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Digital Storytelling in Research: A Systematic Review

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Abstract

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Keywords

Digital Storytelling, Arts-Based Research Method, Data Collection, Narrative, Systematic Review

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Digital Storytelling in Research: A Systematic Review

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Digital storytelling refers to a 2 to 5 minute audio-visual clip combining photographs, voice-over narration, and other audio (Lambert, 2009) originally applied for community development, artistic and therapeutic purposes, and more recently adapted as an arts-based research method. To date, no systematic review of the use of digital storytelling in a research capacity, to generate information about a phenomenon has been conducted. Accordingly, our aim was to provide a systematic review of digital storytelling in research. The review identified 25 articles representing 23 discrete studies that met inclusion criteria. A thematic analysis of results indicated that digital storytelling in research was especially appropriate for use with marginalised groups, and was most commonly used in this context. There was some variation in the extent to which digital storytelling in research adhered to the principles with which it was originally developed. Surprisingly, although digital storytelling provides a ready-made knowledge translation product, few research projects employed the digital stories generated to this end. Across research projects, participants reported several benefits of digital storytelling. While some disadvantages were noted, overall, these were outweighed by the benefits of using a respectful, participatory research practice. Keywords: Digital Storytelling, Arts-Based Research Method, Data Collection, Narrative, Systematic Review

Introduction

Over the past decade, interest in and use of arts-based genres in qualitative research has burgeoned (Boydell, Solimine, & Jackson, 2015; Lenette, 2017). Dance, poetry, body-mapping, digital storytelling, and theatre have all been used to generate data about a research topic (Emert, 2013). Engagement with arts genres in the research process is conducive to co-creation of knowledge between researcher and participant, somewhat diminishing the power hierarchy inherent in such relationships. Arts-based research is valued for the richness of the data produced, as well as its amenability to engaging knowledge translation strategies, which allow findings to be disseminated and understood by the general population, rather than being relegated solely to the realms of academic readership (Boydell, Gladstone, Volpe, Allemang, & Stasiulis, 2012). However, several claims made about arts-based research, such as the production of different or richer data compared to traditional interview, remain anecdotal (de Jager, Tewson, Ludlow, & Boydell, 2016). The need for critical examination of arts-based methods as they are translated into a research context is clear. There are also several challenges in adapting creative activities for research purposes, for example, regarding judging the quality of the art produced and ethical aspects of representing certain experiences (Boydell et al.,

2012). Given the growing interest in arts-based genres in research, the time is ripe for review and critical examination of such practices.

Digital storytelling (DST) is one of the many arts genres that have been adapted for use in a research context. While the term, digital storytelling, in its generic sense is used to denote a story told using digital media, the focus of our review is DST as developed by Lambert, Atchley, and Mullen at the Centre for Digital Storytelling; namely, a 2 to 5 minute audio-visual clip combining photographs with voice-over narration (and other audio if desired) (Lambert, 2009, 2013). Readers unfamiliar with this art genre are encouraged to view some of the examples available on the StoryCenter website (see <https://www.storycenter.org/>). As the application of DST in a research context is in its infancy, it is unsurprising that no review of its use has yet been conducted. We sought to establish how DST is used in research through systematically reviewing relevant published, peer-reviewed articles. A systematic review of a given method comprehensively establishes how it is used, by whom, where, and regarding what substantive topic area. It also facilitates examination of key learning points mentioned by researchers regarding the use of the method, and typically notes aspects of participant experiences. A systematic review of all published research literature was therefore well suited to our purpose, which was to comprehensively examine the use of digital storytelling (DST) in research. This review will be of interest to any qualitative (and quantitative) researcher globally currently engaged in or considering engagement in arts-based research. It will also be of interest to those engaged in DST in a non-research context, who are considering publishing their work as research.

The paper commences with a review of the history of DST. This necessarily includes mention of the various aspects and uses DST outside of the research context, to which it was only more recently applied. We mention these varied uses of DST so that the reader has a broader view and understanding of the multiple ways in which DST can be situated in research. Understanding the application of DST across contexts, for example, therapeutic or educative, is also important as the uses of DST often overlap. For example, DST used in research to examine participants' experiences of a mental health difficulty may confer some therapeutic benefit (although this is not the main aim in a research context). Our systematic review methodology is then described, followed by reporting of our findings, and discussion of key points arising from the results.

Aspects and Uses of Digital Storytelling

Brief history and suggested benefits of DST. Digital storytelling in the format we are interested in developed out of the shared interest of Lambert and Atchley, who recognised the creative potential in using digital means of creating and sharing stories (Lambert, 2009). Together, they founded the Center for Digital Storytelling, renamed StoryCenter in 2015. The philosophical orientation and purpose of StoryCenter is clearly about more than the technical aspects of digital stories. A community development and therapeutic agenda has informed its activities since inception in 1993. Stories are a means of connecting with one another, of paying attention in a deep way, taking the time to tell one's own story and hear those of others (StoryCenter, 2017). Engrained in the philosophy of StoryCenter is a core belief in the power of engaging with stories to generate change, social justice and well-being: *"When we listen deeply, and tell stories, we build a just and healthy world."*

Over time, as DST became more established as a practice, it became apparent that it held potential beyond its original use. It has been suggested to have therapeutic, educative, movement building, and research potential (StoryCenter, 2017). These points are discussed in more detail below.

Digital stories as “counter-narratives.” The notion that the stories we tell, individually and collectively, impact people’s actions and identities is in keeping with a narrative therapy approach; stories are not merely entertaining or educational, we live in and through them (White & Epston, 1990). Given these philosophical underpinnings, it is no surprise that in community-based projects, digital stories are often explicitly posited as counter-stories or alternative interpretations of the world, others, and oneself that “counter” dominant narratives. The importance of counter-stories is most obvious when considering aspects of identity usually associated with social inequity and/or stigma, particularly in regard to gender, disability, ethnicity (Castleden, Daley, Sloan Morgan, & Sylvestre, 2013), health status (e.g., HIV/AIDS; mental health difficulties), lower socio-economic and/or refugee status (Luchs & Miller, 2016), and sexual orientation (Vivienne & Burgess, 2012). In the field of refugee studies for instance, the importance of counter-narratives through digital stories is crucial to challenge the largely negative and deficit-focussed connotations attached to the label “refugee” (Lenette, Cox, & Brough, 2015). In Vivienne and Burgess’ (2012) study, counter narratives are utilised within all stages of DST creation, where participants explore their personal and cultural understandings of those who identify as queer. This identification is designated in the study as those who are “Gay, Lesbian, Bisexual, Transgender, Queer, Intersex, Same Sex Attracted” (p. 363). Participants in this study have varying purposes for creating their DSTs, with some voicing their “duty” to others within the queer community who may have experienced similar dominant stories, where hearing a counter story may assist them in thinking of their own counter stories. For example, one participant recognised that he was “contribut[ing] to society; he was doing his bit to help other young gay Christians accept themselves” (Vivienne & Burgess, 2012, p. 371). Other participants shared their desire to reach members of the public who have a narrow view of those who are queer. When considering their audience as being “unknown,” “they [participants] imagined speaking to open-minded but ignorant audiences who may become more active supporters through “having their eyes opened” (Vivienne & Burgess, 2012, p. 372). Although narrative therapy and DST have shared philosophical underpinnings, it is important to recognise that DST is not necessarily therapeutic. Further, in many cases, DST is not facilitated by a mental health professional or arts therapist.

