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Digital Humanities as Inclusive Knowledge Translation: a Multi-Phase Qualitative Pilot Study

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ABSTRACT

Knowledge translation (KT), the dissemination of research outputs towards utilization and application, is increasingly recognized in research. For marginalized populations, benefiting from research outputs can be hindered by longstanding, inequitable access to information and education. The objective of this pilot study is to assess the potential of using creative works in the digital humanities - such as films, series, animations, games, and graphic novels - as knowledge translation tools for engagement, inclusivity, and equitable access to research-based knowledge. Methods followed a multi-phase process. First, an exploratory literature review was conducted on the intersection between three pillars: digital humanities, marginalized populations, and knowledge translation (Web of Science and Scopus), with 21 studies that met the inclusion criteria. Operational definitions and project framework (CATER) were drawn from the gap analysis, followed by a first round of pilot interviews with individuals with qualitative research experience. The first pilot interviews were conducted to identify any conceptualization errors and address methodological concerns. The second round of pilot interviews was conducted with marginalized individuals. Research findings show that marginalized populations access digital humanities for self-motivated learning. The implications of this research suggest digital humanities can serve as KT tools to supplement existing modes of KT, and that further participatory research will help uncover complex relationships between digital humanities and living with marginalization.

INTRODUCTION

The growing field of Knowledge Translation (KT) with its other associated terms such as knowledge mobilization, knowledge-to-action, knowledge transfer, and knowledge exchange demonstrates increased interest in disseminating research outputs towards utilization and application. To date, close to one hundred terms in the English language (McKibbon et al., 2010) have been identified in research to describe the dissemination process of research outputs. Still, marginalized populations may face a range of barriers in accessing journal articles and academic conferences as commonly accepted forms of KT. In other words, successful knowledge translation may still exclude marginalized populations from benefiting from research outputs. Creative works in digital humanities - such as movies, TV series, animations, and games, are increasingly used for the

communication of information. Historically, they have also been used in the language arts classroom and beyond, with numerous studies relating digital humanities to a range of learning outcomes (Clemens & Hamakawa, 2010; Marsh et al., 2012).

The validity of digital humanities as platforms of information dissemination has been tested in various studies applying their use in postsecondary education, including a wide number of studies on the professional education of medical professionals (Baniasadi et al., 2020; Boejen & Grau, 2011; Chen et al., 2020; Fiani et al., 2020; Mao et al., 2021; Pfandler et al., 2017). Through Covid, the rise of virtual learning, online education, and e-learning platforms in the literature have demonstrated digital educational tools as potentially more inclusive to diverse learning needs (Alverson et al., 2004; Hamilton et al., 2021; Pellas et al., 2019). Perhaps the most relevant advantage of digital humanities as

information-dissemination tools is that younger generations consistently show initiative and motivation to self-access these sources of information (Paulus et al., 2021).

Digital humanities, as information-dissemination tools which reduce access barriers while motivating individuals towards self-access, may be suited for inclusive knowledge translation. To date, the application of digital humanities towards knowledge translation - as a platform for communicating research information to marginalized populations - remains limited. The purpose of this research is to understand how digital humanities can serve as KT tools towards equitable access to research-based knowledge for marginalized populations, by directly engaging marginalized populations towards a qualitative understanding based on their lived experience.

METHODS

An iterative, reflexive process falling under the category of basic qualitative research by Merriam & Tisdell was selected (2015), with an intentional three-phase approach described below. The key

rationale of the multi-phase approach is to refine the methodology before engaging marginalized populations, to ensure that the engagement process is respectful, sensitive, and an apt use of their time.

Phase One: Exploratory Review of Literature

The relationships between the three pillars of the study: digital humanities, marginalized populations, and knowledge translation is complex and interdisciplinary in nature. An initial literature review was conducted through the Web of Science. This resulted in the creation of a conceptual map of themes, illustrating the range of disciplines which can inform the inquiry. Abstracts and keyword fields were scanned to generate the following map (Figure 1), which emphasized the importance of limiting the scope and providing operational definitions of the pilot study. The mind map is not intended to be a comprehensive assembly of relevant disciplines and fields, but rather an illustration of complexity and potential areas of future inquiry. All disciplines listed may provide insight into KT that is inclusive toward marginalized populations.

