongst pre-licensure health profession students. This chapter presents a description of how the digital video story was created and a summary of the formative evaluation study design, including the participants, the inclusion and exclusion criteria, the recruitment process, the data collection and analysis process, and the instruments used.

3.2 Research Questions

1) How does the use of digital video stories influence the understanding and perception of interprofessional competencies among pre-licensure healthcare students?

2) How does digital video story influence the way students perceive interprofessional collaboration amongst and with other healthcare providers from different professions?

3) How can the use of digital video story be optimized to enhance attitudes towards interprofessional collaboration and improve their satisfaction with interprofessional learning?

3.3 Research Design

This study used a qualitative phenomenological design to explore the lived experiences of pre-licensure students in health professions education at Memorial University of Newfoundland and Labrador (MUNL) who have engaged in interprofessional education and have experienced learning using a digital video story. The study sought to understand how digital video stories have influenced the students' understanding of interprofessional competencies and collaboration in health professions education. The use of digital video stories in interprofessional education is a relatively new approach that has not been extensively studied. A phenomenological approach is appropriate for this study because it focuses on understanding the subjective experiences of individuals who have experienced a particular phenomenon (Alhazmi & Kaufmann, 2022). This study focused on understanding the subjective, personal experiences of students who interacted with the digital story as a teaching tool. This aligns with Husserl's (1970) foundational idea that phenomenology should focus on the way individuals experience phenomena and the meanings they assign to those experiences (Husserl, 1970). This research sought to uncover how students' interpretations of their digital storytelling experience influenced their perceptions of interprofessional collaboration and competencies. The study aims to explore the students' personal experiences of interprofessional education using digital video stories and to gain a deeper understanding of the meaning they attach to these experiences. This approach provides a

rich and detailed description of the students' experiences and perceptions of interprofessional learning using digital video stories and how it has influenced their understanding of interprofessional competencies and their perception of interprofessional collaboration. In this study, Tessmer's (1994) expert review evaluation and one-on-one evaluation were implemented.

3.4 Sampling

The sampling strategy used for this study was purposive sampling. The rationale for using purposive sampling was to select participants who met the specific criteria for the research. Purposeful sampling is extensively employed in qualitative research to help researchers identify and select information-rich cases relevant to the studied phenomenon (Palinkas et al., 2015). The participants were selected based on the eligibility criteria. The inclusion criteria for this study were pre-licensure students in health professions programs at Memorial University of Newfoundland and Labrador who have completed at least two interprofessional skill training activities. Purposive sampling is appropriate for this study because it ensures that the sample is representative of the population and meets the specific research criteria. It allows the selection of individuals with the necessary experience and knowledge relevant to the research questions. Additionally, purposive sampling helps ensure that the study will generate rich and detailed data from individuals who have had direct experience with digital video storytelling in their interprofessional education.

First, the participants were invited via email, but after two months of initial invitation and reminder emails, through which only one participant signed up, an amendment of the recruitment process was sent to the Interdisciplinary Committee on Ethics in Human Research (ICEHR) requesting for in-person recruitment. The board approved in-person recruitment, and the researcher commenced by going to the faculties with a hard copy of the invitation documents

(Appendix 1). The researcher went to the faculties, spoke to students after the class had ended, met with students at the faculty lobbies, and connected with some individually. After a couple of visits within a week, ten participants were recruited. Through the purposive sampling technique, ten participants from different health professions programs, including nursing, medicine, pharmacy, and social work were recruited from a population of more than 400 students. The study participants included two males and eight females, and many participants were in either the second, third, or fourth year of their respective programs. Five participants were from the Nursing faculty, three from Social Work, one from Psychology, and one from Pharmacy. Two of the participants had completed all the IPE skill training.

3.5 Ethical Considerations

The ICEHR (Interdisciplinary Committee on Ethics in Human Research) is a Research Ethics Board (REB) that reviews research projects involving human participants. The role of this board is to ensure that studies are conducted ethically and that the rights and well-being of research participants are protected. Researchers submit their study plans to ICEHR for approval before starting, and the board checks that the research follows ethical guidelines, such as informed consent and privacy protection. In this study, I obtained ethical approval from the Interdisciplinary Committee on Ethics in Human Research (ICEHR) beforeparticipant recruitment and data collection. Participants read the informed consent form before signing up; a PDF version of their signed consent form was emailed to them. The informed consent form outlined the study's purpose, procedures, risks, and benefits. In the consent form, study participants were able to read all the details about their participation in the research; it was clearly stated that the research was voluntary, there was a $15 gift card as a token for their participation,

and they could withdraw from the research up to seven days after their interview session. This recruitment document and the consent form are attached in the Appendices.

After participants reviewed the consent form, they had the opportunity to ask the researcher any further questions, and if satisfied, they signed the consent form by adding their name and email address and then clicked on the submit button. This consent form was created on Jotform, and participants were automatically redirected to a meeting scheduling website on OnceHub as soon as they submitted the form. Prospective participants were able to select the best time and date for their participation in the study.

A nurse practitioner from the Family Care Team at Eastern Health shared the story portrayed in the digital video used in this study. Before the researcher could have access to work with the nurse practitioner, organizational approval was sought from the Research Proposal Approval Committee (RPAC) at Eastern Health. After the approval, a specific time was scheduled with the nurse practitioner through the head of her department. The storyteller relinquished all ownership rights through a signed release form. This digital story was created for the purposes of this research and for potential future educational use at Memorial University of Newfoundland and Labrador. Consequently, any further use or distribution of the digital story outside of the approved educational purposes at Memorial University of Newfoundland and Labrador would require additional permission from the researcher and the Media Department of the Centre for Innovation in Teaching and Learning (CITL) at Memorial University.

3.6 Participant Recruitment

A purposive sampling strategy was used to invite participants who had completed at least one interprofessional education skill training activity. The coordinator of interprofessional education at Memorial University of Newfoundland and Labrador also facilitated access to the

research site and the potential study participants. Through the coordinator, the researcher also gained access to the different health professions faculties that participate in interprofessional education. Participants were recruited both online and in person. For the online recruitment, an invitation email was sent out by the coordinator of IPE to all pre-licensure students from the different health profession programs who have participated in at least one interprofessional education skill training activity. A link to the consent form (Appendix 3) was attached to this email. A reminder email was also sent one month after the first email was sent out. After reading the recruitment document, one participant signed up online by clicking on the link on the informed consent form, which was embedded in the recruitment document. The rest of the participants were recruited through in-person contact. An in-person recruitment process was also conducted. Instructors who taught courses in connection with the IPE were contacted and permission was sought to speak to their students at the end of classes. The researcher went to the Nursing, Pharmacy and Social Work faculties. For the medicine faculty students, the researcher met them at the lobby area. A hard copy of the approved invitation email/document was printed, with a barcode containing the link to the consent form, which was attached to the last page of this document.

Interviews were conducted until saturation was reached. Saturation refers to the moment in data collecting when no new issues or insights are discovered, and data begins to repeat itself, indicating that sufficient sample size has been achieved (Hennink & Kaiser, 2022). Saturation is an essential sign that a sample is suitable for the phenomena being examined and that the data gathered has caught the diversity, depth, and complexities of the concerns under consideration and hence exhibits content validity (Francis et al., 2010). Guest et al. (2006, p. 60) state that "saturation in data collection has become the gold standard by which purposive sample sizes are

determined in health science research"(p.60). Qualitative studies can reach saturation between 9 to 17 interviews (Ganle, 2016; Hennink & Kaiser, 2022; Jassim & Whitford, 2014).

The interviews were conducted with questions specifically designed to align closely with the research objectives and to explore key aspects of interprofessional competencies, collaboration, and learning experiences which were being investigated. Initial questions were drafted to cover various dimensions of the research questions. They were all open-ended questions to encourage detailed responses and reflections from participants. A validation process was used to ensure the validity and reliability of the interview questions; first, an expert review of the questions was sought. The drafted questions were sent to the research supervisor, an expert in interprofessional education and qualitative research methodologies. The supervisor reviewed the questions for relevance, clarity, and comprehensiveness. Feedback was provided on the wording of the questions, the sequence, and the coverage of the research objectives. This feedback was essential to refine the questions and ensure they would effectively elicit the desired information from participants. Based on the supervisor's feedback, the interview questions were revised. Specific adjustments included rephrasing certain questions for clarity, removing some of the questions, and ensuring that the questions were open-ended to allow for rich, qualitative data. The supervisor reviewed the final set of interview questions and confirmed that the questions were appropriately designed to meet the research objectives and, as such, ready for use in the actual data collection. One of the interview questions was: How did the digital video story influence your understanding and perception of interprofessional collaboration and its importance in patient-centered care? These revised interview questions (Appendix 2), were also sent to the Interdisciplinary Committee on Ethics in Human Research (ICEHR). The ethics board reviewed the questions to ensure they were ethically sound, did not pose any risk to participants, and were

designed to protect participants' confidentiality and well-being. Approval from the ethics board was obtained, signifying that the questions met the ethical standards required for conducting research with human subjects.

3.7 Data Collection Process

Participants had the option of having an in-person session during which they would watch the video at a preferred place in the school and have the interview meeting with the researcher. None of the participants took this option but instead opted for an online interview meeting via Zoom. The online session was more convenient for the participants, and some chose to have their session very late in the evening when they were done with the day's activity. This preference aligns with Opdenakker (2006), who stated that online interviews are fast and easy and provide an opportunity for researchers and interview subjects to conduct interviews without traveling. On the scheduled day for each participant interview, a reminder email was sent with the Zoom meeting link. The video of the participants was turned off as they joined the meeting. The online interviews were conducted and recorded on Zoom. Both the audio and the audio transcript of each session were downloaded and stored in a password-secured file on a personal computer. NVivo 14 was used for the coding process and data analysis.

The researcher began each session by introducing herself and explaining how the interview would be conducted so that the participants could become aware of the process and what to expect. The link to the digital video story was shared via the chat box. The participants were given time to watch the video and notify the researcher when they were done. As soon as they notified the researcher, their consent to record the interview session was sought, upon their approval, the recording was initiated, and the interview session commenced. The typical interview session lasted between 15 and 25 minutes. After each interview session, the transcript

of each session was shared with the participants. They were asked to go through the transcript and confirm the accuracy of the information shared during the interview. Participants were also informed that they could withdraw any part of their response or even the whole interview. Participants' confidentiality and anonymity were protected throughout the study. The audio recordings and transcripts have been saved in a secure location, and only I and my supervisor can access them.

3.8 Data Analysis

This qualitative research used a thematic analysis approach, which involves identifying and analyzing patterns, themes, and concepts within the data (Braun & Clarke, 2006). The first step of the thematic analysis coding process was done manually and was then transferred to NVivo 14. An inductive coding strategy was used, which is a method where codes are derived from the data; instead of starting with ideas about what the codes should be, the data generates its codes (Delve & Limpaecher, 2024). Inductive coding is ideal for exploratory research when the goal is to develop new theories, ideas or concepts. It allows the data to speak for itself (Stuart, 2024). This approach was appropriate for this research because no work has been done regarding implementing digital storytelling as a teaching tool, especially as instructional material in IPE. Secondly, nothing is known yet about how digital stories influence the understanding and perception of pre-licensure health professionals regarding interprofessional competencies and how they perceive collaborating with other health professionals. Therefore, it was best to use the inductive coding method, allowing the data to generate its code. The following steps were followed in conducting the thematic analysis of the interview data collected from this study.

Step 1: Familiarization with the Data

The first step in thematic analysis is to become familiar with the data. This involved transcribing all recorded interviews verbatim, providing a textual representation of the verbal data collected. In this research, the interviews were transcribed, and before the commencement of data analysis, interview transcripts were printed and then read at least twice in entirety to understand the data. The researcher also returned to the audio recordings to ensure accuracy and be immersed in the data. Because the transcript was automatically generated by Zoom, the transcript was cleaned by removing some typo errors due to words that were erroneously transcribed by Zoom. While reading through each transcript, pencil was used to underline important lines and striking words in each sentence that were found to be relevant for the study. While going through the transcripts, initial ideas and potential themes were noticed.

Step 2: Generating Initial Codes

This step involves systematically working through the data to identify and label significant or interesting features. In qualitative research, a code is typically a word or brief phrase that is used to represent a summative, prominent, or essence-capturing portion of the data, which can be in a text format or any other format (Saldana, 2016). In the first round of coding, an in-vivo coding strategy, which refers to a process where the codes are taken directly from the language or words used by the participants in the data, was used. In-vivo coding is a strategy that emphasizes the actual spoken words of the participants (Manning, 2017). Using my pencil, keywords used by the participant that could be used to represent each significant sentence were underlined. This ensures that the researcher maintained the participant's ideas and these keywords formed the foundation upon which the codes were generated.

After the first phase of coding, the researcher examined each transcript again, looked at all the underlined keywords (codes), read through each significant sentence or paragraph that the

codes represented, and then renamed the codes into a phrase that conveyed more meaning based on the sentence or paragraph that they represented. These phrases became the new codes. The next step was to write all the codes on sheets of paper, read through each to identify similar codes, codes were compared and contrasted, leading to adoption of some phrases. The adopted phrases were used to re-code the data. For example, a code like "to see" and a code like "visualize" were merged, and visualization was adopted. After going through this coding phase using pen and paper, the next step was to upload the data into the qualitative data analysis software NVivo-14 to help manage the data and simplify the coding process. After uploading the data, the coding process started all over again, but this time, manually generated codes were already uploaded into the Nvivo-14, and the hard-copy transcript was used as a template for the coding process. After coding with Nvivo-14, each code was reviewed along with its set of quotations to ensure that all the quotations from the different participant's files were in agreement with their designated codes. This review stage led to moving some excerpts to more appropriate codes.

Step 3: Searching for Themes

After coding the data, sorting these initial codes into potential themes was next. According to Braun and Clarke (2006), a theme captures something important about the data in relation to the research question. It represents some level of patterned response or meaning within the data set. This involved collating all the relevant coded data extracts under potential thematic ideas and considering how different codes may form a theme. The first step taken in creating themes was to group the codes based on the research question that each addressed. This step was very helpful as it guided theme creation and made it easy to create themes that answer the research questions directly. To do this, the Codebook was downloaded from NVivo-14, and a

Word document was used to create empty tables. The next step was to find patterns among these codes. Under each research question, codes were copied from the NVivo-14 Codebook, and pasted into different columns in the Word document tables. Codes that addressed the same research question in a way that seemed related and had a common connection, were placed in the same column.