Participatory research. A collaborative approach with a flat hierarchy is embedded in DST as practised by Lambert and colleagues (Lambert, 2013). As such, DST is ideal for use in participatory projects, where the aim is to do research in collaboration “with” rather than, “on” participants (Conrad & Sinner, 2015). Collaborative creation of digital stories holds promise as a culturally appropriate way of conducting research with diverse minority or Indigenous groups (see Cunsolo-Wilcox, Harper, Edge, “MyWord”: Storytelling and Digital Media Lab, & Rigolet Inuit Community Government, 2013; Hancox, 2012). This seems to be particularly resonant in countries with histories of colonisation, where research practices have a record of being conducted by descendants of colonisers upon descendants of Indigenous people. Research activities can and have functioned as yet another act of colonisation, producing knowledge that is only meaningful from the perspective of the dominant culture, while neglecting other perspectives. This research practice confirms a dominant worldview, as examined extensively by Tuhiwai Smith (2012). As a research method, DST holds promise as a decolonising research practice. Rather than focussing on representations of colonised or minority groups from the dominant culture, DST necessarily involves self-representation—a story “from the inside out.” It therefore avoids, to a large extent, imposition of researcher or “outsider” views of the individual and the group to which he or she belongs. In narrative therapy terms, DST encourages a “thick” rather than “thin” description (White & Epston, 1990). In addition to minority cultural groups, DST also resonates as a respectful, meaningful, and appropriate research method for other marginalised groups including refugees, immigrants

(Lenette & Boddy, 2013; McGinnis & Garcia, 2012) and people with disabilities (Manning, 2010; Rice, Chandler, Harrison, Liddiard, & Ferrari, 2015).

There are several aspects of DST that make it an appropriate research method to employ with marginalised groups. First, storytelling is a universal and powerful way of making meaning. Although engaging in storytelling processes through DST can be emotionally confronting, participants report several benefits of taking part. Second, DST lends itself in philosophy and execution to a participatory action research model, which favours a flat hierarchy between participants, researchers and other stakeholders (Cunsolo-Wilcox et al., 2013). Indeed, DST—within or external to a research project—is often used for community development purposes (Iseke & Moore, 2011; Jernigan, Salvatore, Styne, & Winkleby, 2012; Kent, 2015). The process of creating digital stories and, in some cases, viewing them publicly is seen as transformative for participants and the broader community (Loe, 2013). Indeed, storytelling is argued to foster closer relationships with others (Hildebrandt et al., 2016; Loe, 2013). Many such projects are not published in academic journals; however, some are documented on the websites of organisations who provide training in creating digital stories (see Engaging Solutions, 2017). These characteristics of the DST process mean that when applied ethically and in a spirit of genuine collaboration and respect, a condescending, “top-down” research practice is avoided. Such participatory approaches encourage active participant involvement in decision-making about the research question, and in how the research is conducted and used. The visual nature of DST also makes it more accessible to people with disabilities, especially those with limited verbal and literacy skills (Manning, 2010).

For the reasons discussed above, DST holds promise as a participatory research practice. It is important to note, however, that it is possible to conduct a DST research project in a non-participatory manner. A discussion of how to avoid this outcome is included in section 6.

Therapeutic benefit. DST also holds promise therapeutically. De Vecchi, Kenny, Dickson-Swift, and Kidd’s (2016) scoping review of the use of DST in mental health identified that DST was often used with marginalised or vulnerable groups, with benefits to participants and their support networks. In keeping with these findings, psychological and well-being benefits have been reported anecdotally by workshop participants, and are often mentioned in the literature (Brushwood Rose & Granger, 2013; Burgess, Klæbe, & McWilliam, 2010; Cunsolo-Wilcox et al., 2013; Gachago, Cronje, Ivala, Condry, & Chigona, 2013; Gearty, 2015; Kent, 2015; Wijnen & Wildschut, 2015; Willis et al., 2014). The past 5 years have seen a rapid increase in the number of research articles examining the therapeutic effects of DST in its specific (i.e., adhering to Lambert and colleagues’ process) and generic (digital storytelling that does not adhere to Lambert and colleagues’ process) form. Results indicate that DST holds promise for a broad range of issues including the treatment of trauma in children (Anderson & Wallace, 2015), adults (Cohen, Johnson, & Orr, 2015; Hancox, 2012), and veterans (Tuval-Maschlack & Patton, 2015); children with special needs (Botturi, Bramani, & Corbino, 2012); adolescent sexual health (Gilliam et al., 2012); self-harm and stress in adolescent girls (Goodman, 2012; Goodman & Newman, 2014); to address negative beliefs about oneself and stigma experienced by HIV positive youth (Willis et al., 2014); and to increase intercultural awareness (Ribeiro, 2016). Further research is required to establish how DST creation compares to other therapeutic methods used to address these difficulties. It is important to note that in most examples referred to above, DST is delivered by trained mental health professionals with the primary aim of providing therapeutic benefit to participants. In contrast, DST implemented in a research context usually has facilitators not trained as therapists, and have the primary aim of investigating a phenomenon of interest. Participants may still derive

benefit from engaging in DST, however, this is considered a coincidental and fortunate by-product of the research process rather than its core aim.

Knowledge translation potential. Digital stories are uniquely suited to Knowledge Translation (KT). In contrast to traditional qualitative interviews, which require a great deal of analysis before reaching an audience (such as readers of an article), digital stories are a ready-made KT product. Further, digital stories possess characteristics that are ideal for use in situations where short, engaging, and emotive communication is considered effective. It is unclear whether digital stories have been used to their full potential in terms of disseminating research results to target audiences. Certainly, De Vecchi et al.'s (2016) review in mental health research found that DST had not been used to their full effect in terms of KT. Consequently, information about consumer experiences generated through research activities were not effectively incorporated into the design of services. While the philosophical roots of DST are explicitly tied to creating positive change, as is the focus of community development projects, the use of DST to this end in research projects has not been systematically reviewed.

Preservation of cultural heritage. DST also holds potential as a means of preserving cultural heritage, with some suggesting it is the modern equivalent of oral storytelling traditions. As such, DST has been used to collect and store stories of community groups, as a means of preserving cultural heritage, like in rural Argentina (Balestrini, Bird, Marshall, Zaro, & Rogers, 2014), north-western Canada (Cunsolo-Wilcox et al., 2013) and New Zealand (Beltran & Begun, 2014). Cunsolo-Wilcox et al.'s (2013) study explores the impact of climate change on Inuit communities in Canada. Digital Storytelling was chosen as the research method because of the importance of storytelling within these communities, and the traditions and customs surrounding it. Storytelling in these communities form the "cultural, mythological, and historical fabric to daily life" (p. 7). The use of DST was effective not only in the preservation of storytelling traditions, but also in encouraging new ways of thinking around storytelling within these communities, where digital media is used to add another level of engagement. The impact of climate change is therefore not only learnt broadly for those at a global scale, but contextualises it for the Inuit communities themselves.

Education, training or professional development. There has been an increase in articles reporting on the benefits of DST for educational purposes (Istenic Starčič, Cotic, Solomonides, & Volk, 2016; Nam, 2017; Niemi & Multisilta, 2016; Prins, 2016; Ribeiro, 2015; Sadik, 2008; Sarica & Usluel, 2016). In this context, digital stories are used to encourage development of digital literacy, writing and language skills (Alismail, 2015) as well as storytelling ability, reflective skills and emotional intelligence (Ribeiro, 2016). DST has also been used as a learning tool for student teachers, nurses or health professionals, or to communicate health information (Cueva, Kuhnley, Revels, Schoenberg, & Dignan, 2015). For example, digital stories (in the generic sense of the term) have been used to encourage medical students' learning by rendering patient experiences more salient (D'Alessandro, Lewis, & D'Alessandro, 2004), provide access to the lived experiences of patients (Fenton, 2014), and encourage self-reflection in trainee and established teachers (Gachago et al., 2013). DST has also been found to increase engagement, satisfaction, self-efficacy and sociality among high school students with a disability (Lawler, Joseph, & Narula, 2014).

Community development. As mentioned, DST is often used in community development activities and processes, and noted to facilitate the strengthening and articulation of collective identities (Bromley, 2010; Lambert, 2013). However, many projects remain invisible in the academic literature due to limited availability of project reports or publications in peer-reviewed journals. Nevertheless, examples of community development DST projects published as academic articles include Clark and Dierberg's (2012) examination of DST for collective religious group identity exploration, Wilson's (2008) documentation of the oral history of Welsh cricket, the use of DST to explore and negotiate migrant and minority

identities (de Leeuw & Rydin, 2007; Johnson, Bass, & Hicks, 2014) and to examine and advocate for a person-centred approach in an organisation providing services to people with a disability (Bliss & Fisher, 2013).