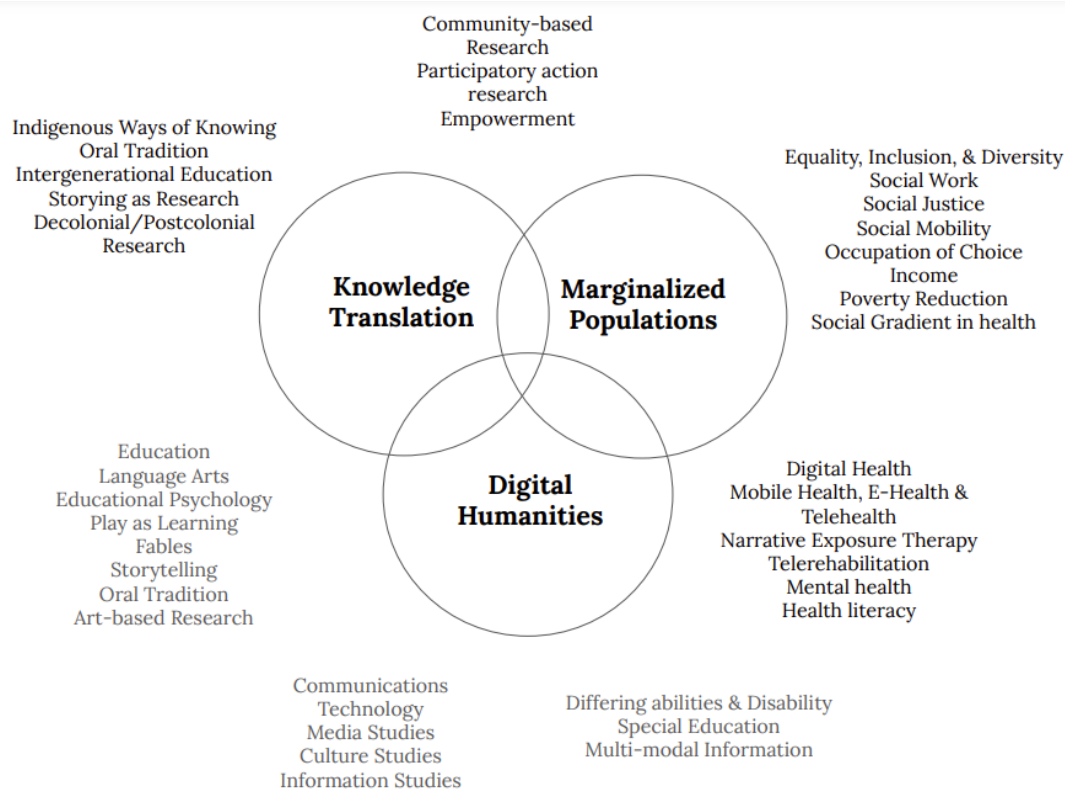


Figure 1. Mindmap of relevant disciplines to the inquiry from exploratory literature review

To provide focus, a subsequent search was conducted on peer-reviewed articles in English, excluding conference proceedings and theses, which simultaneously involve all three pillars of the study from Web of

Science and Scopus. After reviewing the mindmap, the following search terms were drafted for a follow-up search:

Table 1. Search terms applied from mindmap

<p>Digital Humanities</p> <p>Movie OR film OR cinema OR television OR TV OR drama OR Anime OR animation OR manga OR “graphic novels” OR games OR gaming OR "serious gam*" OR VR OR "Virtual Reality" OR “augmented reality”</p>
<p>AND Knowledge Translation</p> <p>"knowledge translation" OR "knowledge exchange" OR "knowledge mobilization" OR "knowledge dissemination" OR "knowledge transfer"</p>
<p>AND Marginalized Populations</p> <p>Empowe* OR “Critical consciousness” OR “critical literacy” OR “social justice” OR emancipa* OR Marginaliz* OR disadvantag* OR vulnerable OR disenfranchis* OR oppres* OR patient* OR disab* OR victim* OR survivor OR aborigin* OR indigen* OR inequ*</p>

The results of the search in Web of Science provided a sense of the quantity of existing research. The intersections of the Venn diagram, each with the number of articles and general focus of the resulting articles are provided in Figure 2.