Step 4: Reviewing Themes

After all the codes were placed in different columns, the next step was to review the themes. This step involved two levels of refinement: first, checking if the themes work in relation to the coded extracts (i.e., whether the extracts form a coherent pattern), and second, reviewing whether these themes formed a coherent pattern in relation to the entire data set. During this phase, some themes were merged, refined, or discarded as they were either too broad, too narrow, or not sufficiently supported by the data. This step was crucial to ensure the themes accurately represented the data set. The excerpts were reviewed, and the groups were assigned to each excerpt.

Step 5: Defining and Naming Themes

Once the themes were reviewed and finalized, the next task was to define and further refine each theme. This involved looking through the theme and figuring out the best way to represent each set so that it answers the research question. This involved identifying the essence of what each theme captured about the data and determining the 'story' each theme told. Through this process, the name of each theme was developed, and the meaning was described.

Step 6: Producing the Report

The final step in thematic analysis is writing up the results. This involved weaving together the analytic narrative and data extracts and contextualizing the analysis in relation to the research question and existing literature. This is presented in the Results and Discussion chapters of this thesis. According to Nowell et al. (2017), thematic analysis is an effective method for analyzing qualitative data because it allows for identifying and interpreting patterns and themes within the data. This approach is useful in identifying and analyzing the experiences, perspectives, and beliefs of the research participants; this is why this approach was used in this research.

3.9 Creation of the Digital Video Story

Conceptual Framework for Digital Storytelling

The digital storytelling (DST) movement started in the late 1980s at the Center for Digital Storytelling (CDS), a nonprofit community art organization in Berkeley, California, founded by Joe Lambert, who had previously worked in theater (Mojtahedzadeh et al., 2021). As stated by the Center for Digital Storytelling. There are seven elements of an effective digital story which form the conceptual framework. These seven elements includes: a) a clear point of view, which is a specific purpose; b) a dramatic question, which gives the audience a reason to stay interested and get the answer by the end of the story; c) emotional content, which includes images, tone and effects that connects the story to the audience; d) the gift of your voice (this involves narration with one's voice that personalizes the story for the audience to help them understand the context; e) the power of the soundtrack, which supports the storyline and conveys emotion; f) economy involves using necessary and readily available elements to tell the story; g) pacing is about controlling the story and how slowly or quickly it unfolds. The personal nature and first-person voice are essential elements of digital stories (Mojtahedzadeh et al., 2021).

This digital story was created in alignment with the conceptual framework for a linear (non-interactive) digital story framework proposed by Kaun et al. (2011). This framework comprises twelve elements: Story Perspective, Intention, Personal, Dramatic Question, Engagement, Articulation, Soundtrack, Minimal, Tempo, Story Map, Expression, and Significant Content. This framework is the most suitable for this study because the author effectively compared frameworks and came up with a unique framework that aligns with a non-interactive digital story, which is a kind of digital story that is straightforward. The user cannot interfere with the sequence; they cannot influence the outcome of the story, and their sole contact with the story is to stop, pause, advance, or rewind it (Schafer, 2008). Other frameworks were basically for non-linear (interactive digital storytelling) in which the users (participants) are involved in the digital storytelling process. The digital story created in this study also aligns with the elements of a digital story framework by Rossiter and Garcia (2010) in digital storytelling in adult education, which emphasized three elements: a narrative of a lived experience, voice, and self-direction.

Process of the Digital Story Creation

With the support of the family care team at Eastern Health, a story was curated and narrated by one of the nurse practitioners. The facility within which this particular family care team is situated is a primary health care and chronic disease prevention and management facility where experts work as an interprofessional team. Because they function as an interprofessional team to manage patients with chronic health conditions, the story and experience of health professionals in this facility are ideal to showcase how experts work together in interprofessional collaborative practice. This is why the digital story was curated from the experience of a nurse practitioner in this facility.

The nurse practitioner told her story, which was recorded by the researcher using a mobile phone. This story was transcribed into a Word document and rearranged into a screen script format by the researcher. The script was organized to follow the structure of the Story Map by Dillingham (2001, as cited in Ohler, 2003). Figure 2 below illustrates this map's structure. Story maps are a useful tool for visualizing the classic narrative arc, which consists of three parts: beginning, middle, and conclusion. This structure is comparable to the three parts commonly employed in filmic storytelling, which are starting with a dilemma, middle with a change, and end with a resolution (Ohler 2008).

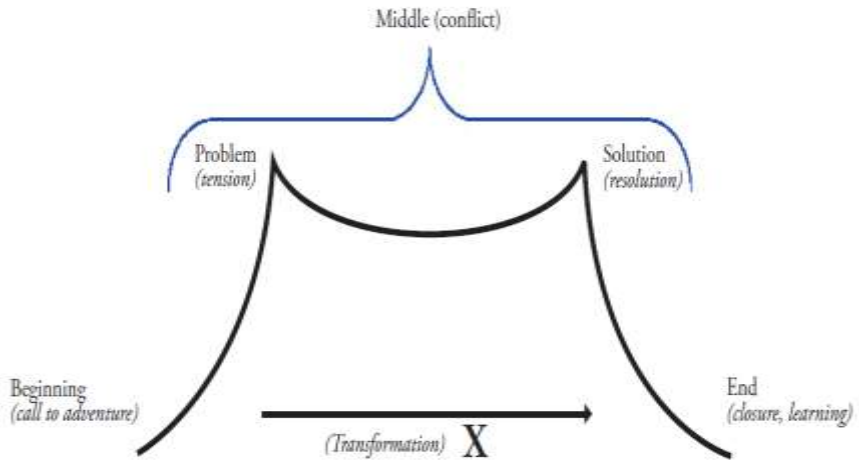

Figure 2. Visual Portrait of a Story or Story Map (Dillingham, 2001) with transformation (Ohler, 2003)

After the script was created, it was first sent to the storyteller to confirm that the script aligned with the story she shared. After her approval, the script was sent to Corporate Communications at Eastern Health for their approval. The digital video story was created by the Media Unit of the Centre for Innovation, Teaching and Learning (CITL), Memorial University of Newfoundland and Labrador. The researcher had a series of meetings with the video producer at CITL, and the first video draft was created. The images, the sound, and the animation processes

were produced by the Centre for Innovation, Teaching and Learning. At the same time, the digital story was narrated by the storyteller, the nurse practitioner. Prior to the creation of the story, the nurse practitioner signed a release form transferring all rights to the media department of the CITL at the Memorial University of Newfoundland and Labrador. While seeking the organizational ethical approval from the Research Proposal Approval Committee (RPAC) at Eastern Health, it was stated that the story was meant to be used by the researcher and for possible future educational purposes at the Memorial University of Newfoundland and Labrador. Therefore, this video is not permitted to be used outside of this scope without further approval from the researcher and the MUNL CITL. During the story creation process, the storyteller was invited to the MUNL CITL studio to record the voice-over; this was done here to ensure the sound quality. The digital story was 3 minutes and 24 seconds long, which aligns with the recommended time duration for a digital story (Lambert & Hessler, 2018).

3.10 Formative Evaluation in Higher Education

As mentioned earlier, Martin Tessmer's model of formative evaluation was adopted in this study. It provides a structured methodology for assessing and enhancing instructional materials and educational interventions. Tessmer organized formative evaluation into three main stages: expert review, one-to-one evaluation, and small group evaluation. Each stage is designed to gather specific types of feedback that contribute to improving educational content (Tessmer, 1994).

Stage One: Expert Evaluation

Experts in the field evaluate educational materials as part of the expert review process. These professionals offer input on the content's correctness, applicability, and pedagogical soundness. The goal at this stage is to find and fix any basic mistakes in the design or content

before learners are exposed to it. This is done by giving the subject matter experts access to the educational resources; they evaluate it based on predetermined standards, emphasizing instructional quality, content validity, and clarity (Benner, et al., 2010). This approach ensures that the instructional content is scientifically accurate and pedagogically sound. This is crucial for maintaining the integrity of the information provided to students and ensuring that it aligns with current medical standards and practices (Benner et al., 2010). After their review, improvement suggestions are made, and they are put into practice to enhance the teaching resources.

Stage Two: One-to-One Evaluation

As described by Motola et al. (2013), during this phase, each student tests the instructional materials to collect comprehensive, individualized feedback on their experiences. The goal is to pinpoint any problems that students may have comprehending or interacting with the content. A facilitator watches each student as they engage with the lesson materials, making note of any problems and misunderstandings (Motola et al., 2013). This stage was implemented in this study as described above, the researcher carried out a one-to-one interview session with each participant, during which they accessed the digital video story

Stage Three: Small Group Evaluation

By extending the examination to a smaller group of students, the small group evaluation enables the observation of group dynamics and the gathering of more varied comments. The goal is to assess the instructional materials' performance in a cooperative learning setting and pinpoint any problems that may be unique to a particular group. Students utilize the resources in a group environment, and their conversations, exchanges of ideas, and comments are examined (Harden & Gleeson, 1979). This stage three evaluation was not implemented in this study; however, this stage of evaluation is best implemented during a future interprofessional education class activity.

Expert Review and the Validation of the Digital Story Draft (Stage one evaluation)

After the first draft of the digital story was created, it was reviewed by representatives of the Centre for Collaborative Health Professional Education (CCHPE), Memorial University of Newfoundland and Labrador. CCHPE develops, implements and evaluates interprofessional education (IPE) activities at Memorial. The mandate of CCHPE is to create an interprofessional education curriculum for both learners and practitioners, and develop evaluation tools and frameworks for interprofessional education and collaborative practice. The digital story draft was reviewed by the Associate Dean of Educational Development, the Director of CCHPE IPE, and the coordinator of IPE for input on the content of the story. These individuals possess many years of experience designing and facilitating interprofessional learning with Memorial University of Newfoundland and Labrador pre-licensure health professional students and clinical experience working in interprofessional collaborative teams. Feedback received was used to modify, adapt, and contextualize aspects of the script used in the digital story. The final script is attached as Appendix 4. The final digital story was created and saved on Google Drive; the Google Drive link was made available for each study participant to view the video. Figure 3 shows screenshots from different scenes in the digital video story and a link to the story.

Figure 3 Screenshot from the digital story scenes

https://youtu.be/gm-Ffry8Y6I?si=Tel_XzJYA3O-tN6y

3.11 Reflexivity Statement

As the primary researcher conducting this study as part of my master's research in Education, I acknowledge the potential impact of my background, experiences, and biases on the research process and interpretation of results. As a medical laboratory scientist, I experienced rivalry among health professionals in the hospital environment, and I understand how this affects the patient who becomes the victim of this rivalry, as well as the work culture in the health organization and the psychological safety of health workers. I understand the importance of collaboration amongst health professionals and the need for effective interprofessional education while health professionals are still in their pre-licensure studies. With this background in healthcare and previous involvement in interprofessional teams, coupled with exposure to digital

storytelling in marketing contexts, there is a risk of inherent bias toward perceiving digital storytelling as effective in enhancing interprofessional competencies. To address this, several measures were taken to mitigate potential biases throughout the research process. Firstly, the researcher actively engaged with the participants during recruitment. Additionally, these helped her build rapport with the participants and establish trust, leading to more honest and insightful responses during interviews and discussions.

Secondly, during the interview sessions, I chose not to reiterate the specific goals and aims of the research to participants, having shared that during the recruitment process. This decision was intended to prevent my biases from influencing participants' thought processes and responses during the interview. There were scenarios where I shared the aim and goals of the research with the participant before we started the process. However, I discontinued this because I noticed that sharing this before the start of the session may likely shape their response in a certain way. However, this may be good, as I wanted to ensure that my thoughts and words do not influence the participants or precondition their thoughts in a certain way. So, this only occurred with my first and third participants. Choosing a phenomenological approach within a formative evaluation framework requires a continuous reflection on how these methodological decisions impacted the data collected and the interpretations drawn. For example, the phenomenological method demands a deep engagement with participants' lived experiences, which can be challenging when trying to remain impartial. To address this, I maintained a reflexive diary where I noted decisions made during the study, particularly during the recruitment and data collection phases, reflecting on how these decisions could influence the study's outcome and striving to ensure that they aligned with the study's objective to authentically capture the impact of digital stories.

Thirdly, as a researcher, I am aware of the potential for social desirability bias, where participants may provide responses they feel are expected of them rather than their actual experiences and opinions. I did my best to remain objective and minimize any potential biases by acknowledging my positionality and consistently reviewing and analyzing the data to ensure the results accurately represent the experiences and perspectives of the participants. This was why I chose to use the in vivo coding in my first coding round, to ensure that I used actual words from the participants.

I remember the initial recruitment process for this research was for the participants to be recruited online only. However, three weeks into the recruitment period, my supervisor and I discussed including in-person recruitment, and an amendment was submitted to the ethics board, which was approved. The reason for this amendment was that the recruitment process took place towards the end of the semester, and students had many deadlines they were focused on. Examinations were around the corner, so the response rate to email invitations was low. This change made me enter the field and allowed me to interact with the participants, knowing that I had no prior relationship or connection with them, except P2, a member of the church I attend. This change in the recruitment process helped me to settle in a bit because, in the beginning, I was worried about ensuring that the participants were comfortable and relaxed to answer the questions naturally without being overly conscious and anxious about what to say. Also, I ensured that the interview sessions were more like a friendly conversation, so it didn't feel so formal.

As for the context of my role in this study, I am an international student in the Education department, carrying out a study that involved students in health education programs. It was crucial for me to connect with the participants in a way that allowed them to see me as one of

their own, rather than just a researcher. So, during the recruitment process, when I introduced myself to the potential participants, I intentionally mentioned that my first degree was in medical laboratory science and I mentioned my transition into education. I believe this tiny bit of information opened opportunities for conversations, and many of them were free enough to converse with me beyond the research work. I would say that this helped to influence the participant's perception of the researcher. Reflecting on and reporting this context and interaction is essential as both significantly influenced the overall research.

The experts who evaluated the first draft recommended some adjustments during the design of the digital video story. One of these key adjustments was in the choice of words used in the story. Sentences like "I took charge" used by the storyteller were highlighted as not being in alignment with interprofessional collaboration. This made me reflect on the fact that interprofessional collaboration is beyond the act of working together; it is also about the mindset of health professionals and how they see their contribution to patient management.