Purpose of the Study

The purpose of our review was to better understand how DST has been used in a research context, operationalised as an activity that generates new knowledge about a phenomenon, and is analysed and reported. A subsidiary aim was to establish the extent to which the characteristics of DST discussed in the introduction are capitalised on: its power in producing counter-narratives, its amenability to participatory research and knowledge translation, its potential therapeutic benefit and utility in preserving cultural heritage, and finally, as an educative or professional development tool. To our knowledge, no review of the adaptation of DST to a research context has been conducted. This information will be of interest to any researchers conducting arts-based research generally and DST specifically.

Method

Researcher Bias and Interest in DST

Authors KB and CL had both used DST as an arts-based research method and were therefore aware of the need for and utility of a review of the use of DST in a research capacity. All authors worked as researchers and had some familiarity using arts-based methods. Having conducted arts-based research, we all had a bias toward believing that it was a useful new way of conducting qualitative research, particularly within a participatory framework. However, we were also aware of issues arising in a research context, which would be of little or no concern when using DST for community development or artistic purposes. These included (a) quality of research data, (b) ethics of conducting arts-based research, (c) theoretical and research rigour. The development of clear inclusion criteria and strict application of these to articles ensured that the impact of researcher bias was somewhat reduced. However, the fact remained that we are researchers viewing DST as a potential research tool.

Rationale for Employing a Systematic Review

A systematic review is useful for synthesizing qualitative research on a substantive research topic and for examining research methods themselves (Noyes, Popay, Pearson, Hannes, & Booth, 2008). Our aim was to comprehensively review the use of DST to generate information in a research context. A systematic review was well-suited to our aims.

Search Strategy

Authors, ADJ and AT, consulted author, CL, who had experience conducting DST research, regarding refinement of search criteria. As our intention was to capture all articles about digital storytelling in research, it was apparent that our search terms were necessarily relatively broad. As a result, it was expected that many irrelevant articles would be returned by the search. Our first challenge was to decide how stringent to make our inclusion criteria; we were interested in digital storytelling as developed by Lambert and colleagues specifically, and not in any use of digital media to tell a story. However, in adapting Lambert and colleague's (2009) DST process to research, many researchers omitted parts of Lambert et al.'s process as it was not considered appropriate to their research process or for their participants.

For example, Lenette and Boddy's (2013) work with refugee women involved participants making decisions about how to use DST. It was therefore decided to operationalise DST in a manner that closely resembled Lambert et al.'s process, but not so restrictive that research articles such as Lenette and Boddy's work would be excluded. A second consideration was to develop inclusion and exclusion criteria that clearly excluded use of digital storytelling in a generic sense, meaning the use of any digital media to tell a story. This very broad meaning could include cartoons or computer games. We also wished to exclude articles where Lambert and colleague's DST was implemented for a non-research purpose. For example, some articles reported on the use of DST as a classroom learning exercise used to improve digital literacy among students. While of interest to teachers and others involved in education, this was not the focus of our review.

After a preliminary search, and bearing in mind our aims as clarified through discussion with author CL, a research librarian with expertise in information science was consulted to identify a search strategy that would ensure all relevant articles were identified. The terms "digital storytelling," "digital stories," and "digital story" were entered as search terms in seven databases: ERIC, PSYCHINFO, CINAHL, PROQUEST, MEDLINE, EMBASE, and SCOPUS. The search was limited to scholarly articles, articles, reports, books, book chapters, and reviews available in English. The search returned a total of 791 items after duplicates were removed.

As mentioned, we employed a broad operationalisation of Lambert and colleagues' (Lambert, 2009) DST method. Inclusion and exclusion criteria were applied through a title and abstract review. Following this initial search, it came to our attention that several relevant articles were published during the weeks after our initial search. To capture these publications, a second search was conducted, limited to the past year. An additional 136 articles were identified, bringing the total to 927. Authors ADJ and AF conducted a title and abstract search, examining full articles in cases where it was unclear from the abstract whether or not an article met inclusion criteria.

Articles were included if they used DST in a research context as this was the focus of our review. This was operationalised as follows:

1. Made use of digital stories, defined as:
 - a. An audio-visual narrative,
 - b. Including still images,
 - c. and voice-over narration,
 - d. of 2 to 5 minutes' duration,
 - e. Created by participants.
2. Contained a digital story that was used to generate knowledge about a phenomenon.
3. Reported on and analysed the results of the information generated about a phenomenon through digital story creation.
4. Were available in full text.
5. Were published (dissertations excluded).
6. Were assessed as having a moderate or high degree of similarity to Lambert et al.'s DST process, adapted for research purposes. This was operationalized as "scored 5 or above" out of 10 on our evaluation (see "evaluation of similarity" section below). The results of our inclusion process are represented in Figure 1 below.

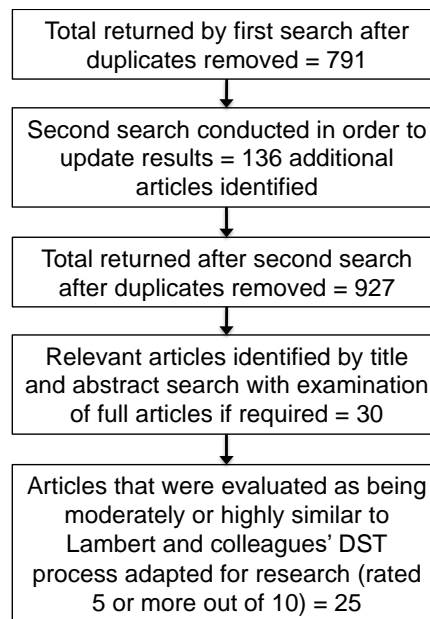


Figure 1: Flow chart of process utilised to locate relevant articles that met inclusion criteria.

We excluded examinations of practical or theoretical aspects of DST, including articles describing how to create a digital story. Several chapters of Hartley and McWilliam's (2009) book fell into this category. France and Wakefield's (2011) overview of DST and its potential application in undergraduate education was excluded as were articles describing the use of DST to disseminate knowledge not generated by use of DST. For example, some articles reported the use of DST as a culturally appropriate means of disseminating health information. In other instances, DST was used to raise cultural awareness in an educational setting. For example, Cushing and Love (2013) employed participatory research methods including DST among students to encourage a greater understanding of the experiences of Latino communities. While the digital stories were likely to generate information about a particular phenomenon (in this case, Latino youths' experiences of their communities) these results were not reported. Digital stories created for any purpose in the absence of reporting and analysing DST content were likewise excluded. The generic use of digital technology to tell a story or communicate information was not considered sufficient for inclusion. Several articles reported on the use of digital stories to enhance training or learning, for example, training videos depicting patients presenting with medical problems (D'Alessandro et al., 2004) or student creation of digital stories exploring their dance training experiences (Enghauser, 2012). We excluded these. Finally, we also excluded articles describing the use of digital stories for therapeutic or community development purposes, in the absence of meeting the criteria outlined above (Bliss & Fisher, 2013; Deutsch, Woolner, & Byington, 2014). Authors, ADJ and AF, made decisions about inclusion/exclusion of articles with assistance from author, AT, and final review by author, KB, in the case of disagreements. Thirty of the 927 articles returned by the search remained after inclusion criteria 1 to 6 were applied. A further five were eliminated due to bearing a low degree of similarity to Lambert and colleagues' digital storytelling process, as outlined in the section "evaluation of similarity to Lambert" below. Thus, a total of 25 articles remained.

Evaluation of Similarity to Lambert and Colleagues' Digital Storytelling

In order to evaluate the extent to which each article encapsulated Lambert and colleague's DST process, we identified eight key characteristics of their process with an additional two items reflecting its adaption for research purposes. ADJ and AF read each article closely and awarded points for the presence of these features. In cases where it was unclear whether the research article possessed a particular feature, this was resolved by discussion between ADJ and AF, and if needed, contacting the authors. Authors of eight articles were contacted during this process, with a response received from five. It is important to note that the quality ratings reflect the extent to which DST described in the article encapsulated the features inherent in Lambert et al.'s version of DST and its application in a research project. As it may not have been the intention of the authors of the reviewed articles to emulate Lambert and colleagues' DST, our quality ratings are not necessarily a reflection of the overall quality of their work.