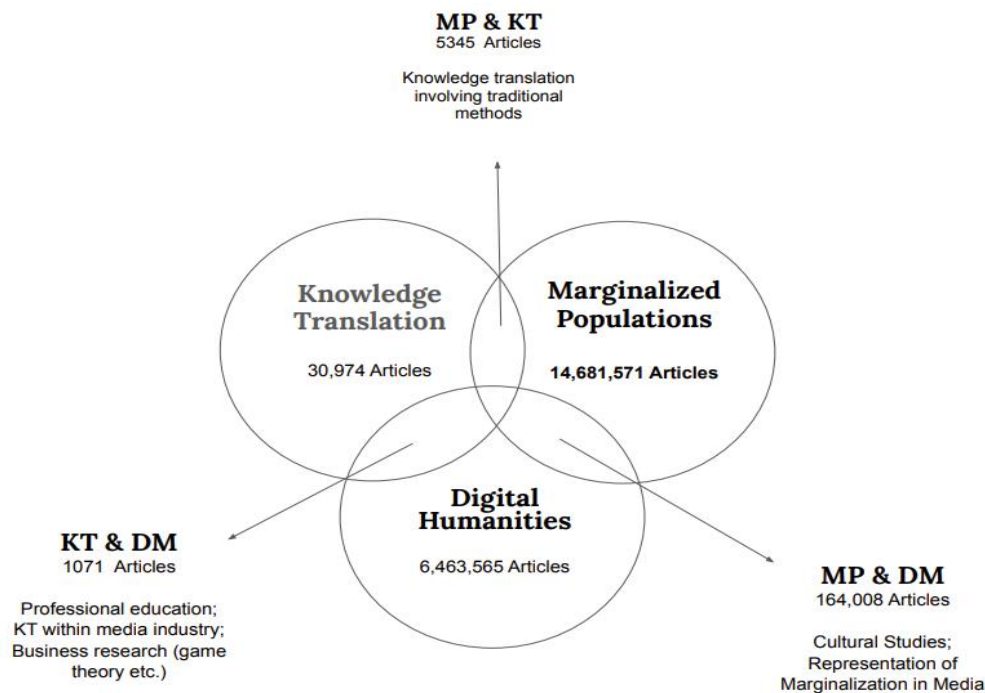


Figure 2. Web of Science article count and general foci of search terms

In the center of the Venn diagram, 149 articles from the Web of Science database involve content on all three pillars of the study. A parallel search was completed in SCOPUS. After removing duplicates, 6 additional articles were added from SCOPUS. The resulting studies were assessed with the following inclusion criteria:

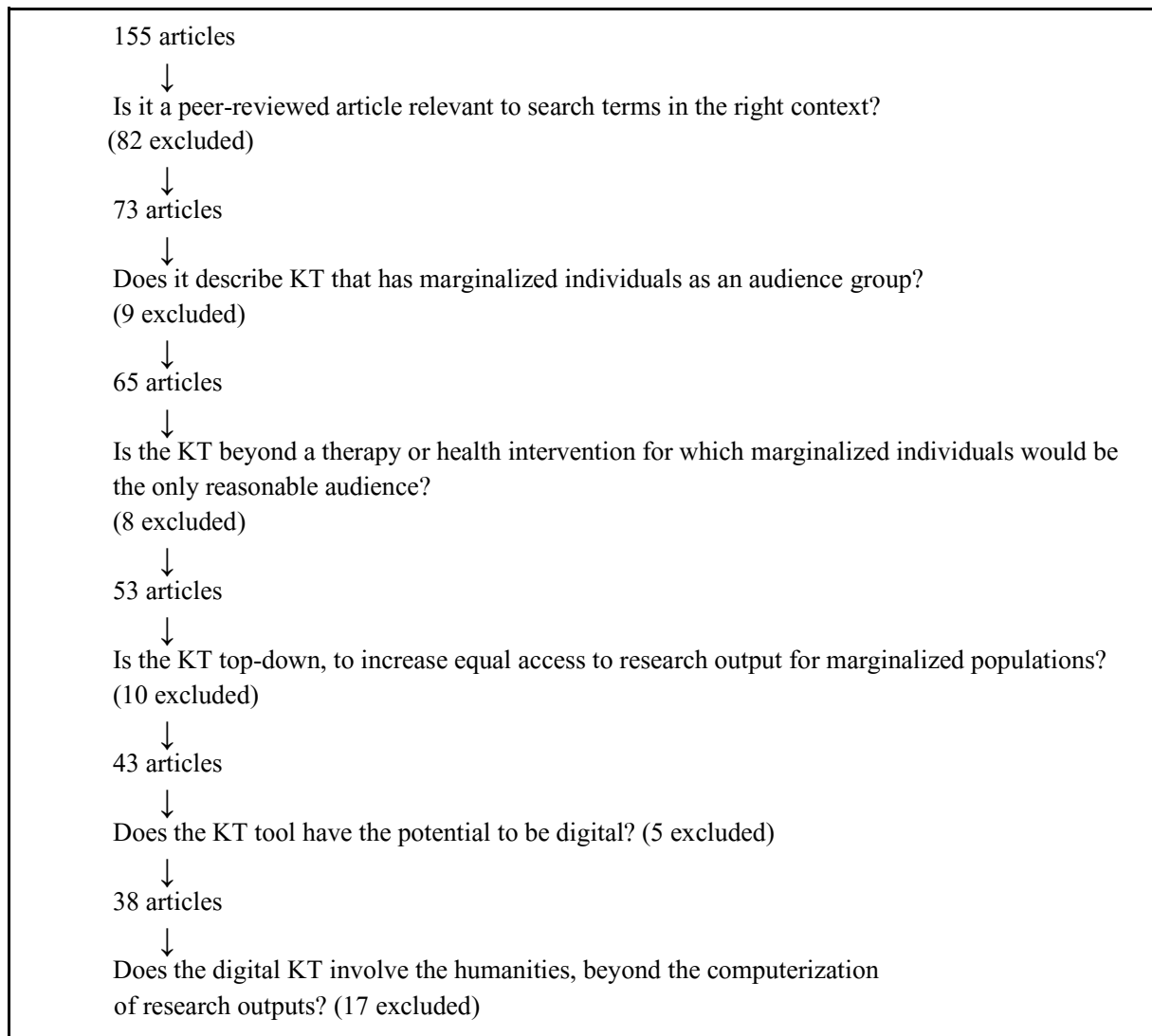


Figure 3. Inclusion criteria of articles meeting three pillars of the study scope

Phase Two: First round of pilot interviews

The first round of pilot interviews was conducted with individuals having qualitative research experience, particularly in the field of health and international development (n=5). Semi-structured interviews were chosen for an

investigative exploration of themes within a framework drawn from the literature review. The initial interview guide was created based on the CATER framework, which seeks to identify key domains relevant to inclusive KT via the digital humanities:

Table 2. CATER framework of semi-structured inquiry on digital humanities for inclusive KT

Category	Sub-questions & Probes
Collection	<p>What are your favorite films, series, animations, manga, and graphic novels? (Alternative probes)</p> <ul style="list-style-type: none"> ● In your opinion, what are the ones that: <ul style="list-style-type: none"> ○ have been most beneficial to your life? ○ are the most meaningful? ○ are the most underrated?
Action	Upon finishing a piece of digital media, have you ever felt like you wanted to

	<p>do something? Such as:</p> <ul style="list-style-type: none"> ● Wanting to talk about it with a friend ● Wanting to share it with others ● Creating content, no matter how formal, such as fan art ● Building online communities or joining an online community to discuss
Transformation	<p>Has there ever been a piece of digital media that:</p> <ul style="list-style-type: none"> ● Was life-changing? ● Brought positive benefits to your life? ● Changed your worldview? ● Changed your goals or aspirations in life? <p>If you had the resources to solve any world problem, which one would you choose?</p> <p>Do you think any pieces of digital media can help solve the world problems?</p> <p>If you were to create a piece of digital media to solve a world problem, what problem would you pick? What would your creation be like?</p>
Emotion	<p>How does digital media impact your emotions?</p> <p>Are there pieces of digital media that you use as “comfort watches”, like “comfort food”?</p> <p>Are there times when after watching something, you cannot shake off the negative feelings?</p> <p>How does digital media positively/negatively impact your emotions?</p> <p>Overall, do you think digital media impacts your emotions more positively or negatively, and could you tell me more?</p>
Recommendation	<p>If you were a professor and you were to create a course on a piece of digital media, which one would you choose and why?</p> <ul style="list-style-type: none"> ● What do you hope your students can learn or understand at the end of the course? <p>What piece(s) of digital media would you definitely share with your children in the future?</p> <p>What is one great example of digital media that all creators can learn from?</p> <p>If someone wanted to create a piece of digital media that is ‘good’ and asked you for your advice, what would you recommend?</p>

Results of the first round of interviews illustrated several areas pending improvement. The first category, *Collection*, was initially conceptualized as a simple “*What are your favorite pieces of digital media*”, with the objective of getting the conversation started. The words “*favorite pieces*” were quickly noted as deficient as 1) the sudden task of providing a list of multiple items was overwhelming; 2) “*favorite*” digital media could be the result of personal details such as a supporting specific actor who is in the film, or a lived-experience connection (ie. “my grandmother

used to watch this with me”). These responses, though useful in learning more about the participant’s lived experiences, could not provide direct data on digital media that provided increased access to information for the participants.