Chapter Four

Results

4.1 Introduction

Interprofessional education is essential for improving collaboration among healthcare professionals to enhance patient care. However, traditional teaching methods may fall short of preparing students for the complexities of interprofessional practice. This research explores the potential of digital storytelling within IPE to improve learning outcomes, attitudes toward interprofessional collaboration, and student satisfaction. The study sought to explore how attributes of digital stories can be optimized for learners from diverse healthcare backgrounds involved in IPE.

This study was conducted as a formative evaluation to assess the effectiveness of using digital storytelling as a teaching tool in interprofessional education, this study was undertaken to evaluate the effectiveness of this educational approach before it may be fully integrated into the curriculum of IPE at Memorial University of Newfoundland and Labrador. Because of the nature of digital storytelling, which integrates narratives with digital media, this modality offers a unique way of conveying complex information, which may be particularly beneficial in IPE contexts. The research examines how digital video stories influence learners' perception and understanding of interprofessional competencies. Secondly, the focus is on how digital video stories can be designed and utilized to enhance healthcare students' knowledge and perceptions of interprofessional competencies. Specifically, the formative evaluation aimed to determine whether creating a digital video story and using it as a teaching tool could help pre-licensure students from various health professions better understand each other's roles and responsibilities. This understanding could foster a more collaborative environment conducive to effective

interprofessional practice. Additionally, the evaluation sought to assess how the digital story influenced students' attitudes toward working in an interprofessional setting. This includes determining whether storytelling makes the idea of collaborative practice appealing. Thirdly, the investigation focuses on identifying which specific features of digital stories resonate most with students in their learning. This is a crucial element for tailoring content that effectively addresses the diverse learning needs and professional backgrounds of health sciences students.

A total of ten participants, two males and eight females, participated in semi-structured interviews. Five students from the faculty of Nursing, three from Social Work, one from the faculty of Psychology, and one from the faculty of Pharmacy participated in the study. Nine of the 10 participants were recruited via in-person recruitment, and one was recruited online via email. Three participants completed all the IPE skill training sessions at MUNL, five completed four sessions, and others completed two IPE skill training sessions (Table 4.1). Several key themes emerged from analyzing the interview data, and these themes were summarized according to the main research questions for the study. The results from this research comprise twelve themes: four themes were used to address research question one, three themes addressed research question two and five themes addressed research question three. Overall, the participants held a positive perception of digital video stories and expressed that the story viewed in this study enhanced their understanding of interprofessional competencies, highlighting the importance of collaborative practice and communication among different healthcare professionals. Additionally, students expressed a preference for digital storytelling as an engaging and effective learning tool, suggesting its potential for broader integration into interprofessional education (IPE) curricula.

Table 4.1 Participants' Background Characteristics

Participant	Sex	Department	Year of Study	IPE Skill Training Completed
P1	Female	Psychology	1st	4
P2	Male	Nursing	3rd	All
P3	Female	Nursing	3rd	4
P4	Female	Social Work	3rd	All
P5	Male	Nursing	3rd	4
P6	Female	Nursing	2nd	2
P7	Female	Social Work	3rd	4
P8	Female	Pharmacy	2nd	2
P9	Female	Nursing	4th	All
P10	Female	Social Work	4th	4

Results

As previously mentioned, after each interview, the interview audio transcript was downloaded from Zoom and converted into a Microsoft Word document. Thematic analysis was used to analyze this qualitative research, and an inductive coding approach was implemented in the first phase of the coding process. Keywords from each significant sentence or paragraph were used to code, reflecting actual words used by the participants in the responses. This coding phase was done manually, after which the raw data were transferred to NVivo 14 software to enhance the coding process. After the first level coding, transcripts were read thoroughly again, and these keyword codes were converted into phrases that had a meaning and reflected the participants'

views. These new codes became the current codes and were subsequently used to code the data in NVivo 14. After coding all the transcripts, the codes were reviewed again, going through the quotations and evaluating them; codes were compared and contrasted but in the end, 62 codes emerged (Appendix 5).

These codes were reviewed through the lenses of the three research questions, and each code was separated and placed under the research question they addressed. Based on this, the 62 codes were grouped into three main categories. Then, under each research question, the codes were grouped based on their relationship or connection with one another; this was the first step towards creating themes. This process was completed on a table designed as a Microsoft Word document. At the end of the grouping, each data set was reviewed with their quotations, adjustments were made, and the final step was to name each theme. Each theme was named based on the core concept conveyed by the codes and quotations and how they answered the research question. The summary in Appendix 6 describes the initial codes arranged according to the research questions they addressed.

4.2 Influence of Digital Video Story on Participants' Perception and Understanding of Interprofessional Collaborative Patient-centered Care

The research question was "How does the use of digital video stories influence the understanding and perception of interprofessional competencies among pre-licensure healthcare students?" This research question was addressed with four themes, which included an appreciation of other health professions and how they operate, an enhanced understanding of interprofessional roles and responsibilities, an understanding of real-world ideal collaborative

patient-centered care, and a visualization of an improved understanding of patient care and how teams function in interprofessional collaborative care.

Theme 1: Appreciation of other Health Professions and how they operate

This theme highlights participants' views on how the digital video story helped them to understand the importance of other health professionals, appreciate their contributions, and understand how they function. Table 4.2 below summarizes the codes, the number of participants, and the number of transcript quotations in this theme.

Table 4.2 Theme 1: Appreciation of other Health Professions and how they operate

Themes	Number of Participants Contributing	Number of Transcript Quotations Assigned	Codes
THEME 1: Appreciate other health professions and how they operate	5	8	Appreciate other health professions, their importance and how they operate

Participants expressed a better understanding and appreciation of the essential functions and specialized expertise of various healthcare roles beyond their original perception.

Participant one (P1) was in their second year of study in the Psychology program and had completed two IPE skill training sessions. They spoke about how they gained a deeper understanding of overlooked or misunderstood roles, such as the broad scope of social workers beyond typical stereotypes.

> *"for example, for myself, I am in a psychology program and so when I see mental health, I immediately think of psychologists, not necessarily social workers. So just getting an understanding of how others like social workers, I know they have*

very different areas that they specialize in, and so you often forget that it is not so much always things like homelessness, there's like more. You get what I am trying to say? Like the basic needs. I feel like that's what I think when I hear social workers and not so many secondary factors like your mental health. And so that was really interesting to learn"(P1).

P1 expressed a better and deeper understanding of the social work profession's responsibilities and contribution in the social work profession in patient management. Through this enlightenment, they felt they had gained an enhanced appreciation of the importance of other health professional roles. Similarly, participant 4 (P4) conveyed a similar sentiment. P4 was a third-year student in the social work program who had completed all the IPE skill training sessions. They reported the educational benefit of visual stories in revealing the critical importance of each professional in a healthcare setting.

"Sometimes. you know, we don't get to see how important everyone you know everyone's roles are. But like, when you show me a video such as the one that you showed me, I can better understand the importance of everyone, and I think you know it would be beneficial for everyone to see that, especially in IPE ".(P4)

The views of P1 and P4 align with how the digital story influenced the understanding of participant 9 (P9), who had also completed her IPE sessions and was in the 4th year with the Faculty of Nursing. During the interview, P9 responded that:

"It also gives me a better appreciation of the other disciplines involved in care Provision".(P9)

These participants expressed a newfound understanding and appreciation for the roles and responsibilities of various health professionals through digital video storytelling. This theme suggests that digital video storytelling influenced the understanding and perception of interprofessional competencies among these healthcare students by influencing their understanding and perception of the importance of other health professionals in patient management. Through the video story, they can appreciate the contribution of other

professionals, which will positively influence their attitude and perception about collaboration in Interprofessional collaborative practice.

Theme 2: Enhanced Understanding of Interprofessional Roles and Responsibilities

This theme focused on how the digital video story helped participants to comprehend the roles and responsibilities of the different health professionals. Table 4.3 summarizes the number of participants who contributed to this theme, the number of transcript quotations and the codes.

Table 4.3 Theme 2: Enhanced Understanding of Interprofessional Roles and Responsibilities

Themes	Number of Participants Contributing	Number of Transcript Quotation Assigned	Codes
Theme 2: Enhanced understanding of interprofessional roles and responsibilities	10	16	Learn about roles and responsibilities efficiently Understand role overlap Understand team work Understand team efficiency

The codes also highlight participants' responses on how the story influenced their understanding of team structures, role overlap, and overall team effectiveness. Participant seven (P7), a third-year student in social work who had completed four IPE skill training sessions, agreed that the digital video story influenced their understanding, and they clarified it by saying that:

"It influences my understanding, So that I was able to understand more about the different professionals and their different roles, and how they all work collaboratively in helping to like treat the patient. So it influences my understanding."(P7)
This was also reaffirmed by P4;

"Yes. So yeah, it helped me better understand the roles of the, you know, like the social worker and the nurse or the doctor." (P4)

P4 also tried to explain how the digital video story gave her clarity and helped her to understand the roles better:

"About who was involved in the care kind of who, and all that were included in his care and their role, the roles that they played. I think it made it very easy to understand". (P4)

When it comes to understanding the roles and responsibilities of different health professionals, knowing the role of each health professional in patient management is critical, but beyond this, knowing where each of these professionals will contribute to patient management is also crucial. This awareness may not develop until the students graduate and begin to practice. This means that there is a gap in knowledge, but with a digital story of an already practicing health professional, this information is provided and the gap filled, just like P1 said:

"Yeah. I mean, I think I always have some idea of what other health professions do. But I don't really. You never really get the opportunity to learn specifics about where they come in when it comes to treatment until you're probably already working and like in a hospital yourself. So this video does kind of help me understand what, and who kind of comes in for treatment like". (P1)

P2, a nursing student who had completed all the interprofessional education skill training classes,explained that they gained more clarity about role overlap in patient management, which is a key reality in real-life collaboration scenarios:

"I think the video shows that specialties sometimes overlapping goal and there is sometimes, depending on the case and how like all as regards how their roles overlapped and the efficiency of the team. It was covered in IPE. But I don't think

I explicitly remember like a case scenario that was presented from like the most positive standpoint, if you understand what I'm trying to say". (P2)

Participant P3, a third-year student in nursing who had completed four IPE sessions, described how the digital story influenced her understanding of roles as these were clearly defined in the story. This was very different from her experience with the formal IPE sessions:

"And it was all very clearly defined well, in regular IP sessions, it is all, you know, each professional kind of states their role but there's no sense of clarity, you know. It is kinda like everyone just says what they're thinking. You don't really get time to process each professional's role. Well, that video was very short, and it was able to highlight each role very officially. That makes sense." (P3)

Generally, this theme highlights that the digital story influenced the participants' understanding of the roles and responsibilities of different health professionals in patient management, by clarifying the specific roles, responsibilities, and potential overlaps in roles among health professionals. This appeared to help the participants to gain a more coherent sense of real-life team activities and efficiency.

Theme 3: Understand Real-World Ideal Collaborative Patient Centered Care

This theme highlights how the digital story fostered participants' comprehension of real-world patient-centered care, the need for promptness in patient-centered care, and the importance of prioritizing patient needs. Table 4.4 summarizes the number of participants who contributed to this theme, the number of transcript quotations and the codes.

Table 4.4 Theme 3: Understand Real-World Ideal Collaborative Patient-Centered Care

Themes	Number of Participants Contributing	Number of Transcript Quotation Assigned	Codes

Theme 3: Understand real world ideal collaborative patient-centered care	5	8	Prioritize patient's needs Real world ideal patient centered care Understand how close knit interprofessional collaboration can be Understand promptness in patient centered care Think about the importance of their role and the role of others in future practice

Participant 2 (P2) saw this digital story as a presentation of an ideal case scenario, which is important in helping participants understand what an actual real life effective interprofessional collaborative practice should look like:

> *" And it also presents an ideal case scenario of how the end goal of an interprofessional collaboration is, in that it is patient centered".* (P2)

> *"Another thing that the video also showed me was the fact that there is a difference between like siloed care where it is just referrals and compared to like a care where everyone is in contact with depending on your goals and the needs, everyone is in contact to produce the end result of achieving a patient, a better patient's health from the multi-facets of the of the patient's diagnosis".*(P2)

P2 also reported that through the digital story, he had gained a better understanding of a key element of patient care, which was the need for promptness in care:

> *"Yes. I think the big, the big thing I learned was the promptness of like of all the healthcare professionals as regarding the case".* (P2)

> *"But I think this just showed me in terms of patient-centered care how the response of each care professional should be in terms of like adept response in terms of quick response. Yeah."*(P2)

P2, P3, and P7 described how the video showcased a patient-centered approach, where prompt and coordinated care from various health professionals addressed comprehensive patient needs, including mental and physical health. P7 saw patient-centered care from the angle of prioritizing the needs of patients in care. They shared the reality of managing patients with multiple conditions and the relevance of patient-centered care.

> *"Absolutely, I mean the patient was experiencing a variety of issues involving both his diabetes and his mental health. I thought it was very important that the team handled both, they targeted him, handling his depression while also managing his diabetes and his hypertension".*(P3)

> *"Like, I said, the Nurse practitioner wanted to obviously do what's best for the patients. And her collaboration with different health care professionals does show that they are putting the patient needs at the very front and center. So yeah, the video really does explain very well that patient centered care for just taking in order to treat the patient".*(P7)

In summary, this theme shows that the digital video illustrated ideal scenarios of patient-centered care. This helped the participants to understand the need for a timely and collaborative response to patient needs, which, of course, also highlights the practical implications of interprofessional collaboration.

Theme Four: Visualization Enhanced Understanding of Patient Care and How Team Function in Interprofessional Collaborative Care

In this theme, participants shared how the visuals enhanced their understanding of interprofessional collaborative care; visuals here refers to the animated pictures in the digital video story through which they could see the patient's case, treatment, the team, and the team's

collaborative processes involved in the care. Table 4.5, is a summary of the number of participants who contributed to this theme, the number of transcript quotations and the codes.