Evaluation of similarity to Lambert and colleagues' digital storytelling included research that:

1. Was based on participatory research (flat hierarchy) principles.
2. Aimed to bring about positive change.
3. Aimed to be therapeutic for the individual.
4. Aimed to be therapeutic for the community.
5. Incorporated a social justice framework.
6. Included an offer to view digital stories with other research participants and other community members if desired (witnessing preferred narratives).
7. Allowed participants to decide how their digital stories were used for advocacy / educational purposes.
8. Used digital stories for advocacy/knowledge translation.
9. Was underpinned by a theoretical framework.
10. Conducted and reported analysis of themes across digital stories.

Data Extraction

After a close reading of each article, key data was extracted and entered into a table and organised by commonalities in topic and use of DST. Key information from each article including author, year of publication, geographical location, study topic, method, results and knowledge translation activities were summarised in tabular form. Benefits or disadvantages to participants of engaging in DST, as well as comments by authors regarding its use as a research method, were also documented.

Results

Descriptive Numerical Summary

Researchers engaged in arts-based research and DST in particular, are likely to be interested in an overall summary of where DST research has been conducted and on what substantive topic area. A summary of the 25 included articles representing 23 discrete studies is included in Table 1. As is apparent in Figure 2, the majority of DST projects were located in Canada (n=8), followed by the United States (n=6), the United Kingdom (n=4), Australia (n=2), South Africa (n=1), Zimbabwe (n=1) and the Netherlands (n=1). Publicly available website links displaying the digital stories created were available for 8 out of 23 projects. Five

articles specifically mentioned that digital stories were made available in a limited manner for advocacy or educative purposes (LaMarre & Rice, 2016; Paiewonsky, 2011; Spector, Smojkis, Chilton, & members of Suresearch, 2011; Walsh, Rutherford, & Kuzmak, 2010; Willis et al., 2014).



Figure 2: Geographical location of digital storytelling projects and participants.

DST was most commonly used with marginalised groups (21/23). Ethnicity was the most common aspect of identity examined (n=7), followed by refugee or immigrant status (n=3), HIV positive / AIDS status (n=3), homelessness or low socio-economic status (n=3), mental health difficulties (n=2), intellectual or physical disability (n=2), and finally, rurality (n=1). Second, DST was used to encourage professional development (2/23) in the fields of education (n=1) and nursing (n=1). DST was also used for community development (n=2).

	Focus	Author	Topic	Method	Analysis	Results	KT	E
DST used with marginalised group	Ethnicity	Wexler, Gubrium, Griffin, & DiFulvio, 2013	Northern Alaska youth's reasons for living: suicide prevention through DST.	Alaska Native students from 12 rural villages in NW Alaska in DST workshops. Participants documented reasons for living ("Project Life"). Community screening. Over 4 years, 39 workshops were held, and 566 digital stories created by 432 people. Feedback on workshops by survey and 27 in-depth interviews.	Numerical assessment of survey data; open-ended responses coded into themes.	Participant feedback was positive; majority satisfied with workshops and found them meaningful. Uptake increased over 4 years. Relationships strengthened through viewing digital stories; stereotypes put into question; strengthened positive sense of self, cultural identity; DST process and product holds promise for primary prevention of suicide.	Participants given the opportunity to share their work online; many posted digital stories on the project website; community screening; shared with family and friends; academic article.	8
		Wexler, Eglinton, & Gubrium, 2012	How Inupiaq young people represent themselves and incorporate traditional values and practices into their lives.	First author known to tribes in NW Alaska for decades. "Project Life" DST workshops held over 3 years; 196 youth from 12 rural villages participated. 271 digital stories produced; 31 selected for further analysis. Participants completed short interviews regarding the process and also completed a survey (numerical) providing feedback.	Content analysed for attributes; independent and intertextual analysis of visual, audio and text elements. Coding of themes related to research focus (culture, youth identity).	Three descriptive themes: self-representation, sites of achievement, relationships.	Most participants chose to share their digital stories on the project website.	5

DST used with marginalised group	Ethnicity	Cunsolo-Wilcox et al., 2013	The relationship between climate change and emotional, physical and community well-being.	Participatory project lead by the Inuit community in Rigolet, Canada. Digital stories created by community members during 6 week-long DST workshops. Topic: the relationship between climate change and well-being. Participants viewed the digital stories they had created at the end of the workshop; group screening. 37 digital stories created.	Analysed through lens of Tuhiwai Smith's "indigenous projects": storytelling, creating, remembering, connecting, sharing, representing, networking and intervening.	DST found to be a culturally appropriate and powerful research tool; means of preserving Indigenous wisdom.	Digital stories published online including on YouTube and Facebook; academic article.	10
		Morgan, Castleden, & c/o Chief Councilor Jeff Cook, 2015	Huu-ay-aht youth visions for a post-treaty era.	Huu-ay-aht youth invited to participate; 8 engaged in a week-long workshop; Digital stories created regarding what youth wanted the Maa-nulth Treaty to bring to their community. Researchers took observational notes	Digital stories analysed using Grounded Theory approach and audio-visual analysis (semiotic and discourse); credibility-checking by Community Committee.	Digital stories embedded in and told through stories, images, symbols, and songs of Huu-ay-aht culture. Youth mentioned (a) reinvigorating cultural and social practices, (b) pride in Huu-ay-aht culture and resistance to colonial impositions, (c) increased community self-determination post-Treaty. DST creation as a decolonising practice.	Digital stories available on YouTube; academic article.	8

DST used with marginalised group	Ethnicity	Gubrium, Krause, & Jernigan, 2014	Parenting Latinas' sexual health and justice.	Participants were women aged 16-21 who attended the Hear Our Stories Centre (an alternative education centre for young women). DST workshops held by trained facilitators. Guiding prompts provided, however, participants selected a story to tell that was meaningful to them.	Limited cross-case analysis; in-depth description of one DST.	Digital stories demonstrate the effects on reproduction of negative assumptions about Latinas embedded in policy and practice. Digital stories as sensory research method: facilitates conceptualisation of sexuality through sensory experience (stories made "visceral"); co-creative process; emotion and subjectivity as enriching analysis.	Digital stories not available; academic article.	5
		Burgess et al., 2010	Responses to Australian Prime Minister Kevin Rudd's 2008 apology to Indigenous Australians.	The State Library of Queensland collaborated with Queensland University of Technology and QLD Aboriginal and Torres Strait Islander communities to elicit and record QLD residents' responses to the Apology using DST. 7 participants (5 Indigenous Australians).	Digital stories considered within framework of Nobles' 3 tasks of the apology.	All 7 stories described the Apology as validating a previously unacknowledged perspective of national history; 5/7 included mention of hopes for moving forward as a reconciled nation; all noted historical reasons for Indigenous disadvantage.	Digital stories published on State Library of Queensland website and on YouTube; academic article.	6

DST used with marginalised group	Ethnicity	Rolón-Dow, 2011	Racial experiences of youth within an educational context.	Digital stories created regarding how race/ethnicity influenced the education experiences of students of colour. 14 10th graders participated. Ethnography: observational notes. 10 follow-up interviews transcribed and coded.	Gestalt approach including analysis of photograph, voice and other audio. Themes across stories noted briefly. Two digital stories examined.	Negative impact of racial stereotyping evidence across all digital stories; racial discrimination identified. DST shows promise as a tool for initiating conversations about race in education.	Academic article; suggested that digital stories be used to open conversations about race in the context of education in the school community more broadly.	5
	Refugee / immigrant status	Brushwood Rose & Granger, 2013	Educational biographies of low-income and immigrant women in Toronto; how biographical narratives provide insight into experience.	Two DST workshops held for newcomer and low income women in Toronto. Workshop offered over 16 weeks, 2 hours each. Digital stories produced on social identity and difference, with a focus on educational experiences and barriers. Observational data recorded; interviews conducted post-workshop.	Detailed analysis drawing on psychoanalytic theory of two digital stories; potential and limits of biographical narrative and process of narration considered. Limited cross-case analysis.	Process of narration may be more important than the story told. Identified stories as partial; only one version of the story told, containing contradictions, with aspects of experience remaining untold. Story circles identified as an important community-building part of the workshops. Hearing other women's stories influenced which stories the listener decided to tell.	Academic article.	6