The term “*Digital media*” was initially understood by multiple participants as “social media”. The wording was then changed to specifically list “*movie, series, animation*” as examples of digital media. Participant response demonstrated that while “digital media” may be a useful research terminology to refer to media

regularly consumed by younger generations, the same term is almost never used in daily speech (ie. “*My favorite digital media is...*”).

During the conceptualization of research, answers about non-fictional works were not expected to be elicited from the CATER framework. However, participant responses showed that documentaries, podcasts, and other non-fictional information sources were still reported even when the researcher restated “*movies, series, animation*”. This resulted in changing the interview schedule to place greater emphasis on the word “*fictional*”.

Where possible, the interview was conducted with a casual attitude for several reasons. Firstly, the discussion on digital humanities should not leave the realm of personal interest and entertainment. It is precisely because individuals are interested and entertained by digital humanities that these creative works may be a promising, alternative platform for inclusive knowledge translation. Secondly, the wording of the interview schedule was designed to be intentionally casual to give room for participants to respond comfortably in the same way. This is important for the purpose of allowing future marginalized participants to feel that they are in equal power with the researcher; the researcher does not have access to a more academic set of vocabulary or language that would exert any form of power over participants.

Analysis of the flow of the conversation illustrated a common theme relevant to the issue of unequal power. In many interviews, participants only brought up more creative and entertaining works in the digital humanities that spoke to their personal interests near the end of the interview. During the first half of the interview, many participants provided examples of educational documentaries, or even academic sources as their favorite pieces of digital media - which is out of the scope of this pilot study. Member checking with the participants revealed that many instinctively tried to provide responses that they felt were relevant to the theme of learning, education, equal access, and empowerment. Additionally, even though all of the participants were individuals with qualitative research experience, participants still expressed hesitations in being judged for their favorite works in the digital humanities. Personal support for a piece of work in the digital humanities, especially

as a fan, can be a private matter. Sharing these responses in an academic setting proved to be challenging even for participants who were briefed about the objectives of the study.

This strongly emphasized the need to maintain a casual atmosphere for the pilot interviews with marginalized individuals. It is essential that the language, tone, and environment was non-judgmental, and supportive of the marginalized participants’ true interest in the digital humanities - in order to accurately determine what they choose to self-access, and what they deem as beneficial to their lives.

Open coding of the interview transcripts showed that close to half of the content was personal and directly related to each participant’s unique personal experience, current life, or aspirations for the future. This would raise immediate questions regarding whether the data can have transferability to inform the creation of future digital humanities for inclusive KT. On the other hand, an open and flexible discourse that slowly involves more and more of the participant’s life may also be an indication that there is growing trust, or that the participant has internalized the interview themes to apply them to their own lives. Ideally, the interview process in and of itself can be refined so it can become a positive or even empowering experience. The need to strike a balance between personal application versus transferability requires careful future consideration.

In relation to the concept of empowerment is *transformation*. The concept of transformation, as part of Roulston’s (2000) conceptualization of interview questions, is not just relevant to methodology but intrinsically relevant to the study objective: to understand how digital humanities can serve as inclusive KT platforms. It thus becomes essential to differentiate between 1) digital humanities which can create a change in attitude, behaviors, values, or knowledge from 2) digital humanities which are accessed by a self-selected group who have pre-accepted the themes. As an example, an environmentalist film cannot be seen as a valid KT tool if it only attracts viewership from existing environmentalists.

Within the discussions of “empowerment” (Freire, 1972) and “transformation”, it is important to note that participants do not require the researcher to change or elevate them. Participants

are not only in equal power but also hold the knowledge that the researcher does not know. Rather, concepts of transformation and empowerment are applied to guide the researcher, to ensure the interview is not a one-time extractive moment in the lives of the participants, but an experience with potential utility to the participants well into the future.

Phase Three: Pilot Interviews with Participants

The first round of interviews highlighted the importance of an equal-power setting. Requesting participants who experience marginalization by society to potentially disclose their personal taste in digital media itself throws the researcher-participant relationship off balance. For this phase of the pilot study, an intentional decision was made to enter a setting in which the participants had control over their own space - where the researcher was the guest. Discord was finalized as the interview platform. Marketed as “where you can make a home for your communities and friends”, the Discord app has also been broadly researched during the Covid-19 pandemic as a distance education tool as well as a platform to build student communities (Craig and Kay, 2022). The defining characteristic of Discord is that any user can create their own “server” on a theme or topic. This server then becomes their own virtual space in which they can establish their own rules, and engage with others on their terms.