Table 4.5 Theme 4: Visualization Enhanced Understanding of Patient Care and How Team Function in Interprofessional Collaborative Care

Themes	Number of Participants Contributing	Number of Transcript Quotation Assigned	Codes
THEME 4: Visualization enhanced understanding of patient care and how team function in interprofessional collaborative care	9	14	Visualization of patient's case and patient's treatment enhanced understanding Visualization of team & team process efficiency

According to P1, being able to visualize the team process in real-time, the patient and his symptoms, helped them understand the purpose of team function in patient-centered care:

> *"Yeah, I think I found the video helpful overall, especially with seeing the step by step process of inter professional teams, like what is the most immediate process to start with and how over time other health care team members came in, kind of as a wraparound service or to help support".*(P1)

> *"So, seeing it on the screen, like exactly seeing what the patient came in with, like, you know, having it listed like diabetes. Depression like seeing that one by one was really helpful".*(P1)

P3, P6 and P9 also agreed that seeing the whole interprofessional collaborative care being described and visualized helped them gain a better understanding. P9 was a fourth-year nursing student who had completed all her IPE skill training. They mentioned that some of the professionals involved in the care depicted in the video are from professions they may not have

encountered yet. As well, the reality of the number of health professionals that can be involved in collaborative care and their diverse backgrounds provided a new level of understanding for her.

> "*It definitely enhanced my understanding, because, like I said, even given my experience with IPE, we don't have as many intersectorial disciplines as what were highlighted in the video. I've never really considered how many different healthcare providers and how many different backgrounds that they come from. There's, you know, there's dietitians. There's a counselor, there's a mental health nurse, there's physicians. There are nurse practitioners. There's, you know, there's so many people involved that you don't really consider until you see something like that. That kind of breaks it down for you. So that gave me a better understanding, for sure.''*(P9)

4.3 How Digital Video Story Influence Participants' Perception of Interprofessional Collaboration with Other Health Care Providers

The research question "How does digital video story influence the way students perceive interprofessional collaboration amongst and with other healthcare providers from different professions?" was addressed by a number of key themes that emerged from the interviews. The following themes emerged from the analysis to address this research question, including collaboration as skill enhancement and support, communication in collaboration, and recognizing the value of interprofessional collaboration.

Theme 1: Collaboration as Skill Enhancement and Support:

This theme highlighted how participants viewed collaboration as a means of support for not just patients alone but for new professionals and how it contributed to building their confidence in interprofessional settings. This was expressed by one participant:

> *"Definitely, because I mean, I'm sure I can speak for most people in my position being in my third year, just finishing about to go into my fourth year of my degree. I'm almost ready to enter the workforce at this point, and it all seems a little bit intimidating right now, but realizing that there is an interdisciplinary team, and that there will always be other healthcare professionals around to support me and to also support the patient it. It doesn't feel as daunting to be in charge and be a primary care provider". "It kind of makes me realize that I'm a more confident than what I thought I was."* (P9)

They stated that through the digital video story, they saw that collaboration provides an opportunity for health professionals to learn from one another:

> *"Because, for example, the nurse practitioner was able to share expertise with other professionals, she was able to gain expertise from the doctor, from a mental health nurse, from the social worker where that might not even be an expertise. So it did." "It did help with my perception of Interprofessional collaboration."*(P7)

These participants saw that collaboration is an excellent opportunity for them as health professionals to gain new skills and expertise from other professionals. They also had a boost in their confidence when they realized that they would be supported as new experts in the field because they would likely collaborate with other experts. Table 4.6 below summarizes the number of participants who contributed to this theme, the number of transcript quotations and the codes.

Table 4.6 Theme 1: Collaboration as Skill Enhancement and Support

Themes	Number of Participants Contributing	Number of Transcript Quotation Assigned	Codes
Theme 1: Collaboration as skill enhancement and support	3	4	More confident Opportunity for skill share View collaboration with others as a means of support

Theme 2: Communication in Collaboration

This theme reflected the influence of the digital video story on participants' perception of the importance of communication in interprofessional collaboration. Participants emphasized the role of respect and understanding in fostering effective teamwork among health care providers from

different professions. Table 4.7 summarizes the number of participants who contributed to this theme, the number of transcript quotations, and the codes.

Table 4.7 Theme 2: Communication in Collaboration

Themes	Number of Participants Contributing	Number of Transcript Quotation Assigned	Codes
Theme 1: Collaboration as skill enhancement and support	3	4	Appreciate the use of technology in interprofessional communication Importance of communication in Interprofessional collaboration Respect in team process

Excerpts highlighted participants' recognition of communication as a cornerstone of collaborative practice. Participant P5 was in their third year in nursing and had completed four IPE skill training sessions:

> *"Teamwork, where everyone knew what was expected of them, and there was also respect for people's opinions." (*P5)

> *"How important inter collaboration is in patient care, especially when teams talk to each other and be able to figure out what the patient needs to maximize and maximize outcomes. Yes."(P5)*

> *"Well, team, teamwork where everyone knew what was expected of them and there was also respect for people's opinions".*(P5)

Participants also described that through the digital video story they were able to appreciate the role technology played in facilitating communication in interprofessional

collaboration. This realization was made possible through one of the scenes where the storyteller narrated how communication amongst the team was facilitated through technology:

> *"Technology plays a part, too, when professionals could link up by the touch of a button and conveniently work together without having to leave their physical locations. So it would have accounted for increased productivity when people maximize their time, especially since most care professionals are quite busy in their endeavor."*(P5)

P5 also highlighted the significance of communication in maximizing patient outcomes and respecting diverse opinions within interprofessional teams. P7 emphasized the importance of communication in facilitating effective collaboration among healthcare professionals, while P2 acknowledged digital storytelling for showcasing an ideal scenario of communication and collaboration among healthcare providers.

Theme 3: Recognize the Value of Interprofessional Collaboration

This theme focused on how the digital video story shaped participants' understanding of the need for interprofessional collaboration and the importance of working collaboratively in healthcare settings. It also reflected participants' perception of interprofessional collaboration as the most effective approach for patient care. Participant P7 discussed how the digital story influenced their understanding of roles and helped them to realize the need for interprofessional collaboration:

> *"And how important it is for inter professional professional collaboration to come to be".*(P7)

> *"Video really does a good job in explaining the different roles of different healthcare professionals in the healthcare system, and how important it is for us to work collaboratively."*(P7)

They saw the digital story as a good template of what an ideal interprofessional collaborative practice would look like.

> *"So it has indeed shown me what the best case scenario could look like, or what a very good case scenario could look like, definitely."*(P2)

"The video made me understand that interdisciplinary collaboration is the most effective route to helping patients."(P9)

Generally, the participants emphasized the importance of interprofessional collaboration and highlighted the role of digital storytelling in illustrating the significance of working collaboratively in healthcare systems. Participants expressed how digital storytelling highlighted ideal scenarios of collaboration, influencing their perception of effective interprofessional practices and acknowledging the effectiveness of interprofessional collaboration in helping patients, which leads to a better understanding and appreciation of collaborative healthcare approaches. Table 4.8 summarizes the number of participants who contributed to this theme, the number of transcript quotations, and the codes.

Table 4.8 Theme 3: Recognize the Value of Interprofessional Collaboration

Themes	**Number of Participants Contributing**	**Number of Transcript Quotation Assigned**	**Codes**
Theme 3: Recognize the value of interprofessional collaboration	5	6	Need for interprofessional collaboration Perceive interprofessional collaboration as most effective for patient care Understand an ideal interprofessional collaborative practice Understand cooperation and importance of working collaboratively among team members

4.4 Optimization of Digital Video Story for Interprofessional Collaboration

This research question included "How can the use of digital video story be optimized to enhance attitudes towards interprofessional collaboration and improve their satisfaction with interprofessional learning?" This question was addressed by the following themes which emerged from the analysis of the interviews: educational impact and integration of digital video story, learners' preferences for the digital video story format and features, perception about learning through digital story, preferences over other learning methods and optimizing digital video stories for interprofessional education.

Theme 1: Educational Impact and Integration of Digital Video Story

This is the only theme with sub-themes due to the number of codes that emerged. The codes were grouped into two sub-themes: Meaningful engagement in IPE sessions (this is made up of four codes) and the second sub-theme, instructional resource material in physical IPE classes (this is made up of five unique codes). Table 4.9 below represents the summary of this theme.

Table 4.9 Theme 1: Educational Impact and Integration of Digital Video Story

Themes	Number of Participants Contributing	Number of Transcript Excerpt Assigned	Codes
THEME 1: Educational impact and integration of digital video story	10	30	SUB-THEME: Meaningful engagement in IPE sessions Activate conversations in

	IPE sessions
	Digital video story instigate curiosity for IPE class participation
	Engaging and keeps attention
	SUB-THEME: Instructional Resource material in physical IPE classes
	Solidify existing knowledge or what has been taught
	To teach foundational topics in IPE
	Suitable for different learning methods
	Use digital video story as a pseudo case
	Can be used to highlights the role and responsibilities of silent or absent health professions

This theme emphasized participants' perception of the educational value of digital video stories in IPE. The first sub-theme emphasized participants' perception that digital storytelling can bring about meaningful engagement during IPE sessions, while the second theme reflected participants' perceptions about digital stories being a helpful resource material in IPE and the

possible ways it could be implemented in IPE, like using it to solidify existing knowledge and teaching foundational topics in interprofessional education. Participants like P2, who had completed all the IPE skill training sessions, saw this digital story as a means of solidifying existing knowledge around concepts being formally taught.

> *"I've gone through all the rounds of IPE. So, I know a whole lot as regards how like the processes of interprofessional collaboration. So the video in itself I won't, I won't explicitly say that it is like, did much of bringing new information. But it did. It was more so, a means of solidifying already the information I already had".* (P2)

> *"This is more of like a reinforcement. It is it seems like a good supplementary. However, I see digital storytelling as a means to an end. It seems more of a medium to portray foundational topics".* (P2)

Another participant, P1 also expressed their limitation in asking deep questions during IPE classes because they were not really informed enough, but with a digital story, class conversations could be more informed:

> *"I think I could get that understanding too from having discussions with people on my interprofessional team, but like I said, you don't really know what questions to ask, because you genuinely don't know that kind of question exists and applies to another profession because your knowledge is so low about other professions. Just having things answered for you in a video or sometimes the video can help bring about curiosity or it kind of gives you questions based on what you see that you can now pull and directly ask your team."*(P1)

All they said is also similar to the thoughts of P6:

> *"Yes, it is much easier to pick out the important information and like to start discussions and conversations in a more simpler manner".*(P6)

Reflecting on one of the responses of P6, they suggested that digital stories could be used to present patient cases, that is, to present a pseudo case.

> *"Like we get all of the information about the care of the patient, their history, everything in like a 3 min video. This then, allows us to start those discussions earlier. So I think that's like a really big positive for it".* (P6)

In summary, participants recognized that digital video storytelling was useful instructional resource material for IPE, reinforcing existing knowledge and helping to stimulate and facilitate conversations. They appreciated its ability to instigate curiosity and discussions, making it suitable for different learning methods and teaching foundational topics effectively.

Theme 2: Learner's Preferences for the Digital Video Story Format and Features

This theme reflects participants' preferences for the digital video story format and its features that make it appealing for learning. These features included its short length, audio-visual nature, use of headings or text, pace control, technological/digital nature of the story, and features like animation. Table 4.10 represents the summary of this theme.

Table 4.10 Theme 2: Learner's Preferences for the Digital Video Story Format and Features

Themes	Number of Participants Contributing	Number of Transcript Excerpt Assigned	Codes
THEME 2: Learner's preferences for the digital video story format and features	8	34	Like being able to have control over the pace Like the animation Likes it is audio visual nature Likes that it is short Likes the technological/ digital nature Use of headings or text

Participants appreciated the audio-visual format of the digital video story and the incorporation of text or headings, as these aspects helped to enhance their understanding and engagement. They found the short length of videos appealing and felt that it enabled better retention of information. These sentiments were reflected in many quotations from the interview respondents:

> *"So I think that is what is most appealing about it being in video format. I think it was helpful to also see things laid out visually. I can kind of alter the pace of learning."(P1)*

> *"It is audio visual. It is so it employs different forms of learning."(P2)*

> *'Like I said, like you can pause it or go back, or, you know, to help you better understand. Being able to pause it and rewind, or whatever, that's important. You know."*(P4)

> *"I found that the use of both the text on screen helpful, along with the talking. The narrator in the background, all of that together, I felt like it was explained very well". (P6)*

> *"I think it had a like a positive influence on my on like my learning, because, first of all, I was able to like read what was being said, and understand and grasp better. And also the write ups in the video, it did make it appealing."*(P7)

> *"It was short, which I find is important. I mean, if something, you know, drags on, especially online, people tend to lose focus. And I think of the majority of people's attention spans since a lot of content is online now have probably gone down."*(P9)

The study participants expressed preferences for specific features of digital video storytelling, such as its short length, audio-visual nature, technological aspects, use of headings or text and finally, being able to control the pace at which they go through the digital video story. They found these features engaging, attention-grabbing, and conducive to learning.

Theme 3: Perception about Learning through Digital Video Story

This theme focused on how participants perceived digital video stories as learning resources. Interview respondents reported how they found the digital video story engaging and

attention-grabbing, making it more personal, relatable, and easy to remember. They also mentioned that the structured and simplified format of digital stories and its impactfulness and memorability made it a good resource for learning. Table 4.11 below summarizes this theme presented in a table format.

Table 4.11 Theme 3: Perception about Learning through Digital Story

Themes	Number of Participants Contributing	Number of Transcript Quotation Assigned	Final Codes
THEME 3: Perception about Learning through Digital Story	10	35	Digital story simplified the information and makes it easy to follow Digital video story is a great resource for learning Digital video story is impactful Digital video story is like case study Digital video story is easy to understand and easy to remember

Participants found the digital story helpful for simplifying information, enhancing understanding, and making learning more engaging and memorable. Many participants appreciated various features of the digital story, including its relatability, impactfulness, and ability to present information in a structured and simplified format.

"I think one aspect about it being in a story format. It is very easy to then like having to rethink about what happened in this case". (P1)

"I think I found the video helpful overall". "Because it is still kind of like a pseudo case that seems real and so I think that helps me remember aspects of the case more". (P1)

"Digital video is definitely a great resource." "I think learning through a story seems like the most relatable form. It is not too semantical in that it is not meant to be". (P2)
"So I find this very engaging". (P2)

"I perceive this as a good learning tool". (P7)

"I think it made it very easy to understand here's a very easily digested way of presenting it". (P6)

"I thought, I feel like I was understanding information a lot better and a lot faster". (P8)

"I think videos, especially like storytelling videos are very key foundations for learning about, you know, interprofessional practice and stuff like that". (P3)
"However, I do believe that storytelling is important in teaching about into professional practice". (P3)

"*So like, if, say, you were to explain to me the different roles of nurses and social workers and doctors, you know, it might be difficult for me to absorb all that information, when you know, something like this is a little bit more impactful".* (P4)

Participants perceived digital video story as an engaging, impactful, and memorable learning resource. They found it easy to understand, relatable, and beneficial for simplifying complex information, making it an effective tool for enhancing attitudes towards interprofessional collaboration.