DST used with marginalised group	Refugee / immigrant status	Lenette & Boddy, 2013	Single refugee women's experiences in Brisbane.	Researcher immersed in 8 single (widowed or divorced) parenting refugee women's lives using visual ethnography, including 3 women's digital stories on resilience and well-being. Researcher articulated subject position.	Intersectionality and feminist theory informed the analysis. Themes across digital stories considered, however, each story also discussed separately.	Commonalities across digital stories: (a) strong faith and belief in God, (b) importance of ensuring children's education & well-being, (c) realising their resilience: a sense of achievement, health & well-being, ownership of their work; in those who did not produce digital stories, a sense of burden of completing research tasks. Rich data elicited; respectful method.	Academic article; CD with DST created provided to each woman, who decided who to show it to, for example, friends, family, or colleagues.	8
		McGinnis & Garcia, 2012	Immigration experience of a Salvadorian youth.	DST creation occurred in the context of an after-school writing programme run by the researcher. DST created by a Salvadorian youth about his family's crossing over the border between Mexico and the U.S.A. Two additional written stories provided further context. DST presented to family and community.	Narrative analysis; audio-visual analysis; New Literary Studies framework: examines social, cultural and political context of story creation and identity construction.	New digital literacies enabled the telling of a story that represented the experiences of many Salvadorians and countered anti-immigration sentiment.	Academic article; presented to family and community.	5

DST used with marginalised group	HIV/AIDS	Mnisi, 2015	South African secondary school learners' experience of HIV/AIDS-related stigma	DST used as a participatory, community-based method. 12 isiZulu high school students in a rural South African community created digital stories about HIV/AIDS related stigma. DST workshop over 3 days; screening followed by focus group discussions. Participants discussed how to address HIV/AIDS related stigma in their community.	Symbolic interactionism (meaning made through interaction with other people). Initial analysis by participants; then by descriptive analysis to identify themes.	Themes: living with stigma is a hardship, community stigmatises those with HIV/AIDS, stigma results in silent suffering as youth did not feel there were many people with whom it would be safe to discuss HIV/AIDS. This aspect of the community, as well as negative judgement of early age at first sexual experience, fuelled stigma.	All 12 digital stories saved on a DVD and a copy provided to all participants. Academic article.	8
		Treffry-Goatley et al., 2016	Contexts of anti-retroviral therapy adherence in rural South Africa	DST workshops (4 days long) held with the aim of examining the experiences of 10 people with HIV/AIDS in a rural, under-resourced community in Kwa-Zulu Natal, South Africa. Digital stories explored the barriers and facilitators to treatment adherence. Participants given freedom to select what story to tell regarding the topic being investigated.	Narrative, thematic and musical analysis applied (Nvivo used to analyse story texts). Analysis of visual data focused on drawings created by participants and excluded any stock images used.	Six themes identified: (1) Adherence: treatment is for life; (2) Illness and death: the Black nation is dying; (3) Health seeking behaviour and experience: I am sick, I need help; (4) Stigma: Beware! She might infect us; (5) Disclosure is not easy; (6) Social support: we help each other. Image of "armed struggle." Choral music most commonly used soundtrack; followed by classical and indigenous songs.	Digital links to stories included in academic article. Participants agreed to share their videos with the public at local health clinics and online. 122 screenings at local clinics.	8

DST used with marginalised group	HIV/AIDS	Willis et al., 2014	Experiences of HIV positive adolescents and young people in Harare, Zimbabwe.	12 adolescents with HIV/AIDS recruited from Africaid support groups in Harare, Zimbabwe. They attended a 10-day DST workshop. Separate focus groups held with participants and carers; field notes taken.	Analysis of audio and visual material, focus group discussions and field notes. Transcripts coded by two researchers; common themes identified.	Themes identified: memories of parents who were unwell, stigma, anger that HIV/AIDS was not discussed with them. Over time, with support, they gained skills, ambitions and hope for the future. Positive feedback regarding DST: therapeutic, exciting, skills developed, improved communication.	All storytellers decided to share their digital stories with their caregivers and were proud of what they had created. Six did not wish to share their DST more publicly, however, six made their digital stories available for viewing in controlled settings as an advocacy and training tool.	8
	Homeless/ low SES	Kent, 2015	Experiences of poverty in Northern Ireland	DST conducted as part of participatory action research that aimed to address poverty-related shame and stigma, and encourage public engagement among stakeholders, particularly people on a low income. 27 community focus groups held; 3 communities created digital stories to share research findings publicly: Ardoyne, North Belfast; Doury Road, Ballymena; Lettershandoney, County Derry.	Descriptions of the three digital stories produced provided; overall comment on participants' experience of creating digital stories and their potential for advocacy and addressing poverty-related shame. Cross-DST analysis of process, not content.	A sense of shame, social isolation and social exclusion was reported. Community storytelling was found to reduce these negative effects of poverty and call into question dominant notions of blame regarding low income status. DST provided a counter-narrative to dominant discourse.	Participants attended a conference held at the Northern Ireland Parliament and spoke about their experiences of poverty, as well as sharing their digital stories. A DST created by the Ardoyne community was later presented at the Lord Mayor's Civic forum on poverty and successfully used to lobby for free Wi-Fi internet access.	9

DST used with marginalised group	Homeless/ low SES	Walsh et al., 2010; Walsh, Rutherford, & Kuzmak, 2009	Perspectives of women who are homeless	20 women with experience of homelessness in Calgary, Canada, created digital stories and participated in semi-structured interviews, Photovoice, a creative writing exercise and design charette. Researchers were on site for the duration of the 4-month study (immersive). Field notes; multiple qualitative data sources; weekly meetings. Community based research framework.	Data analysed by 4 researchers; data triangulated; multiple data sources; multiple representations; arts-based methods facilitated participation. Phenomenological approach; data coded; iterative analysis.	Poverty, abuse, addictions, trauma and poor mental health contributed to entry into homelessness and were worsened by it. Social isolation was common. Barriers to exiting homelessness included stigma, low minimum wage, and lack of access to services, particularly for addictions. Women described the need for shelters to provide “normal living conditions” and noted physical, affective and external features.	Ongoing participant involvement in dissemination of research findings. Concrete steps taken apparently in response to the results of the study: Calgary Committee to End Homelessness established, 10-year plan established in collaboration with politicians on the municipal level, corporate entities and service agencies.	9
	Mental Health	LaMarre & Rice, 2016	Recovery from an eating disorder	Feminist, critical arts research framework. 3 participants created digital stories on recovery from an eating disorder in a 3-day DST workshop lead by researcher with lived experience. DST group screening including DST created by researcher.	Riessman’s visual analysis used to analyse digital stories and narrative arcs.	Digital stories challenged reductionist definitions of recovery, situating it as a process that unfolds in individual, family and social contexts. Intercorporeality emphasised—bodies influenced by others and culture. Participants noted the challenge of pursuing recovery in a culture that values success, productivity and slimness.	Digital stories shown at conferences, at the local eating disorders coalition, at the National Initiative for Eating Disorders “honouring the journey” event and in classroom contexts. Participants involved in ongoing consent process regarding how their digital stories would be used.	9