Sampling was conducted on Discord through an open invitation for individuals over the age of 18 and able to provide consent. All individuals who responded to the invitation were sent the ethics and intake survey to ensure they met the dual criteria of 1) facing a barrier to formal education as well as 2) living with at least one marginalized status. To ensure a degree of breadth within the small sample, only one participant was selected from each individual server.

The informed consent process, with a formal institutional ethics form, proved to be a barrier to engaging some participants. At its core, Discord is a place where individuals congregate online over a passion or personal interest. A formal ethics procedure may take away from the casual, cordial connection between individuals, or give the impression that the researcher is imposing another set of rules on top of ones already established in each server. These barriers resonate with the findings of Sharpe *et al.* (2020), in which

researchers found it useful to apply VR technology not just in the research dissemination phase, but even as early as the informed consent process - which was noted to be both more engaging as well as more informational to ensure true informed consent.

All eight participants who chose to complete the informed ethics procedure met the dual criteria, with seven participants reporting more than one status of marginalization, and all participants reporting more than one barrier to formal education. Over one-third of participants were family members or caregivers to someone living with a disability or a chronic health condition. Over one-third reported currently combating mental health challenges.

Of the marginalization statuses, the most common self-identifications were racial minority, LGBTQ2+, as well as previous experience with shelter, housing insecurity, or homelessness, all represented by one-fourth of the sample. Notably, no individuals identified as indigenous or aboriginal, speaking to the need for purposeful sampling and greater engagement for indigenous perspectives on inclusive knowledge translation.

The most common barrier to formal education identified by the participants is personal health, with five out of eight participants reporting this on the intake form. Six out of eight participants reported more than one barrier to formal education, with an average of three pre-described barriers reported by each participant.

Operational Definitions

Digital Humanities. All non-fiction is ruled out from this pilot study. Firstly, non-fictional digital works do not necessarily motivate and engage individuals towards self-access behavior: a film set in a historical period versus an instructional video on high school history are arguably two information sources that motivate different audiences. The second rationale for excluding non-fiction is relevant to the knowledge translation context of the study: research outputs that are converted to a digital format, such as creating a digital copy of a printed infographic poster, can increase access but may not motivate and engage individuals.

The exploratory review of literature established the first set of inclusion criteria: movies, television series, animations, anime, manga & graphic novels, games, and VR. Specifically, the

inclusion of games is built upon the rise of "serious games", which have been applied to a wide variety of educational settings. The inclusion of manga & graphic novels is based on three considerations: 1) the massive rate of adaptation of these works to modern movies, television series, and animations; 2) the rise of e-books, allowing for ease of access and consumption through digital devices such as mobile phones; and 3) their combination of text with images and visuals as multi-modal information, to meet diverse learning needs.

Knowledge translation. Through the rise of participatory research emphasizing the role of the researcher as one who amplifies voices from the community, knowledge exchange is no longer restricted to a top-down model. Conversely, the voices of marginalized populations can also be communicated to academics, policymakers, healthcare providers, and a broad range of other stakeholders through a bottom-up knowledge translation process. For the purpose of this pilot study, bottom-up research knowledge exchange is excluded. The reasons are twofold: firstly, top-down versus bottom-up knowledge translation is an equally important process that deserves specific investigation and careful consideration; combining the two into a single pilot may lead to incomplete investigation of both. Secondly, the underlying aim of the study is to decrease barriers for marginalized populations in accessing and benefiting from research outputs. The bottom-up exchange of knowledge, even if fully realized, will amplify their voices but not necessarily facilitate their equitable access to research outputs.

All studies for which the community members are the only suitable target for knowledge translation are also excluded. Examples include KT projects that focus on direct medical intervention, or offering programs to promote behavior change among patients. As no other stakeholder applies in these forms of KT studies, the inclusion of community members is a default option. These studies are therefore not suited for informing other KT projects which may have historically excluded marginalized populations.

Marginalized populations. Defining marginalization is an important but challenging task. Rather than the traditional paradigm of *limiting* the scope of a term, marginalization is a highly intersectional issue (hooks, 2000) which requires *expanding* and acknowledging multiple interconnected themes, including and not limited to: lower socioeconomic status; childhood trauma or domestic abuse; homelessness & housing-insecure experiences; victim of crime; street-involvement, including sex work or sexual abuse; substance use or forced substance use by others; disabilities and or birth conditions, including invisible disabilities and learning disabilities; chronic health conditions, including undiagnosed conditions; colonial oppression; transfers between rural/remote and inner city life stages; and societal discrimination. Acknowledging these themes in the pilot study is not intended to be a catch-all. Rather, the rationale is to fully recognize that an individual participant may identify with multiple statuses listed above, belonging to a nuanced identity that a single label cannot rightfully describe. Furthermore, research shows that many of these statuses leading to marginalization are upstream factors of other statuses leading to marginalization (Hankivsky and Christoffersen, 2008; Lynam and Cowley, 2007) - resulting in a greater likelihood that any given participant would identify with more than one identity listed above.