Theme 4: Preferences over other Learning Methods

Participants also described their preference for digital video storytelling over written patient histories or verbal presentations in IPE. Participants highlighted the powerful impact of digital stories, noting how easily they could understand the content, and how effectively these

stories conveyed complex information. They found it more engaging and convenient than other learning methods, such as reading or listening to presentations. Participants P1 and P4 mentioned that talking about patient cases without visuals was challenging to conceptualize, which is one area where the visual aspect of the digital story was most beneficial.

> *"Sometimes when we're just collaboratively talking about a patient's case, it is difficult for me to conceptualize."*(P1)

> *"It makes it easier than having someone tell you like in person. I think that digital storytelling is definitely more impactful and easier to understand than just reading words. So I guess just incorporating more of it would be beneficial for students who are doing IPE."*(P4)

P8 and P6 preferred the digital story to having a written document that describes either the patient or the patient's care in IPE class sessions.

> *"Like I said up before it. Before, when we got assignments with regards to IPE, it would take quite a while to get through all the content and then we would have to have discussions about it. So I think, the video and the digital storytelling makes that whole process a lot faster".* (P6)

> *"But in the 2 cases that I had to deal with the first one that we did, we just got a sheet of paper with like instructions on it, like the whole story was written out. And in the second one we had a like patient's chart, which was a lot of writing. So it was very difficult to get through all the information in like a short amount of times. This is much easier to follow."*(P6)

> Participant P8 stated that *"especially compared to like just handing me a huge paragraph. I would much rather watch a video like this."(*P8)

Many participants preferred digital video stories over traditional learning methods in IPE, such as written patient histories or verbal presentations. They found digital storytelling more impactful, engaging, and conducive to understanding complex information. Table 4.12 below provides a summary of this theme.

Table 4.12 Theme 4: Preferences over Other Learning Methods

	Number of	Number of	Final Codes

Themes	Participants Contributing	Transcript Quotation Assigned	
THEME 4: Preferences over other learning methods	7	12	Prefer it to having someone talking about roles and responsibilities Prefer it to written patient history

Theme 5: Optimizing Digital Video Stories in Interprofessional Education

This theme presents participants' recommendations for optimizing digital video storytelling, such as using simple language, keeping it concise, making it interactive for conversation, and tailoring it geographically. Hence, the story content reflects common situations in the learners' geographical area, incorporating the patient's voice and focusing on a single case per story, highlights the roles of silent health professions, and incorporate scenarios that illustrate lapses in interprofessional collaboration. Table 4.13 represents the codes, number of participants and the number of quotations that make up this theme.

Table 4.13 Theme 5: Optimizing Digital Video Stories in Interprofessional Education

Themes	Number of Participants Contributing	Number of Transcript Quotation Assigned	Final Codes
THEME 5: Optimizing digital video stories in IPE	10	14	Add more details in the video Include patient's voice Include stories of lapses scenario in

	Interprofessional collaborative care
	Keep the digital video story concise
	Make it interactive for conversation at the end of watching
	Should be tailored geographically
	Use easy language no Jargon
	Best as one case per one digital video story
	Scene of conversation between health professionals

Participants suggest improvements such as using easy language, making videos interactive, and focusing on specific cases to enhance their effectiveness in IPE. Interview respondents emphasized the importance of including patient voices and incorporating stories of lapse scenarios, scenarios that show situations where interprofessional collaborative practice was not at its best, just to provide a comprehensive understanding of interprofessional collaboration. For participant P2, incorporating stories of lapses and tailoring the content to specific geographic regions would enhance the effectiveness of digital video stories for interprofessional education (IPE).

> *"I also feel like it should like sometimes also have like scenarios that are not also like the best. That shows us how the lapses could affect patient health, and how the lapses also play out in real life. I feel like. That is the only part this video doesn't cover. If I think about it, the only thing that I can say for sure that could be could*

make it a more useful resource is if it is stories that are pertinent to like I'll use the word geography. Like stories that are both relatable in terms of the medical the medical importance, and like something that fits the geography."(P2)

As a tool in IPE classes, P6 suggested the digital story would be a good tool in IPE, if it were used to present patient cases:

"Like we get all of the information about the care of the patient, their history, everything in like a 3 min video. Which then, allows us to start those discussions earlier. So I think that's like a really big positive for it."(P6)

P6 also talked about other departments or health profession programs that do not have representatives during the IPE sessions; this could include departments or programs that are not offered in the institution:

"One is that usually, when we have interprofessional communication meetings, we usually each student from their individual program will sort of take up the role, or, like, take up the discussions in terms of the roles of the circle of care of the patient. So there were some members of that circle of care, like the dietary and stuff that-I don't think there are students from those programs in all of the groups. I would be interested in seeing how that discussion would take place. So that is one thing like where that information would come from in terms of discussions."(P6)

Instead of not having anyone talk about their roles during the IPE sessions, digital stories can fill this gap. Participants P3 and P7 found digital story videos useful in learning, while P3 suggested that it would be great to have it as one case per digital story and add questions at the end of each story to activate conversations and discussion during formal interprofessional learning activities. P7 suggested that a more detailed description would add more value:

"I like to have it had one specific case and you followed it all the way through". "Say, there's like a question put or an interactive part at the end."(P3)

"I do feel like there are certain parts that need to be worked on, for example, like the wording and there was a part. I talked of the medications for depression, but I really didn't see it mention the medications. I don't know if it was meant to mention the medications.But I think the video in itself is a really good learning video."(P7)

Respondents provided specific recommendations for optimizing digital video storytelling in IPE, such as using easy language, keeping videos concise, making them interactive, tailoring them geographically, including patient voices, focusing on one case per story, adding more details, and incorporating stories of lapses scenarios in interprofessional collaboration.

4.5 Conclusion

The results suggest that participants perceived digital storytelling as a valuable educational resource in IPE. The participants acknowledged that seeing the patient, the team, and the team's processes helped influence their understanding of real-world interprofessional collaborative patient-centered care. Digital video stories helped them understand and appreciate other health professions' roles and how they function in patient management. Participants shared that digital stories can be implemented as a teaching tool in IPE and can be used to reinforce existing knowledge, teach foundational topics effectively, and stimulate curiosity and meaningful discussions among learners. Participants expressed preferences for the format and features of digital storytelling. They valued its short length, audio-visual nature, ability to control the pace, and use of headings or text, finding these features engaging and conducive to learning. The participants provided valuable recommendations for enhancing digital storytelling in IPE. They suggest using simple language, keeping videos concise, making them interactive, tailoring them geographically, and including patient voices to optimize their effectiveness.

Chapter 5

Discussion and Conclusion

5.1 Introduction

Many of the research studies examining the use of digital storytelling in IPE involve learners creating their own digital stories as part of their learning process (Cueva et al., 2013; Frost et al., 2016; Park et al., 2021; Rimando et al., 2015; Trish et al., 2018). From the literature review, little is known about using instructor-created digital stories as instructional material in interprofessional education, especially when it comes to using digital stories to teach students interprofessional collaborative patient management. In current forms of online teaching and learning, multimedia has many different uses as instructional resources, even in IPE, but little is known about digital stories. The purpose of this research was to conduct a formative evaluation of digital video storytelling as a teaching tool in interprofessional education, to explore its potential impact on pre-licensure health professions students' understanding of interprofessional collaboration, and to investigate ways to optimize digital stories to improve attitudes toward interprofessional collaboration and increase satisfaction with interprofessional learning.

This research was carried out as part of a Master of Education thesis project. Ten pre-licensure health professions students were recruited, and semi-structured interviews were conducted after the participants were given access to an approximately four-minute digital video story of a health professional who works as a member of a collaborative health team. This chapter will focus on the interpretation of the research results, how these results connect to existing studies and evidence, the implication of these findings for IPE, and possible recommendations.

5.2 Summary of Results

The results suggests that digital video stories can be integrated as a supplement or complementary resource material in interprofessional learning. In theme 1, students suggested that digital video stories can help activate meaningful conversations in IPE, instigate curiosity, and be used to solidify existing knowledge. In theme 2, students preferred the digital video format for its audio-visual nature, pace control, use of text/headings, and the fact that it is powered by technology. Theme 3 suggests that participants perceived digital video stories as engaging, attention-grabbing, relatable, memorable, and a well-structured or organized resource for learning. The students preferred digital video stories to written patient histories or verbal presentations (Theme 4). Recommendations included using easy language, keeping stories concise, making them interactive, tailoring them geographically, including patient voices, focusing on one case per story, adding more details, highlighting silent professions, and incorporating stories of lapses in collaboration (Theme 5). In a nutshell, the thematic analysis suggests that according to these 10 participants, digital video storytelling can positively influence healthcare students' understanding and perceptions of interprofessional competencies and collaboration while providing an engaging and effective learning resource when optimized with certain features and recommendations.

5.3 Interpretation of Results

The results of this study provide valuable insights into the impact of digital video storytelling as a teaching tool. In this section, the results are interpreted in detail, and the research questions are answered through the key themes that emerged from the data.

5.3.1 Influence of Digital Video Story on Participants' Perception and Understanding of Interprofessional Collaborative Patient-centered Care

Theme 1: Appreciation of other Health Professions and how they Operate

The findings suggest that the digital video story influenced students' appreciation of other health professions and how these health professionals operate in real life. The participants' responses appeared to reflect, in part, the perspective of social learning theory developed by Albert Bandura, who postulated that people learn from one another via observation, imitation, and modelling (Bandura, 1977). As a theory that emphasizes the importance of learning through social context, the digital story provided for the study participants portrayed the social context of a real-life interprofessional collaborative patient-centered care setting. Digital video story enabled them to observe the input of other health professionals in patient management. Secondly, by watching this digital story depicting interprofessional collaboration, students may have internalized the roles, responsibilities, and behaviors of different healthcare professionals, which may have fostered their learning and perception of interprofessional collaboration. The fact that participants were able to gain a deeper understanding of the contribution of other health professionals helped them recognize the importance of other health professionals. This appreciation promotes a culture of respect and mutual understanding, which is essential for effective interprofessional collaboration (Oandasan & Reeves, 2005). According to Curran (2004), some of the key elements that influence effective collaborative practice include mutual respect and knowing other health professionals and their contributions to patient care, which involves the knowledge of each other's roles. Reflecting on the data, this digital story was able to help these participants achieve both and, as such, prepare them for real-life collaborative interprofessional patient-centered care.

Based on these findings, digital video stories may serve as powerful learning tools to promote respect and understanding among future healthcare professionals, which is crucial for collaborative practice. Digital video stories serve as a medium for portraying these roles vividly and tangibly, fostering a deeper appreciation among healthcare students for the contributions of their colleagues from different disciplines. This is a significant and positive outcome for interprofessional education classes, which has been reported by some studies like Ateah et al. (2011), who reported that after interprofessional education sessions, there were positive shifts in student ratings of other health professions across various characteristics (e.g., academic ability, interpersonal skills, professional competence). According to Dacey et al. (2010), interprofessional education classes help students become more patient-centered by helping them appreciate other professions' contributions. Both studies affirmed that the enhancement in appreciation of other health professions is one key outcome of IPE. This is essential for preparing health professionals for interprofessional, patient-centered care. They suggested that by fostering respect, understanding, and collaborative skills, and by reducing stereotyping, IPE contributes to developing effective, collaborative healthcare teams. Through this study, digital stories have shown their influence on learners' understanding and appreciation of other health professionals, suggesting that digital stories could play a role in achieving an essential outcome in IPE.

Theme 2: Enhanced Understanding of Interprofessional Roles and Responsibilities

The data from this theme suggest that the digital video story helped participants to better comprehend the roles and responsibilities of the different health professionals. The digital video story enhanced their understanding of interprofessional roles, responsibilities, role overlap, teamwork, and team efficiency. Participants could see a depiction of health professionals actively playing their roles and how each profession contributed uniquely to patient care. This level of

clarity helped students understand their future roles within a team context and how to effectively collaborate with others. Such level of clarity is emphasized in interprofessional education (Reeves et al., 2016).

This theme could be viewed from the angle of the Transformative Learning Theory proposed by Jack Mezirow (1997). His theory suggests that through critical reflection on experiences, learning can transform an individual's worldview, leading to a more inclusive and discriminating perspective (Ted, 2018). Participants' responses show that through critical reflection on the story they watched, participants were able to gain a deeper understanding and appreciation of the interprofessional roles of the health professionals involved in the care and the value of collaboration, thereby transforming their perspectives. One participant responded that they could see beyond the basic functions of a particular profession; they gained a higher level of insight into other contributions of these professions. The digital video story appeared to influence learners to achieve another vital competence of IPE. Many authors have proposed that the need for health professionals to understand the roles and responsibilities within the interprofessional practice is a crucial competency of IPE, helping students identify unique and shared roles among different health professions (Furr et al., 2020; Macdonald et al., 2010; Wynarczuk et al.,2019). Knowledge of the professional role of others is crucial for interprofessional collaborative practice, contributing to better patient-centered care and optimized client care (Barnsteiner et al., 2007; Nichols et al., 2019).

This study aligns with the study carried out by Nichols et al. (2019), which suggested that simulation-based learning experiences and interprofessional clinical assignments enhance students' understanding of roles and responsibilities, leading to positive perceptions of collaborative practice. This study is in line with Frost et al. (2016), where digital storytelling was

used to assess health students' knowledge of interprofessional roles in the care of older adults. The study found that the use of digital storytelling helped students understand their roles and the roles of other disciplines in patient care. The current study aligns with these studies mentioned above and with other studies that have emphasized the effectiveness of visual aids, such as digital video stories, in improving the comprehension of complex concepts and processes in interprofessional collaboration (Paul et al., 2023).

Therefore, the implication of this theme in this study is that using digital video story as instructional material in IPE can help students develop a clearer understanding of interprofessional roles, which leads to more effective collaboration in clinical practice. By visually depicting interprofessional roles and responsibilities, the digital video story facilitated a more precise understanding of team dynamics, which enhanced students' ability to navigate collaborative practice environments.