DST used with marginalised group	Mental health	Spector et al., 2011	Inclusion of patient experiences in staff training	Broad aims of the workshop for staff of the hospital discussed with participants, who were patients. Digital stories created in a manner that preserved their anonymity. Six service users took part, producing a total of 11 digital stories. Five consented to their stories being used as part of staff training (10 digital stories). Group screening with participants and workshop facilitators held. Focus group held to discuss experience of the process.	Content of individual digital stories mentioned briefly; bulk of the analysis conducted on focus group data which focused on process of DST creation rather than content.	A range of topics were represented. Regarding the process of DST creation, participants noted that it was (a) potentially re-traumatising, (b) potentially therapeutic, (c) ambivalence about anonymity and the sense of lack of ownership associated with keeping their digital stories anonymous, (d) the value of incorporating digital stories into staff training, and (e) potential uses of digital stories beyond incorporation into staff training, for example, for therapeutic benefit.	Digital stories included in 2-day workshops provided to staff at a 74-bed acute psychiatric hospital in Birmingham, UK. Preliminary staff feedback indicated that they perceived the digital stories as a valuable addition to staff training.	8
	Disability	Paiewonsky, 2011	Experiences of university by tertiary students with intellectual disabilities (ID).	Participatory action research. Students with an ID in inclusive concurrent university enrolment recruited. Data collected regarding educational experiences included photos, video clips and narratives, as well as field notes taken by the facilitator-researcher.	Modified grounded theory analysis.	Six themes identified: (1) having a new identity and feeling different, (2) access to different classes, (3) adjusting to new expectations, (4) working with educational coaches, (5) campus life, (6) transportation.	Plan of action to improve educational experiences for students with an ID developed by participants; viewed each other's work via Voicethread. Digital stories used as testimonies in advocacy for legislative changes and more funding. Results used to create fact sheets.	8

DST used with marginalised group	Disability	Rice et al., 2015	Self-representations of disabled people	Project Re*Vision: disabled people and health providers created digital stories in workshops exploring representations and meanings of disability and difference.	Individual stories described and considered within theoretical frameworks; discussion of vulnerability in research process and product.	Digital stories were counter-narratives to dominant cultural understandings of disability & health care providers as “disembodied” expert. DST provided an alternate way of representing disability, inviting an intimate connection with film-makers and blurring boundaries between disabled and non-disabled categories.	Digital stories curated and made available on Project Re*Vision website.	9
	Rural	Wake, 2012	Rural middle school students’ exploration of identity	Participants were 40 7 th and 40 9 th grade students at rural schools in the southeast United States. DST workshops held, facilitated by researcher. Students worked in small groups to create digital stories about living in a rural town, including exploration of identity, educational experiences, and the meaning of educational success.	Digital stories analysed using comparative grounded theory.	Rurality had a significant impact on students’ identity formation and understanding of community. Themes: teenage identity and role identification; friends/peers, school and community. School and community generally viewed in a positive light, as a source of connection to others.	None mentioned apart from academic article.	8

Professional development	Education	Gachago et al., 2013	Examines how identity and difference influence South African pre-service teacher pathways and experiences	Digital stories created by pre-service teachers to facilitate reflection upon a moment in their teaching where racial difference was relevant and how this impacted their professional identity. 62 digital stories created; viewed among the group. 5 selected for analysis based on possessing characteristics of “counter-stories.”	Digital stories analysed with regard to linguistic, visual and audio meaning.	Students created stories that presented a perspective on a particular ethnic, social, or cultural group that was contrary to dominant views or stereotypes. Digital stories dealt with issues of difference, power and disadvantage. Multimodal storytelling facilitated healing and was well-suited to complex topics; useful in building community.	Examples of digital stories created posted on YouTube.	7
	Nursing	Stacey & Hardy, 2011	Newly qualified nurses experiences of “reality shock” upon commencing work	Patient Voices Programme collaborated with the Division of Nursing at the University of Nottingham. 8 newly qualified nurses created digital stories with a view to reflecting on their recent experiences. Three-day DST workshop, followed by focus group.	Content of digital stories described and considered within broader literature. Thematic analysis of focus group; themes checked by focus group participants.	Stories were effective, affective, and reflective. DST content was consistent with broader literature, highlighting issues faced by new nurses: (a) values being challenged by more experienced staff, (b) emotional burden, and (c) emotional consequences of distressing events at work. DST process valued by nurses in training: recommendation for use to address reality shock.	Digital stories available online.	8

DST for community development	Environmental	Gearity, 2015	Pro-environmental behaviour and change	Reflective action research project funded by the Department for the Environment, Food and Rural Affairs targeting pro-environmental behaviour change through people aged 50+ in the UK. 8 pilot digital stories created; “tested” on audiences; follow-up regarding behavioural change as a result. 90 digital stories over 2 years.	Reflections on the process of DST creation and screening with regard to the ultimate aim of the research project, namely to effect pro-environmental behavioural change.	DST creation and viewing generated pro-environmental behavioural change and increased participants’ involvement in advocacy for the environment. Tensions noted by authors between their desire for participants to tell the story they wished to tell, while at the same time being mindful of research goals.	Digital stories available online and screened for audiences as part of the research project. Recommendation for consideration in future projects of how to facilitate communities coming together to watch digital stories and encourage collective action.	6
	Cross-cultural leadership development and sports	Wijnen & Wildschut, 2015	The impact of sport in 10 young women’s lives, and how the DST process contributed to cross-cultural leadership skills.	5 day intensive DST workshop held with young women who created digital stories on the impact of sport in their lives.	Feminist theoretical framework drawing on Riceour’s notion of narrative identity. Description of digital stories.	All narratives demonstrated the importance of sport in participants’ lives. Most came from marginalised backgrounds and noted that participation in sport was empowering. Storytelling noted to be an empowering act that encouraged leadership competencies.	Programme designed with a view to participants sharing what they learned from the DST workshop with their peers. Participants expressed a desire to show leadership in their communities and inspire other young women to play sports.	9

* Walsh, Rutherford, & Kuzmak’s 2009 and 2010 articles are presented as one study in the table.

Thematic Analysis

The aim of our review was to better understand how DST has been used in a research context, operationalised as an activity that generates new knowledge about a phenomenon and is analysed and reported. A subsidiary aim was to establish the extent to which the characteristics of DST discussed in the introduction are capitalised on: its power in producing counter-narratives, its amenability to participatory research and knowledge translation, its potential therapeutic benefit and utility in preserving cultural heritage, and finally, as an educative or professional development tool. Bearing these characteristics in mind, several themes emerged in the analysis of DST use across included articles.

Thematic analysis was considered the most appropriate method for analysis as our aim was to identify patterns across articles regarding how DST is used in research. We identified themes in the uses of DST through systematic, close reading of the articles and identification of notable common features (Braun & Clarke, 2006).

DST as participatory research with marginalised groups. As shown in Table 1, DST was predominantly used for research with marginalised groups and noted by authors to be particularly appropriate for this purpose. DST was used with participants marginalised due to ethnicity (Burgess et al., 2010; Castleden et al., 2013; Cunsolo-Wilcox et al., 2013; Gubrium et al., 2014; Rolón-Dow, 2011; Wexler et al., 2012; Wexler et al., 2013) refugee or immigrant status (Brushwood Rose & Granger, 2013; Lenette & Boddy, 2013; McGinnis & Garcia, 2012), HIV/AIDS positive status (Mnisi, 2015; Treffry-Goatley et al., 2016; Willis et al., 2014), homelessness or low socio-economic status (Kent, 2015; Walsh et al., 2010; Walsh et al., 2009) mental health difficulties (LaMarre & Rice, 2016; Spector et al., 2011), intellectual or physical disability (Paiewonsky, 2011; Rice et al., 2015) and rurality (Wake, 2012). In many cases, authors specifically mentioned the benefits of using DST with their participants. Production of digital stories as narratives that supported a preferred identity for participants and challenged dominant, negative conceptions was a frequently cited benefit. From a research perspective, prolonged engagement facilitated development of relationships and rapport with participants. Involvement in a creative activity that focuses on subjective experiences, and included participants in decisions throughout the research process likewise contribute to generation of richer information compared to a traditional qualitative interview. These benefits appear to become more pronounced with a greater degree of participant involvement and application of research knowledge for knowledge translation and advocacy (discussed below).