RESULTS AND DISCUSSION

Twenty-one studies met the inclusion criteria for the literature view of this pilot (Table 3). These spanned a range of disciplines and geographic contexts, with notable clusters of studies in two fields: patient engagement as well as community-based research with indigenous communities. Sample sizes ranged from 5~25, with the exception of two population health studies. Most studies employed a mixture of knowledge translation methods in which digital humanities is a tool to complement other tools. In 8 studies, more than one tool in the digital humanities is applied.

Table 3. Overview of Studies Related to Intersections of Digital Humanities, Knowledge Translation, and Marginalized Populations

Study	Disc.	Tool	Study	Geo. Focus	Sample Size	Outcome
Lithoxoidou et al., 2020	Labor Studies	Game	Gamified collaboration platform for workers	Greece Germany	“Small sample”	Increased motivation, work satisfaction
So et al., 2019	Special Ed	Game	RCT of Robot-based Play-drama for Children Living with Autism	China	13	Increased communications skills; gestural and narrative
Mindu et al., 2018	Rural Dev.	Mixed: Game Film Phone	Review of 18 “research uptake” methods for rural Africa	Africa	Not Applicable	Encouraged “uptake of health and environment measures. and increasing treatment”
Lomax et al., 2022	Pop. Health	Animation Film	Overview of “Beyond Text” research methods for Marginalized children during Covid	UK	Not Applicable	Facilitated “co-creation and knowledge exchange”
Suppan et al., 2021	Pop. Health	Game	Web game to enhance national Covid prevention behavior	Switzerland	1104	“enhance correct infection prevention and control measures on a national scale”
Lohan et al., 2015	Pop. Health	Interactive App Drama-film	Interactive digital tools to address men’s attitudes toward depression and unintended pregnancy	Canada, Ireland, Australia	746	Overcame barriers in engaging men in health topics
Li et al., 2012	Medicine	Mixed, including game and animation	Overview of mixed non-fictional and fictional digital media for self-management of rheumatoid arthritis	Canada	Not Applicable	“provide tremendous flexibility for delivering health information and resources at a time and place that is chosen by the individual”
Schick-Makaroff et al., 2022	Medicine	Mixed, animation and live-action video	Overview of mixed digital media for the Quality of Life of Elders and Caregivers	Canada	12	Contributed to quality-of-life assessment and KT that is tailored to the community
Kontos et al., 2018	Medicine	Film	Aesthetic, character-based film to promote wellness for hemodialysis care	Canada	10 patients 10 family members	Can optimize the health of seniors undergoing hemodialysis
Maskeliunas et al., 2022	Medicine	Game	Serious game to improve caregiver’s knowledge and abilities in providing post-stroke care	Lithuania	25 patients	Lowered rates of reported depression and improved user experience of health resources
Silva-Lavigne et al., 2022	Medicine	Game	Serious game to improve children’s self-management of asthma	Canada	5 children	Serious games are “acceptable to children and family members” in self-management of pediatric asthma
Bradford and Bharadwaj 2015	Indigenous	Animation	Whiteboard animation to share traditional knowledge interviews beyond the community	Canada	2 communities	Communicated traditional knowledge to wider audiences