Theme 3: Understand Real World Ideal Collaborative Patient-Centered Care

This theme highlights how digital stories facilitated participants' comprehension of real-world patient-centered care, emphasized the need for promptness in delivering care, and prioritizing patient needs. They appreciated the collaborative efforts of healthcare teams in addressing patients' diverse needs. This theme of understanding real-world ideal patient-centered care resonates with literature emphasizing the centrality of patient needs and preferences in interprofessional collaboration (Bridges et al., 2011; Zwarenstein et al., 2017). Digital video stories enabled students to observe a holistic approach to patient care advocated in interprofessional models, leading to a deeper understanding of patient-centered practice principles.

This theme also highlights the principles of situated learning theory as introduced by Lave and Wenger (1991), which emphasizes learning that occurs in context. This theme suggests that the digital video story provided a realistic and contextual scenario that helped the students understand how ideal collaborative, patient-centered care is implemented in real-world settings. Some studies, like Törnqvist et al. (2023), have suggested that providing realistic and contextual scenarios in IPE (of which a digital story is one) enhances student engagement, learning outcomes, and the development of interprofessional competencies. These scenarios help students connect theoretical knowledge with practical applications, improve problem-solving skills, and increase overall activity and performance in educational settings. Implementing such strategies in IPE can lead to more effective and confident healthcare professionals.

The study by Hilton (2003) on using scenarios as a learning and teaching strategy with students suggests that using scenarios in teacher education enhances students' learning, enabling them to widen their thinking about curriculum needs and become more responsible for their learning. Although this action research differs from this present study, based on the data available, they both have a common ground; in both studies, digital story functioned as scenario-based instructional material. Realistic scenarios helped students visualize and understand the complexities of interprofessional collaboration in patient care (Bainbridge & Wood, 2012). Based on the data, the implication of this theme suggests that digital video storytelling can be a valuable educational tool for demonstrating the practical aspects of collaborative, patient-centered care.

Theme Four: Visualization Enhanced Understanding of Patient Care and How Teams Function in Interprofessional Collaborative Care

Using digital video storytelling improved students' understanding of patient care and team dynamics in interprofessional settings. The voice and the animated images in the digital video

story helped the participants to better understand the complex concept by providing concrete examples of team functioning and patient care. From the participant's responses, the digital video story method made abstract concepts more tangible and easier to understand. The data in this theme show that participants' understanding of interprofessional collaborative care was enhanced by the visuals, which involved the animated pictures in the digital video story, through which they were able to see the patient's case, treatment, the team and team's collaborative processes involved in the care.

According to Paivio (1986), visual aids and storytelling improve comprehension and retention of complex information. The Dual Coding Theory developed by Paivio (1986), suggests that people learn better when information is presented through both verbal and visual formats. Digital video storytelling uses audio (verbal) and video (visual) elements to enhance understanding of patient care and how teams function. The study carried out by Aleena et al. (2023) suggests that visual art-based IPE sessions can improve learners' skills in collaborative competencies, which is precisely what we have seen in this study where the digital video story was able to help participants understand interprofessional collaborative patient-centered care visually. The visual nature of the digital video story contributed significantly to participants' understanding of patient care and the processes involved in interprofessional collaboration. Visualization of patient cases and team processes appeared to facilitate comprehension and retention of information. A study by Sari et al. (2023), suggests that multimedia-based learning media effectively improves health students' competence in human anatomy and physiology.

Many studies (Agarwa et al., 2020; Friedl et al., 2006 & Huang, 2005), have suggested that multimedia learning significantly improves comprehension of complex health concepts compared to traditional educational methods. These studies suggest that multimedia learning enhances knowledge retention, efficiency, and engagement, which is particularly effective in

practical and procedural settings. Multimedia presentations help manage cognitive load and make complex information more accessible because it can leverage verbal and visual cognitive channels. In this study, the digital video story, which was used as instructional material, is an example of multimedia. The data in this theme suggests that incorporating digital video storytelling into IPE can significantly enhance students' understanding of team dynamics and patient care.

5.3.2 Influence of Digital Video Story on Participants' Perception of Interprofessional Collaboration with Other Health Care Providers

Theme 1: Collaboration as Skill Enhancement and Support

The results of this study suggest that participants perceived interprofessional collaboration as a means not only to support clients but also to support new health practitioners, enhancing their clinical skills and confidence. The results imply that participants see collaboration as a crucial support system for patients and new healthcare professionals. Collaboration allows new practitioners to enhance their clinical skills and build confidence in their practice. This interpretation aligns with collaborative practice as a mechanism for knowledge sharing, skill development, and mutual support among healthcare professionals (Reeves et al., 2017). The sense of reassurance derived from knowing that other professionals are available for support reflects the importance of teamwork and collective responsibility in healthcare delivery (Hall, 2005). The discussion from action research by Adamson and Dewar (2015) suggests that reflective learning and stories about the experience of giving and receiving care can contribute to developing the knowledge, skills and confidence that enable student nurses to provide compassionate relationship-centered care within the practice. This aligns with the data in this theme, where the participants stated that reflecting on the digital story and the information received from it has made them more confident.

Therefore, reflecting on the responses from the participants, this theme indicates that using digital video story as instructional material influenced the participants' perception of collaboration. The digital video story made them see collaboration as an opportunity to build their skills as new experts coming into the field. Secondly, as new practitioners, seeing that they will not be working alone in the field influenced their confidence level. This finding implies that using digital video stories that show real-life collaborative practice experiences will be helpful for pre-licensure students; it will prepare and give them confidence for future interprofessional collaborative practice.

Theme 2: Communication in Collaboration

Reflecting on the data in this theme, the theme suggests that the digital video story encouraged the participants to reflect on the importance of communication in interprofessional collaboration. This finding also highlights how the digital video story brought about the realization that respect in communication and understanding are critical components in fostering effective teamwork among health care providers. For example, one participant described how effective communication among team members can help them understand and manage patient needs. The participants also mentioned the importance of respect among professionals.

Looking at existing literature like the study by Leonard et al. (2004), effective communication is a cornerstone of successful interprofessional collaboration. The emphasis on respect and understanding aligns with other results that have highlighted that these elements are essential for cohesive and effective teamwork (Suter et al., 2009). Observing effective communication in digital video stories helps students learn and model these behaviors in their practice. Although this study was designed to implement a digital story as instructional material,

and as such, the research participants were not involved in creating the digital story, it is essential to note that the result from this study still aligns with other studies where participants were asked to create the digital story as part of their learning. In O'Byrne et al. (2018) study on digital storytelling in early childhood, students were involved in digital storytelling and they played a role in creating the digital story as part of their learning. Results suggested that digital storytelling helped students organize and express their ideas, ask questions, express opinions, and construct narratives, enhancing their communication skills. Although only three out of the ten participants in this study contributed to this theme, the results from this current study suggest that the digital video story also influenced participants' perceptions and helped them understand that communication is critical to effective collaboration. Therefore, this study suggests that digital video stories can also be used to emphasize the importance of communication and respect in interprofessional collaboration, thereby improving teamwork in healthcare settings.

Theme 3: Recognize the Value of Interprofessional Collaboration

The findings in this theme suggest that the participants recognized the need for interprofessional collaboration and perceived it as the most effective approach to patient care. The participants understood the importance of working collaboratively and acknowledged the benefits of interprofessional teamwork. This suggests that the digital video story may have helped students to understand that interprofessional collaboration is crucial for delivering high-quality patient care. Students perceived interprofessional collaboration as the most effective approach to patient care.

Looking at this from the perspective of transformative learning theory by Mezirow (1997), the students were able to reflect on the interprofessional collaborative success depicted in the digital video story, which helped them recognize the value and impact of interprofessional collaboration. The recognition of the value of interprofessional collaboration is supported by the

Institute of Medicine (2011), indicating its positive impact on patient outcomes and healthcare quality. Collaborative practice is essential for addressing complex patient needs and improving healthcare delivery (WHO, 2010). Through this digital video story, participants were able to see how experts work together to achieve the end goal, which is effective patient-centered care.

5.3.3 Optimization of Digital Storytelling for Interprofessional Collaboration

How can the use of digital video story be optimized to enhance attitudes towards interprofessional collaboration and improve their satisfaction with interprofessional learning?

Theme 1: Educational Impact and Integration of Digital Video Story

This theme comprises two sub-themes; the two sub-themes represent the participant's perception of the educational value of digital video storytelling in interprofessional education. Sub-theme one comprises codes showing that participants perceived that digital video stories can catalyze meaningful engagement in IPE classes. The participants perceived digital video story as a valuable tool for stimulating curiosity and bringing about meaningful conversations or discussions among learners in IPE classes. Reflecting on participants' responses, the findings suggest that participants perceived that digital video stories could provide interactive and engaging experiences that can help students construct knowledge about interprofessional collaboration through meaningful and contextualized learning. Digital video stories were influential in activating conversations and engaging students in IPE sessions. This positions digital video stories as beneficial instructional resource material that can positively influence students' learning in IPE.

Jackson et al. (2019) conducted an exploratory study on dietetics and speech-language therapy students and their educators. They found that conversations during simulated IPE scenarios enabled rich learning opportunities and higher-level problem-solving. Educators often

use open-ended questions to encourage students to think critically and solve problems collaboratively. Conversation is vital, and conversational agents can improve peer learning by building on prior knowledge and guiding students through structured lines of reasoning (Tegos & Demetriadis, 2017). Conversational agents help enhance learners' comprehension, engagement, and motivation (Tegos & Demetriadis, 2017). While Piaget (1972) emphasized individual cognitive development, he also acknowledged the role of social interactions. Conversations and social exchanges challenge learners' pre-existing notions and encourage cognitive conflict, which is essential for learning and cognitive growth (Piaget, 1972).

According to Tegos & Demetriadis (2017), conversational agents with social interaction capabilities can enhance learning and idea generation by providing dynamic support for learners working together. This includes stimulating cognitive processes such as conflict resolution and mutual regulation. Tegos and Demetriadis (2017) emphasized that agents who provide reflective prompts (like digital video stories) can help students produce more conceptually rich statements and engage in deeper learning. Digital video stories may serve as a useful tool to enhance learning and student's attitude toward IPE by fostering meaningful conversations. Unsurprisingly, the participants in this study perceived digital video stories as good instructional material for learning. Some codes that made up this theme include codes from participants' responses that highlight how digital video stories can be used in IPE as excellent instructional material. They perceived that it could be used to solidify existing knowledge or what has been taught, teach foundational topics in interprofessional education, and highlight the role and responsibilities of silent or absent health professionals. They perceive digital video stories as suitable for different learning methods and valuable as a pseudo case in IPE.

Study participants also mentioned that digital stories fostered curiosity. This was also reported in the study by Hafford-Letchfield et al. (2018), where students involved in digital

storytelling also reported increased curiosity. Looking at the results from this study and the study by Hafford-Letchfield et al. (2018), there is a suggestion that digital stories influenced the curiosity of participants in both scenarios, that is, when they are the creators of the digital story (as part of their learning activity) and when students watched an already created digital story (as an instructional material). Both scenarios produce curiosity among learners. According to Hafford-Letchfield et al. (2018), enhancing curiosity will enrich interprofessional exchange. The use of multimedia in education has been shown to increase engagement and improve learning outcomes (Clark & Mayer, 2016). Digital stories, by providing visual and narrative context, can enhance understanding and retention of information (Robin, 2008).

In summary, this theme highlights the educational value of digital video storytelling as a teaching tool in interprofessional education, as perceived by participants. This interpretation aligns with previous research suggesting that multimedia tools, such as videos, enhance learning outcomes and facilitate knowledge retention in healthcare education settings (Cook et al., 2010; Wong et al., 2014). Integrating digital video stories to supplement traditional IPE classes reflects a pedagogical approach that embraces technology to engage learners and promote active participation in collaborative learning activities (Curran et al., 2010). Integrating digital video stories into IPE may enhance student engagement and reinforce key concepts, making digital video stories valuable educational tools.

Theme 2: Learner's Preferences for the Digital Video Story Format and Features

This theme comprised different codes representing participants' preferences for the format and features of digital video storytelling. They valued its short length, audio-visual nature, pace control, and use of headings or text. Participants found these features engaging and conducive to learning. Students preferred the audio-visual format and concise nature of digital

stories, as they found them engaging and easy to follow. Features such as animation, headings, and pace control were also highlighted as beneficial for learning. Most significantly, the use of text in combination with the storyteller's voice was found to be very helpful by the participants. This emphasis on the storyteller's voice is directly related to the suggestions made by Mayer et al. (2004), which suggests that the use of a human voice in place of a machine voice (the voice principle) and conversational language in place of formal language (the personalization principle) are two strategies to boost student interest in computer-based multimedia presentations. Presenting information in a multimedia format like a digital story, which is ideally less than 5 minutes in length, reduces or simplifies the load of the information. Cognitive Load Theory, proposed by Sweller (1988), argues that to maximize learning, instructional approaches should avoid overloading human working memory, which can only contain a certain quantity of information at any given moment. It is not surprising to see that in theme four, participants directly shared their preference for a digital video story over a case study presented in text format, which they described as being too much and difficult to go through. This Cognitive Load Theory gives more insight into why students prefer concise and interactive digital stories; this theory posits that instructional design should minimize cognitive load to enhance learning efficiency.

Learners generally prefer multimedia materials that combine text, images, and, narration over single representations, as it enhances their learning experience and engagement (Blank et al., 2003; Mayer, 2003; Pastore, 2016a; Pastore, 2016b). Just as one of the codes in this theme represents participants' perception that a digital video story is suitable for different learning methods. Studies suggest that visual learners prefer dynamic multimedia materials like videos and animations, while verbal learners perform better with video-based materials that include narration (Chen & Sun, 2012; Kisicek et al., 2012). Despite the redundancy principles

suggesting that redundant information can hinder learning, learners often prefer having text, narration, and images together. They also favor highly detailed and colored images over simpler ones (Pastore, 2016a; Pastore, 2016b).

Another essential feature that participants mentioned is the ability to control the pace of the digital video story, like pausing or returning to a missed point. According to the study by Moreno and Mayer (2007), the ability to control the pace and interact with content enhances learner engagement and retention. Participants' preference for the format and features of digital video stories shows the importance of tailoring educational resources to meet diverse learning needs. This interpretation is supported by literature emphasizing the significance of learner-centered approaches in curriculum design and delivery (Cullen & Reinhold, 2012).
Students emphasized short, visually engaging content with user-controlled pacing and interactive elements, which reflects a shift towards more personalized and interactive learning experiences in health care education (Plamen, 2004). According to Hamm and Robertson (2010), multimedia materials can support deep and surface learning approaches, depending on how they are integrated into the curriculum. Incorporating preferred features into digital video stories can increase student engagement and improve the overall learning experience.