Knowledge translation. Nineteen articles reported the use of DST for knowledge translation, including for advocacy. The most commonly utilised KT strategy was posting digital stories online on *YouTube* or a curated project website (7), followed by sharing with family or friends (5), advocacy (4) and education (3). Three authors noted that participants consented to the use of their digital stories for advocacy or education purposes; however, this had not been implemented at the time of publication. Overall, use of DST for advocacy purposes to their full potential was surprisingly rare; when they were used for this purpose, the strategy was reported to be effective. For example, Kent's (2015) participants presented digital stories on their experiences of poverty in government forums and successfully lobbied for free Wi-Fi access in their neighbourhood. Homeless women in Walsh, Rutherford and Kuzmak's (2009, 2010) project presented their digital stories to municipal level politicians in Calgary, Canada. The 10-year plan to end homelessness was subsequently established; the authors reported that this result appeared to be in response to viewing participants' stories. Upon contacting the author, Paiewonsky (2011) confirmed that digital stories created by students with intellectual disabilities had been used for advocacy, to influence relevant legislation, and to inform the creation of information pamphlets. Spector et al. (2011) incorporated patient digital stories into staff training and were reported to be well received. LaMarre and Rice

(2016) likewise confirmed the use of digital stories for educational and advocacy purposes. However, overall, digital stories were not used to their full potential in terms of disseminating research findings and advocating for change. This may be a result of KT activities being poorly funded, being in progress at the time of publication, or not considered an important aspect of the research project. In some cases, it may be inappropriate to use DST for KT purposes. The content created is often personal, and it is frequently the case that participants consent to sharing information about themselves in DST format on the condition that they are involved in an ongoing consent process. In some cases, they may not give permission for their stories to be shared more widely. Lenette (personal communication) confirmed that this was the case with her research with single refugee women in Brisbane (Lenette & Boddy, 2013). In order to justify funding requests for end-of-project KT activities, it may be useful to examine the impact of DST viewing by key target audiences. Gearty (2015) noted that she was certain that her action research project resulted in concrete changes, or would do so in the future. However, as in most DST projects, this was not specifically evaluated. Naturally, desired outcomes change from project to project, and there are challenges in measuring impact.

Benefits and disadvantages mentioned by participants. In addition to analysing overall uses of DST in research, particular attention was given to benefits or challenges of participating in DST projects. Every mention of a benefit or disadvantage of DST was extracted through a close reading of all included articles. These were subsequently coded into categories. Overall, the benefits of DST significantly outweighed disadvantages, with a majority of studies addressing the effectiveness of using DST to explore phenomena. The most prominent benefits include collaboration/building relationships, the value of arts-based research, the therapeutic/reflective benefits, and the impact on the wider community. DST often has elements that involve group activities, with many studies using “story circles,” where participants share experiences and gain feedback from peers in guiding the creation of their digital stories. Brushwood Rose and Granger (2013) commented on the effectiveness of story circles for participants to nurture and encourage each other. Their participants described the story circle as “intense” but “precious” and “very touching.” They noted feeling empowered or liberated to disclose information that they had previously kept secret, “to take something that is hiding inside...and put it outside.” Other benefits of using story circles include strengthening the class community and developing connections with others who have been through similar experiences (Gachago et al., 2013; Gearty, 2015; Wijnen & Wildschut, 2015; Willis et al., 2014). The value of arts-based research is identified in a number of studies. Many participants felt that through the use of DST, their stories were communicated in a way that could not be achieved through interview-based research alone (Cunsolo-Wilcox et al., 2013; Rice et al., 2015). Lenette and Boddy (2013) acknowledged that through the creation of digital stories, participants’ notions of what it means to be involved in research projects altered, and participants allowed themselves to be more actively engaged in the process. Through reflecting on and reimagining experiences when creating digital stories, participants across many studies mention the benefits of DST as being cathartic, in which they are encouraged to work through their experiences and reflect on and deepen their understanding of what really matters in their lives (Cunsolo-Wilcox et al., 2013; Gachago et al., 2013; Kent, 2015; LaMarre & Rice, 2016; Stacey & Hardy, 2011; Willis et al., 2014). As mentioned in McGinnis and Garcia’s (2012) article, one participant felt that creating a digital story allowed for the space to define him/herself and his/her family. Many study participants also felt empowered by being able to present their perspectives in their own way when creating digital stories (Castleden et al., 2013; Cunsolo-Wilcox et al., 2013; Walsh et al., 2010; Walsh et al., 2009). Many studies focused on the impact of DST not only on the participants, but also on the wider community. Mnisi (2015) and Walsh et al. (2010) discuss this impact in a broad sense, as they view DST as effective in bringing about community change. Kent (2015) talks more specifically about the use of DST

to decrease shame, and inspire and influence policy. Rice et al. (2015) focus on DST as a way to advance social inclusion and justice. Wexler et al. (2013, 2012) highlight that DST assists in guiding health promotion efforts and can also guide a focus on social issues affecting young people. Importantly, some authors explicitly noted that their research was not intended to be therapeutic, however, despite this, reported several benefits to participants that could be considered therapeutic.

The disadvantages of DST were varied, with some issues having positive and negative aspects. For example, in two studies there were concerns that revisiting past experiences may be traumatising for participants (Spector et al., 2011; Stacey & Hardy, 2011). However, in Stacey and Hardy's (2011) study, researchers also saw this as being positive due to the depth of reflection it stimulated. Participants in Willis et al.'s (2014) study were concerned that they would be further stigmatised if the public viewed their stories. Cunsolo-Wilcox et al.'s (2013) study was affected negatively due to the lack of access to technological resources.

DST as professional development. The main advantage of using DST as a tool for professional development is that it encourages a deeper level of engagement and self-reflection. Given its non-didactic nature and philosophy of empowering the person creating the digital story, it may also present a method for professional development that is respectful and particularly helpful for those in need of connecting to their values and motivation for engaging in their profession (Stacey & Hardy, 2011). Indeed, in the two articles identified, DST was found to be a useful professional development tool.

DST as educative. As an educative tool, DST has the potential to encourage a deeper level of reflection and engagement on a specified topic, while at the same time improving participants' digital literacy and storytelling skills (Ribeiro, 2015; Robertson, Hughes, & Smith, 2012). Given the plethora of studies reporting on the use of DST for educative purposes (Rubegni & Sabiescu, 2014), it was surprising to note that no educative articles were also research articles that met our inclusion criteria.

DST as Community Development. Two articles were classified as having a primary community development aim (Gearty, 2015; Wijnen & Wildschut, 2015). Even taking into account that some of the projects classified as research with a marginalised group also had a community development aim (Kent, 2015; Wexler et al., 2012; Wexler et al., 2013), this number is surprisingly low. The absence of community development projects published as research articles is particularly conspicuous given that DST has its roots in community development and storytelling, with several examples of its application in this context absent from the academic literature (StoryCenter, 2017).

Findings

Several key themes emerged from our analysis of how DST was used across diverse research projects.

The Value of Digital Storytelling for Research Purposes

Across studies, the value—for researchers and participants alike—of creating DSTs in research to generate knowledge about a phenomenon was evident. Not only did the process facilitate the type of “deep listening” encouraged by [StoryCenter](#) and reported to be of benefit to participants, it also appeared to elicit richer data compared to traditional interviews. Thus, although DST requires that researchers and participants invest more time and effort into the research process, the return on their investment was considered worthwhile. DST engaged participants on a deeper emotional and relational level. Indeed, relationship building and

collaboration was reported as one of its primary benefits and is seen as a prerequisite for an effective and ethical DST process.

Suitability of Digital Storytelling for Marginalised Groups

It was not surprising that DST was demonstrated to be appropriate for use with marginalised groups. When applied in the spirit in which it was developed by Lambert (2013) and colleagues, DST possesses many characteristics that make it appropriate for this purpose, including its participatory approach, building deeper relationships with researchers and other participants, and offering an opportunity to develop counter-narratives. Most of the research practices described were congruent with a decolonising research practice (Tuihawai Smith, 2012).