Theme 3: Perception about Learning through Digital Video Story

Based on the codes that emerged under this theme, participants perceive digital video story as engaging and impactful. Participants suggest that digital video stories make information more accessible to understand and remember due to their structured and relatable format. They found it beneficial for simplifying complex information and enhancing understanding. Codes derived from participants' responses under this theme include a sense of realism and enhanced

memory retention, the facilitation of quicker and easier comprehension through the digital video story, and its personal and relatable nature.

Students found digital storytelling to be a personal and engaging way to learn, which kept their attention and made learning more enjoyable. This aligns with the study by Haven (2007), which stated that stories provide context and relevance, making information more relatable and accessible to retain. Naturally, humans are drawn to stories. Our childhood is filled with stories. Reflecting on the data, digital stories present complex information in a format that is natural and familiar, which may have contributed to the perception that digital stories are relatable, easy to understand and easy to remember. Digital stories are perceived as engaging, facilitating knowledge construction through relatable and memorable narratives. This typically affirms the role of narrative in enhancing memory and understanding, as reported in educational psychology (Schank & Abelson, 1995). The ability of digital story to enhance engagement of participants was also recorded in the study by Fisher & Hitchcock (2022), where students were asked to create digital story assignments in their social work courses. This was found to enhance student engagement, learning, and digital literacy while providing opportunities for creativity and collaboration. Although in this current study, students did not create the story, they found watching the video to be engaging. They suggested that the digital story can be used to spark conversation in class, which may also increase engagement.

The participants' positive perception of learning through digital storytelling suggests that this medium effectively conveys complex concepts in an accessible and memorable manner. This interpretation resonates with studies that have suggested the potential of narrative-based approaches to promote deep learning and critical thinking skills among learners (Bruner, 1991; Greenhalgh & Hurwitz, 1999). The ability of digital stories to simplify information, evoke emotional engagement, and facilitate knowledge retention aligns with principles of effective

instructional design and cognitive learning theory (Mayer, 2005; Sweller et al., 2011). Digital storytelling in IPE may make learning more engaging and effective, helping students retain complex information through relatable and memorable narratives.

Theme 4: Preferences over Other Learning Methods

This theme comprises two codes shared by four participants, highlighting participant preference for digital stories over other learning methods like text-based instructional material and verbal presentation. The preference for digital video storytelling over traditional learning methods, such as written patient histories or verbal presentations, reflects a growing recognition of the advantages of multimedia approaches in healthcare education. This interpretation is consistent with literature that advocates the use of technology-enhanced learning environments in order to accommodate diverse learning styles and preferences (Cook et al., 2008; Ellaway & Masters, 2008). The perceived effectiveness of digital storytelling in conveying complex healthcare concepts also suggests its potential as a primary instructional tool in IPE curricula (Issenberg et al., 2013; Ruiz et al., 2006).

This result and its interpretation are also supported by Issa et al. (1999), which is a study that evaluated the impact of multimedia-based instruction on learning and retention in high school and university students. This study postulates that multimedia-based education offers superior retention rates and improved learning outcomes compared to traditional classroom learning methods. This also reflects broader trends toward integrating digital technologies in education (Hodges et al., 2020; Topol, 2019). By offering a more dynamic and immersive learning experience, a digital video story enhances student engagement and motivation, leading to more positive learning outcomes in interprofessional education contexts. The incorporation of digital video storytelling into IPE may enhance learning by making it more engaging and

accessible compared to traditional methods. It is also important to mention that only four participants contributed to this result.

Theme 5: Optimizing Digital Video Stories in IPE

This theme presents participant's specific recommendations for optimizing digital video storytelling, such as using accessible language, keeping it concise, making it interactive for conversation, tailoring it geographically, including the patient's voice, focusing on one case per story, adding more details, highlighting the roles of silent health professions, and, incorporating stories that show scenarios where there are lapses in interprofessional collaboration. These recommendations for enhancing digital video stories used in IPE also highlight the importance of formative evaluation and the need for ongoing refinement and customization to meet the evolving needs of learners (Damasiotis, 2023). By incorporating feedback from students and educators, digital video storytelling can be further optimized to maximize its educational impact and relevance in interprofessional education settings.

This also affirms the need for tailoring educational resources to address specific learning needs and preferences. This interpretation aligns with the principles of learner-centered design and continuous quality improvement in educational technology (Bates & Poole, 2003; Laurillard, 2011). Incorporating features such as easy language, geographic relevance, patient perspectives, and interactive elements reflects a commitment to enhancing the effectiveness and relevance of digital storytelling in IPE (Cheston et al., 2013; Greenhalgh & Russell, 2006). Participants suggested that digital stories should be concise and use simple language to enhance understanding. Literature supports the importance of explicit, concise content and interactivity in educational materials (Clark & Mayer, 2016). Optimizing digital video stories based on student's feedback will position digital video stories to provide adequate experiential learning opportunities and enhance engagement and learning outcomes.

5.4 Conclusion and Recommendation

This study explores the relatively under-researched area of using instructor-created digital storytelling as an interprofessional education instructional tool. While much of the existing literature focuses on learners creating their own digital stories as part of the learning process, there is a need to better understand the effect of digital video stories created by instructors. In an era where online teaching and learning are increasingly prevalent, and various media are employed in IPE, digital video stories are underutilized and under-examined. The primary aim of this research was to conduct a formative evaluation of digital video storytelling as a teaching tool in interprofessional education. The study sought to understand how digital video story might influence pre-licensure health profession students' comprehension of interprofessional collaboration at Memorial University Newfoundland and Labrador.

Additionally, the research aimed to explore how digital stories could be optimized to enhance students' attitudes toward interprofessional collaboration and improve their satisfaction with interprofessional learning. Twelve themes emerged from the thematic analysis of the data, addressing three key research questions. These themes provide insight into the influence of digital video storytelling on students' understanding and perception of interprofessional competencies, their views on interprofessional collaboration, and suggestions for optimizing digital stories in IPE. Under research question one, the analysis identified four themes indicating that digital video story positively influenced students' understanding and perception of interprofessional competencies. Digital video story helped students appreciate different health professions' roles, responsibilities, importance, and how they operate and collaborate. It enhanced their understanding of interprofessional roles, responsibilities, role overlap, teamwork, and team efficiency. The third theme stated that it facilitated their understanding of the real world, ideal patient-centered care, the value of prioritizing patient needs, and the need for close-

knit interprofessional collaboration. The fourth theme suggested that participants' ability to visualize patient cases, the treatment process, and team interactions helped enhance their comprehension of genuine interprofessional collaborative care. For research question two, three emerging themes suggest that digital video story positively shaped students' perceptions of interprofessional collaboration. It portrayed collaboration as a means of skill enhancement, support, and confidence building for new professionals. It highlighted the importance of communication, respect, and understanding in effective interprofessional teamwork. The third theme suggests that it helped students recognize the value and need for interprofessional collaboration, perceiving it as the most effective approach to patient care.

In research question three, five themes, along with sub-themes, offered recommendations for optimizing digital video storytelling in IPE and highlighted students' preferences. In the aspect of educational impact and integration, participants suggested that digital video stories can be integrated as supplementary resources to in-person interprofessional educational classes, activate meaningful conversations, instigate curiosity, and solidify existing knowledge. One of the themes highlighted learners' preferences for format and features. Students preferred the digital video format for its audio-visual nature, pace control, use of text/headings, and technological integration. They perceived digital video stories as engaging, attention-grabbing, relatable, memorable, and well-structured resources for learning. Students preferred digital video stories to written patient histories or verbal presentations. Participants also made recommendations for optimizing digital video stories in interprofessional education. Recommendations included using accessible language, keeping stories concise, making them interactive, tailoring them geographically, including patient voices, focusing on one case per story, adding more details, highlighting silent professions, and incorporating stories of lapses in collaboration.

5.5 Limitations of Study

Firstly, the sample size is small and, as such, limited, which may affect the overall results. The results from this study were gathered over a short time and as such may not represent a long-term impact of digital storytelling as a teaching tool.

Conducting this research brought a realization that in-person recruitment was more effective in this study. Many students acknowledged that they saw the invitation emails sent out by the IPE coordinator, but they never had the time to go through it in detail. While there may be many underlying reasons for this, the most prominent factor that could be a contributing factor was the timing; the recruitment process commenced a few weeks before the end of classes. Many undergraduate students at this time were focused on preparing for exams and meeting assignment deadlines. However, meeting with them physically and explaining what was required and the time involved helped them make their decisions. Therefore, the timing of the recruitment posed a form of limitation during this study.

5.6 Recommendations

Future research should involve a more extensive and diverse group of participants to increase the generalizability of the findings. Including students from various healthcare disciplines across multiple institutions and different IPE curricular approaches could provide a broader perspective on the impact of digital video storytelling in IPE. Future researchers should incorporate multiple evaluation methods beyond expert evaluation and one-on-one interviews used in this study. Methods such as focus groups, surveys, and longitudinal studies can provide richer data and more comprehensive insights into the effectiveness of digital storytelling in IPE. This study also suggests possible experimental studies comparing digital stories and other teaching methods, as well as conducting longitudinal studies to assess the long-term impact of

digital video storytelling on students' understanding and perception of interprofessional competencies and collaboration. This approach will help determine whether the initial positive effects are sustained over time.

The IPE curriculum designers should consider incorporating digital video stories as a core component of IPE curricula. These stories can supplement in-person IPE classes, activate meaningful conversations, and solidify existing knowledge. IPE program developers should create digital stories with interactive elements to engage students actively. Features like discussion prompts, quizzes, and reflective questions can enhance students' engagement and learning outcomes. Digital video stories should be based on real-life experiences of health professionals. This approach can make the stories more relatable and memorable for students, enhancing their understanding and retention of interprofessional concepts. Digital video stories should highlight the roles and responsibilities of various health professions, including those often overlooked or not offered in an institution. This will help students appreciate the full spectrum of interprofessional collaboration and understand how each profession contributes to patient care.

IPE instructors can use real-life digital video stories that showcase successful collaboration and address common communication challenges, which can prepare students for real-world interprofessional practice. IPE coordinators should ensure that digital video stories are tailored to the geographic and cultural context of the students. This can make the content more relevant and engaging, leading to better learning outcomes. Including patient perspectives in digital stories can enhance the authenticity and impact of the narratives. Patients' voices can highlight the importance of patient-centered care and the role of interprofessional collaboration in achieving optimal outcomes. This study also recommends keeping digital video stories concise and using simple language to ensure clarity and understanding, and incorporating interactive elements and real-life scenarios to make the stories more engaging and relatable. This study also

suggests that digital stories should reflect real-world practices and geographic contexts to enhance relevance and relatability.

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Appendix

Appendix 1

INVITATION

Hi
You are invited to participate in a research project entitled Exploring the Use of Digital Video Storytelling as a Teaching Tool in Interprofessional Health Education among pre-licensure students in healthcare education at MUN.

This research is being carried out by Ben Goodness Chinazom, a Master's student in the Faculty of Education at MUN, under the supervision of Prof. Vernon Curran, Associate Dean of Educational Development at MUN.

This qualitative research aims to investigate the impact of a digital video story on the students' understanding of interprofessional competencies, their perception of Interprofessional collaboration, how the use of digital video storytelling can be optimized to enhance attitudes towards collaboration, and their satisfaction with interprofessional learning.
This research will help to evaluate if video digital storytelling will be a good tool for teaching interprofessional health education.

You are invited to participate in this project because you are a pre-licensure healthcare education student who has also taken the interprofessional health education course at MUN.
To be part of this research, you must have completed at least one semester out of the four semesters of the IPE skill training sessions; this means that you must have participated in either one or more of the following training topics: Team Functioning, Communication, Conflict management and Addressing team failure.

If you are taking any course with my supervisor, Prof. Vernon Curran, or have participated in an IPE teaching activity with Prof. Vernon Curran as your facilitator/teacher. In that case, you are not ethically permitted to participate in this research.
If you choose to be a participant in this research, you'll be given access to a 5-minute video digital story. This digital story is designed to tell the real story of an interprofessional team as they collaborate to manage a patient.

After you watch this video, there will be a 30-minute interview session, which will be recorded. This interview will help the researcher understand your perception and understanding of interprofessional collaboration and interprofessional competencies.
Participation in this qualitative phenomenological study is voluntary and confidential in compliance with Memorial University's ethics policy.

Both the video and the interview session will take place on Zoom on a day and time that is convenient for each participant, incase a participant prefers to have a physical session, this will be done at an agreed time and place in school .

There is no monetary reward for participating in this research, but study participants will receive a $15 gift card in recognition of their time for participating in the study. Kindly note that participation in this study is not a requirement for your program. Your participation in this research will allow you to get more insights into interprofessional education and interprofessional competencies.
Secondly, by participating in this research, you will also be contributing to the body of knowledge that will shape how inter-professional health education courses will be designed in the future.
To participate in this study, you are required to read, understand, and sign the consent form, which you can access by scanning the barcode on the last page of this invitation document.

A PDF version of this consent form will be sent to you.

Your assistance in conducting this research study would be greatly appreciated. If you have any questions or concerns, please contact the researcher at gcben@mun.ca or (709) 2194998. The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to comply with Memorial University's ethics policy.
If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861

Thank you in advance for considering my request.

Scan the barcode on the next page.

You 'll be automatically redirected to a virtual calendar where you can select the date and time to watch the digital story and be interviewed afterward.

Appendix 2

RESEARCH QUESTION

1) How did the digital video story influence your understanding and perception of interprofessional collaboration and its importance to patient-centred care?

2) How did the digital video story enhance your understanding of the roles and responsibilities of different healthcare professionals in collaborative patient-centred care?

3) What aspects of the digital video storytelling approach make it appealing for learning about interprofessional collaboration?

4) Are there any ways in which digital video storytelling could be enhanced for learning about interprofessional collaboration?

Appendix 3

Informed Consent Form

Title: Exploring the Use of Digital Video storytelling as a teaching tool in interprofessional health education and it possible influence on students' understanding of interprofessional competencies and collaboration among pre-licensure students in healthcare education at MUN

Researcher(s): Ben Goodness Chinazom

Supervisor(s): Dr. Vernon Curran

You are invited to take part in a research project entitled Exploring the Use of Digital Video storytelling as a teaching tool in interprofessional health education and it possible influence on students' understanding of interprofessional competencies and collaboration among pre-licensure students in healthcare education at MUN.