The importance of relationships in DST brings us to a key consideration, namely that the extent to which participants feel comfortable exploring a given topic through digital storytelling is likely to depend on the degree of safety and support they feel in the research process. As noted in relation to another arts-based method in research (body-mapping), the depth of participants' relationship with the researcher is a key consideration when deciding whether or not it is appropriate to examine sensitive material (de Jager et al., 2016; Sweet & Ortiz Escalante, 2014). Facilitators need to remain mindful of various aspects of the context in which DST is conducted in order to monitor the well-being of participants. This can be challenging given the active role of participants in DST research. For example, Cunsolo-Wilcox et al. (2013) noted that their research team was unprepared for the degree of trauma-related stories that participants wished to explore, particularly as the intended research topic was the impact of climate change on the wellbeing of the Inuit Community in Rigolet, Canada. Similarly, in Boydell, Gladstone, Stasiulis, Nodin, and Cheng's (in press) research with young people who hear distressing voices, several participants felt that the story they needed to tell included elements that went beyond the phenomenon of interest. In some cases, this involved engaging with memories of difficult or traumatic experiences. The ethical considerations of this type of work therefore necessarily go beyond broad ethical issues, and researchers need to be attuned to the ethical implications and impact of decisions taken during the course of the project on participant wellbeing, while simultaneously respecting their capacity to make decisions about what story to tell. The ethics of participants engaging in potentially dangerous emotion terrain has been discussed in depth by (Boydell et al., 2015). Conversely, decisions made about what to include in a story necessarily exclude other details. Brushwood Rose and Granger (2013) noted that elements of the stories of low income women interviewed in Toronto remained untold. The brevity of digital stories is particularly demanding in this respect and certainly contributes to certain elements of participants' experience being omitted. Indeed, Boydell et al.'s (in press) participants described some tensions regarding elements of their story that had been omitted. Further examination of participant experiences of creating digital stories in a research context would shed light on the nuances of the process, including the difficulties involved in making such decisions.

The Utility of Digital Storytelling as a Sensory, Visual Research Method

The advantages of the use of a sensory, visual research method, particularly regarding avoiding imposing preconceived notions onto participants, are congruent with findings regarding other visual arts-based research methods (de Jager et al., 2016; Gamlin, 2011; Gastaldo, Carrasco, & Magalhães, 2013; Nostlinger, Loos, & Verhoest, 2015). The sensory, audio-visual nature of digital stories was valued for its ability to represent experiences that are inadequately captured in verbal interview and text alone. For example, Gubrium et al. (2014)

found that digital stories were a suitably sensory method to examine phenomena where the senses are highly relevant, such as sexuality. They argue that digital stories allow for “visceral” stories that capture sensory data not accessible via written word or interview. Deeper engagement of the audience was also valued. Rice et al. (2015) found that digital stories invited viewers to engage in an intimate connection with the filmmaker. Additionally, digital stories were reported to be an excellent means of capturing nuanced, emotional, subjective experience, with several authors noting the affective nature of digital stories as a strength (Gubrium et al., 2014; LaMarre & Rice, 2016; Stacey & Hardy, 2011). Finally, the visual and auditory nature of DST allowed participants with strong visual, oral storytelling, musical or other auditory cultural traditions to express their stories through such modes, rather than being limited to the written word (Castleden et al., 2013; Cunsolo-Wilcox et al., 2013; Treffry-Goatley et al., 2016). In fact, multimodal storytelling facilitated storytelling across cultures (McGinnis & Garcia, 2012) as well as psychological healing processes (Gachago et al., 2013).

Scarcity of Published Educative and Community Development Projects

The finding that educative and community development projects are not often reported on in research articles, and that the stories created through research activities are not used to their full potential for knowledge translation and advocacy, resonates with our findings regarding the use of body-mapping in research (de Jager et al., 2016). It appears that in translating innovative, creative practices into the research sphere, the intention for the practice to contribute to community development, knowledge translation and advocacy, although initially central to projects, is sometimes lost. Arguably, the pressure on academics to publish articles in traditional formats results in a greater focus of resources and time on this activity. To support academics in translating their research in ways that are relevant to the community they collaborate with, and remain true to the original intention of DST, greater recognition of the importance of such activities may be required. Such support would certainly contribute toward closing the current gap between research findings and application of such (where relevant). Similarly, and in keeping with our systematic review of body-mapping (de Jager et al., 2016), it appears that most community development projects do not publish on the knowledge generated through DST creation in peer reviewed journals. It is understandable that some DST creators may feel they wish to keep their stories private or share with a select few. However, it is likely that others may see value in analysing the content of stories and publishing them to benefit their community. Further inquiry is needed to better understand the needs of those involved in community development DST projects and perceptions of disseminating their stories through various means. It may be the case that community development practitioners do not perceive publishing to be beneficial; alternatively, they may not feel that they have the skills to do so.

Implications

Having noted the positive characteristics of DST as described in the articles reviewed, it is important to discuss some potential pitfalls. First, although overall the authors of the articles reviewed reported that DST was effectively implemented in a participatory manner, using DST is no guarantee of this outcome. An awareness on the part of researchers of the inevitable power imbalances between themselves and participants is essential, alongside a willingness to take steps to mitigate these imbalances. Ongoing reflection on how researchers communicate with participants, how decisions are made, and participant experiences of the research process, can help to ensure that the “flat” hierarchy aimed for in theory is achieved in practice. Further, researchers need to develop an awareness of how their subjective

experiences, identity and beliefs may influence their worldview and assumptions. It is not possible to take an entirely “neutral” stance. However, using a reflexive diary to document and elucidate such assumptions before, during and after the research process may ensure that the researcher is aware of the possible influence of their views on the research process and interpretation of the findings. Cultivating an awareness of the researcher’s subject position and “bracketing” these assumption minimises the tendency to impose their views onto participants (Tufford & Newman, 2012). As is common practice in qualitative research, it is also important to avoid leading questions and making assumptions about participants’ views, and prioritise participants’ words and perspectives.

Ethical issues related to representation of experience are also relevant when DST is used in a research context. Lundy’s (2007) consideration of voice, audience, space and influence provides a useful framework in this regard. It is argued that simply allowing participants an opportunity to express their views is insufficient. In a DST context, researchers would be encouraged to question what degree of control participants have on the display of their work after the research project is completed. For example, do participants have the opportunity to decide where their work is displayed, in what contexts, or for whom? Are they given the chance to attend such viewings and if desired, take questions from audience members? Do individuals who possess the power to advocate for practice or policy change that might benefit participants or people like them in some way have an opportunity to view the DSTs? These questions are centred on why and for whom the research is conducted.

A final consideration relates to the benefits of engaging in DST as reported by participants. The note of caution in relation to the potential participatory nature of DST also applies to its benefits; it is entirely possible to conduct DST in a manner that is not greatly or at all beneficial to participants. Similarly, it should be acknowledged that although the story circle and collaborative nature of DST was valued, this group process may influence what story participants chose to tell and how they tell it. It is unclear whether the changes made to individual digital stories due to group influence ought to be considered an advantage or disadvantage. It appears that participants could feel empowered by the group to tell stories that were important and perhaps difficult to tell, or could experience a degree of pressure to tell a particular story and obscure or omit the stories they would have told outside of the group.

Conclusion

Although we have highlighted a range of benefits on the uses of DST in research, it is somewhat difficult to comment on how other researchers could attain the same benefits in future initiatives, as there is a paucity of process or component research linking particular aspects of DST to beneficial outcomes. However, a sensible hypothesis based on current data might be that a combination of the following factors contribute to making DST beneficial: (a) a genuine participatory approach that makes DST meaningful for participants, (b) clear communication and agreement regarding the use and dissemination of DSTs before commencing the project, (c) taking steps to create a safe and respectful space in which to create DSTs, (d) facilitating a sense of camaraderie within the group (where relevant), (e) support towards the effective use of digital media, (f) providing enough time and focused attention for each participant to craft their digital story, (g) group viewing of DSTs (where relevant), and (h) involving participants in each step of the research process from start to finish. Ensuring that such steps are taken makes it more likely that potential pitfalls of DST are avoided, while allowing researchers and participants to capitalise on its benefits. Throughout the process, researchers in collaboration with participants can determine what steps are more appropriate for each project (i.e., whether individual storytelling is more appropriate than a group setting, or whether participants wish to keep their stories private).

Nevertheless, DST's growing use as a research method continues to challenge more traditional approaches (quantitative and qualitative) that have not always been sensitive to participants' worldviews and contexts in the creation and dissemination of new knowledge. The benefits of DST extend beyond more obvious advantages of telling one's story, with growing potential to contribute significantly to the decolonising research agenda; privilege participants' perspectives as co-constructors of knowledge; open up new pathways for knowledge translations efforts, interdisciplinary research, and policy impact; and valuing participants' time and efforts in research endeavours.

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