This form is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. It also describes your right to withdraw from the study. In order to decide whether you wish to participate in this research study, you should understand enough about its risks and benefits to be able to make an informed decision. This is the informed consent process. Take time to read this carefully and to understand the information given to you. Please contact the researcher, Ben Goodness, if you have any questions about the study or would like more information before you consent.

It is entirely up to you to decide whether to take part in this research. If you choose not to take part in this research or if you decide to withdraw from the research once it has started, there will be no negative consequences for you, now or in the future.

Introduction:
I am a master's student in the Faculty of Education, at Memorial University Newfoundland, and my supervisor is Dr. Vernon Curran.

Purpose of Study:
The purpose of my qualitative research is to investigate the impact of a digital video story on the students' understanding of interprofessional competencies, their perception of Inter-professional collaboration, and how the use of digital video storytelling can be optimized to enhance attitudes towards collaboration, and their satisfaction with interprofessional learning. This research will help to evaluate if digital storytelling will be a good tool for teaching interprofessional health education.

What You Will Do in this Study:
Should you consent to participate in this research you will be asked to do the following:

- You will be given access to a 5 mins video digital story on inter-professional education via zoom or webx. You will be expected to watch this video.
- At the end of this video, there will be an interview session with the researcher which will be recorded. This interview will help me to understand how you perceive and understand interprofessional collaboration and inter-professional competencies through the digital story.

Length of Time:
The video is expected to last approximately 5minutes. The interview is expected to last approximately 30 minutes. This session will be done virtually, so it can be done at your most convenient time.

Withdrawal from the Study:
You may end your participation up to one week after the interview by letting me know, and any data collected from you up to that point will be destroyed. To notify me in case you want to withdrawal, you may contact me at gcben@mun.ca. Within 4 days of completing the interview, I will email you the transcript of the interview, so you can give me a feedback concerning the accuracy of the text. Should you withdraw your participation, I will use McAfee Antivirus Plus' to ensure the data is thoroughly deleted.

Possible Benefits:
Participation in this will give you an opportunity to learn more and gain more insight about inter-professional collaboration and inter-professional competencies through the digital story. Secondly, by participating in this research, you will also be contributing to the body of knowledge that will shape how inter-professional health education course will be designed in future.

Possible Risks:
Some individuals who are camera shy may find it a bit uncomfortable sharing over zoom. But as much as possible, the interview sessions will be conducted in such a way that you will be comfortable and relaxed. But apart from this, participation may not cause you any harm that I know of.
Should participation in this research cause any anxiety in spite of these assurances, you can avail the services of the Student Wellness and Counselling Centre at the address below:

Student Wellness and Counselling Centre
5th Floor University Centre, UC-5000
Memorial University of Newfoundland
St. John's, NL A1C 5S7
Tel: 709-864-8500

Confidentiality:
The ethical duty of confidentiality includes safeguarding participants' identities, personal information, and data from unauthorized access, use, or disclosure.

To ensure confidentiality, electronic copies of text, audio recordings, and interview transcriptions will be saved in a password-protected folders on my laptop and back-up flash drives.

Anonymity:
Although during the collection of data your participation will not be anonymous, because I will know who you are and my supervisor will also be privy to your participation. But various measures will be taken in other to ensure that your identity is withheld from every other persons during and after the conducting of this research.

Also, to ensure your anonymity to all other individuals, a pseudonym chosen by you will be used to label your interview transcription. Since interviews will be one-on-one, and done virtually, only I will know your real name, but your transcript will bear your pseudonym. While quotes extracted from the data may be used, every reasonable effort will be made to ensure your anonymity.

Recording of Data:
Interviews will be recorded using Zoom and transcribed manually.

Use, Access, Ownership, and Storage of Data:
Data will be stored in password-protected folders on my laptop and maybe on a back-up flash drives. Only my supervisor, Prof. Vernon Curran, will also have access to the data. In addition, this signed consent form will be kept in a locked filing cabinet. In keeping with University policy, data will be kept for a minimum of five years, as required by Memorial University's policy on Integrity in Scholarly Research. After that period, data and this consent form will be shredded and deleted electronically.

Third-Party Data Collection and/or Storage:
No third-party data collection or storage mechanisms will be used for this study.

Reporting of Results:
Upon completion, my dissertation will be available at Memorial University's Queen Elizabeth II library, and can be accessed online at: http://collections.mun.ca/cdm/search/collection/theses.
A version of it may be released in a scholarly publication elsewhere.

Data will be incorporated using direct quotations, visuals, summaries and paraphrases, all of which will be void of personal identifying information.

Sharing of Results with Participants:
After the completion of my analysis, I will share results via face-to-face discussion and/or email, as preferred by you.

Questions:
You are welcome to ask questions before, during, or after your participation in this research.

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

Consent:
Your signature on this form means that:

- You have read the information about the research.
- You have been able to ask questions about this study.
- You are satisfied with the answers to all your questions.
- You understand what the study is about and what you will be doing.
- You understand that you are free to withdraw participation in the study without having to give a reason, and that doing so will not affect you now or in the future.
- You understand that if you choose to end participation **during** data collection, any data collected from you up to that **point will be destroyed**.
- You understand that if you choose to withdraw **after** data collection has ended, your data can be removed from the study up to two weeks after the second interview.

By signing this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

Your Signature Confirms:

☐ I have read what this study is about and understood the risks and benefits. I have had adequate time to think about this and had the opportunity to ask questions and my questions have been answered.

☐ I agree to participate in the research project understanding the risks and contributions of my participation, that my participation is voluntary, and that I may end my participation.

☐ A copy of this Informed Consent Form has been given to me for my records.

_____ _____
Signature of Participant Date

Researcher's Signature:
I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

_____ _____
Signature of Principal Investigator Date

Appendix 4

THE NEW SCRIPT

Scene 1: Introduction

[Scene: Busy hospital with nurses and doctors rushing around]

[Narrator] Eight whirlwind years in the emergency room, where every second counts. Life's a race against time.

[SFX: Clock ticking and hospital sounds]

Scene 2: Transition

[Scene: Hospital transforming into a peaceful primary healthcare facility]

[Narrator] I am Nurse Jennifer , a Nurse Practitioner, who once worked in the ER. But today, I find myself in a different setting, a serene primary healthcare facility. Here, my patients have chronic illnesses with intricate symptoms, like our friend, Mr. Zim.

Scene 3: Mr. Zim's Health

[Scene: Mr. Zim looking worried, sitting in the waiting room]

[Narrator] Meet Mr. Zim - history of diabetes, obesity, depression, and hypertension. He's in our capable hands now.

Scene 4: Assessment and Recognition

[Scene: Nurse assessing Mr. Zim]

[Narrator] It didn't take long to realize that we needed a team. As the primary provider, I took the first steps. Tests were ordered, medications were prescribed, and I assessed the situation.

Scene 5: Team Formation

[Scene: The team of healthcare professionals gathers]

[Narrator] I assembled the dream team for Mr. Zim. First up, Nurse Alison, our chronic disease management expert.

Scene 6: Collaborative Efforts

[Scene: Nurse Alison explaining the treatment plan to Mr. Zim]

[Narrator] Nurse Alison swung into action with recommendations - an EKG, medication change, a new exercise routine and providing Mr Zim with education to help manage his chronic illness.

Scene 7: Medication Adjustment

[Scene: Medications being administered]

[Narrator] The necessary medication adjustments was made based on her expert advice and my assessment, with the help of our Pharmacist Molly .

Scene 8: Dietary Assessment

[Scene: Mr. Zim meeting with dietitians]

[Narrator] But we couldn't ignore his diet. Our dietitians, Amanda and Jerry a dynamic duo, took charge.

Scene 9: Dietary Recommendations

[Scene: Dietitians providing Mr. Zim with a customized meal plan]

[Narrator] The dietitians worked their magic, offering a tailored diabetic meal plan, complete with the necessary nutrients to help optimize his diabetes control.

Scene 15: Technology-Enabled Collaboration

[Scene: Characters collaborating via technology, sharing information]

[Narrator] Technology made our collaboration seamless. We shared findings, made plans, and assigned tasks, all for the well-being of our patient.

Scene 16: Patient's Progress

[Scene: Mr. Zim, transformed, smiling and healthy]

[Narrator] Four months down the road, Mr. Zim's progress is impressive. He is feeling healthier, he's more active, has shed some weight, and has adopted good habits to help manage his depression and diabetes. The care team will continue to take care of him.

Appendix 5

Initial Codes

Initial Codes	Number Of Participants Contributing	Number Of Transcript Quotations Assigned
Appreciation of other health professions and how they operate	2	4
Importance of other professionals	3	4
Learn about roles and responsibilities efficiently	7	13
prioritizing patient's needs	3	3
The Visual gave me a better understanding	3	4
Understand how close knit interprofessional collaboration can be	1	1
Understand promptness in patient centered care	1	2
Understand real world ideal patient centered care	1	3
Understand role overlap	1	2
Understanding of team efficiency	1	1
Visualization of Patient's Case and Patient's treatment enhanced understanding	3	6
Visualize Team & Team process	4	4
Think about the importance of their role and the role of others in future practice	1	3
Appreciate the role of tech communication in Interprofessional collaboration	1	1
Importance of Communication in IPC	1	2
More confident	1	1

Need for interprofessional collaboration	1	1
Opportunity for skill share	1	1
Perceive IPC as most effective for patient care	1	1
Respect in team process	1	1
Understand an Ideal Interprofessional Collaborative Practice	1	2
Understand cooperation among team members	1	1
Understand team work	1	2
Understand the importance of working collaboratively	2	3
View collaboration with others as a means of support	1	2
Activate conversations in IPE sessions	2	2
Add more details in the video	2	2
Best as one case per one digital video story	1	1
Can be used to highlights the role and responsibilities of silent or absent health professions	2	2
Digital story simplified the information	1	1
Digital Video Story as a good supplement to physical IPE classes	1	2
Digital Video story instigate curiosity for IPE class participation	1	1
Digital Video story is a great resource for learning	5	10
Digital video story is easy to follow	3	5
Digital video story is impactful	1	2
Digital Video story is like Case study	1	1
Digital video story is memorable and easy to remember.	2	3
Digital video story made it easy and faster to understand	4	4

Engaging and keeps attention	3	4
Feels real and helps me remember	3	5
Finds Digital Video story helpful	3	3
Include patient's voice	1	1
Include stories of lapses scenario in IPC	1	2
Keep the digital video story concise	1	1
Like being able to have control over the pace	3	5
Like the Animation	2	2
Likes it is audio visual nature	4	6
Like the video format	2	3
Likes that it is short	4	7
Likes the technological nature	1	2
Make it interactive for conversation at the end of watching	1	3
Personal and relatable	2	3
Prefer it to having someone talking about roles and responsibilities	3	3
Prefer it to written patient history	5	9
Should be tailored geographically	1	1
Solidify existing knowledge or what has been taught.	1	3
Suitable for different learning methods	2	2
The Structured nature makes it easy to remember	3	3
To teach foundational topics in IPE	1	1
Use Digital Video story as a pseudo case	4	4
Use easy language no Jargon	3	3
Use of headings or text	5	9
Scene of conversation between health professionals	1	2

Appendix 6

Initial codes according to the research questions

RESERCH QUESTION ONE

Initial Codes	Number Of Participants Contributing	Number Of Transcript Quotation Assigned
Appreciation of other health professions and how they operate	2	4
Importance of other professionals	3	4
Learn about roles and responsibilities efficiently	7	13
prioritizing patient's needs	3	3
The Visual gave me a better understanding	3	4
Understand how close knit interprofessional collaboration can be	1	1
Understand promptness in patient centered care	1	2
Understand real world ideal patient centered care	1	3
Understand role overlap	1	2
Understanding of team efficiency	1	1
Visualization of Patient's Case and Patient's treatment enhanced understanding	3	6
Visualize Team & Team process	4	4
Think about the importance of their role and the role of others in future practice	1	3

RESEARCH QUESTION TWO:

Initial Codes	Number Of Participants	Number Of Transcript

	Contributing	Quotation Assigned
Appreciate the role of tech communication in Interprofessional collaboration	1	1
Importance of Communication in IPC	1	2
More confident	1	1
Need for interprofessional collaboration	1	1
Opportunity for skill share	1	1
Perceive IPC as most effective for patient care	1	1
Respect in team process	1	1
Understand an Ideal Interprofessional Collaborative Practice	1	2
Understand cooperation among team members	1	1
Understand team work	1	2
Understand the importance of working collaboratively	2	3
View collaboration with others as a means of support	1	2

RESEARCH QUESTION 3

Initial Codes	Number Of Participants Contributing	Number Of Transcript Quotation Assigned
Activate conversations in IPE sessions	2	2
Add more details in the video	2	2
Best as one case per one digital video story	1	1
Can be used to highlights the role and responsibilities of silent or absent health professions	2	2
Digital story simplified the information	1	1

Digital Video Story as a good supplement to physical IPE classes	1	2
Digital Video story instigate curiosity for IPE class participation	1	1
Digital Video story is a great resource for learning	5	10
Digital video story is easy to follow	3	5
Digital video story is impactful	1	2
Digital Video story is like Case study	1	1
Digital video story is memorable and easy to remember.	2	3
Digital video story made it easy and faster to understand	4	4
Engaging and keeps attention	3	4
Feels real and helps me remember	3	5
Finds Digital Video story helpful	3	3
Include patient's voice	1	1
Include stories of lapses scenario in IPC	1	2
Keep the digital video story concise	1	1
Like being able to have control over the pace	3	5
Like the Animation	2	2
Likes it is audio visual nature	4	6
Like the video format	2	3
Likes that it is short	4	7
Likes the technological nature	1	2
Make it interactive for conversation at the end of watching	1	3
Personal and relatable	2	3
Prefer it to having someone talking about roles and responsibilities	3	3

Prefer it to written patient history	5	9
Should be tailored geographically	1	1
Solidify existing knowledge or what has been taught.	1	3
Suitable for different learning methods	2	2
The Structured nature makes it easy to remember	3	3
To teach foundational topics in IPE	1	1
Use Digital Video story as a pseudo case	4	4
Use easy language no Jargon	3	3
Use of headings or text	5	9
Scene of conversation between health professionals	1	2