and to children						
Carry et al., 2011	Indigenous	TV series	Using TV series and other digital engagement technologies for community health in the Inuit community	Canada	1 community	Inviting the community to co-develop television series can engage the community in health and wellness discussions
Kandasamy et al., 2017	Indigenous	Short film	Shared indigenous elderly women's perspectives on perinatal health	Canada	18 grandmothers	"Elder women are... trusted and knowledgeable (to) deliver health information to their community in culturally meaningful ways"; the short film aided in this communication of health knowledge
Cooper and Driedger 2018	Indigenous	Activity sheets and board game	Reviewing creative ways to communicate traditional knowledge and health knowledge to indigenous communities	Canada	23 focus groups	Met the following principle: "Knowledge dissemination products must consider the requests of participants."
Hannola et al., 2018	Labor Studies	Augmented Reality and Mixed Digital Solutions	Providing a framework for digital tools to empower production workers	Finland; Europe	Not applicable	Enhanced production, work satisfaction, and "empower workers to openly share their contributions to a communally updated pool of knowledge."
De Freitas et al., 2009	Education	Virtual worlds: Game and VR	Using virtual worlds to inform learners of educational and career opportunities	UK	18	Enhanced collaboration and mentorship
Pellas et al., 2018	Education	VR Game	A systematic review of 21 studies on VR Games applied in education	Global	Not applicable	Influenced "students' attendance, knowledge transfer, skill acquisition, hands-on digital experience, and positive attitude towards their learning."
Sindi et al., 2006	Medicine	Film	Viewer-reports of the film "Lady in Waiting" to communicate research-based knowledge on chronic impacts of breast cancer survival	Canada	396	93% of audiences report having benefited from the viewing, and 94% would recommend it to others
Sharpe et al., 2020	Special Education	VR and Digital Illustration	Applying digital media throughout the participatory action research process for youth with disabilities	UK	18	Digital technology can engage; contribute to informed consent; and empower youth with tools for research co-creation in PAR
Rose and Flynn, 2018	Social Work	Animation	Collaborating with communication design students to animate interviews with children of parents with previous imprisonment	Australia	20	Contributed to anonymity; and added entertainment value in the KT process for greater social connectedness

The benefits of using digital humanities for knowledge translation reported from the studies spanned a broad portion of the research cycle. From improving the inclusivity of the ethics and informed consent process, to facilitating post-dissemination activities such as action and research evaluation, digital humanities were reported to support iterative and cyclical KT that cannot be easily simplified into a single linear procedure. With the exception of three terms: “anime”, “manga”, and “graphic novels”, all other search terms relating to digital humanities tools were used and represented by the final selection of studies.

The 21 studies illustrate the scale-up potential of digital humanities in KT. Kandasamy et al. described an indigenous community-based study with the goal of investigating traditional knowledge about perinatal health (Kandasamy et al., 2017). Elderly women were engaged (n=18) to share their traditional knowledge, as researchers noted the important role of elderly women as trusted, culturally-meaningful sources of information by community members. The resulting data collected informed the creation of a short film, which was then used to educate members of the entire community. In other words, while engaging a large number of community members in the qualitative data-collection phase with the elderly women may be challenging, the conversion of knowledge into a short film facilitated scaling up the KT process to be inclusive to the masses. The concept of mass media was also noted in another indigenous study, in which health knowledge was disseminated as a television series in an Inuit community (Carry et al., 2011). Beyond quantitatively evaluating population-level reach, the study continued to note audience responses to the television series as a KT tool, which generated further data in the form of community discussions on health themes presented in the series.

A brief comparison of another two studies can illustrate the unexplored potential of scaling-up KT through the digital humanities. Rose & Flynn’s qualitative work (2018) with 20 children of parents who have been imprisoned resulted in a KT tool of an animated film, which was noted to not only significantly contribute to anonymity, but was also useful in engaging or empowering other children. In

the paper, further reach or application of the resulting animated film was beyond the scope. Sindi et al. (2006) used an international conference as an opportunity to test a film on the chronic implications of breast cancer. Out of the 396 viewers who returned the survey results, 93% of audiences report having benefited from the viewing, and 94% would recommend it to others. The study demonstrates similar potential for all KT animations including Rose & Flynn’s: if given a similar opportunity for mass dissemination, the resulting animation created from children’s responses may likewise benefit many more. In other words, similar to the traditional KT output of a journal article, KT via the digital humanities is not time-sensitive and can be preserved to have future population-level reach and impact. This scale-up implication is supported by Suppan et al., a study (2021) on a web-based game to impact health behavior at a national scale in Switzerland during Covid.

The literature review suggests value in investigating digital humanities KT products at a population scale. At the same time, the 21 studies showed that there is significant specificity in the marginalized populations engaged, from Chinese-speaking children with autism to seniors undergoing hemodialysis. Regarding what is valid KT via the digital humanities, from the perspective of marginalized populations at a generalizable or potentially transferable level, became the focus of the following phases of the pilot study.

Following open coding and axial coding, interview transcripts were also analyzed with a lens of progressive time, as the interviews from Phase Two illustrated that participant responses tend to become more personal close to the end of the interview. The data collected were first analyzed according to the CATER framework.

Collection

The theoretical rationale for identifying the *Collection* is to establish a base-level understanding of digital humanities which have motivated self-access or benefited marginalized populations. Data in this category can help inform what modes of digital humanities (ie. film vs. serious games) are preferred, and also which specific works overlap between participants towards potential saturation of data.

Eight participants reported a wide range of works in the digital humanities, covering all search terms with the exception of graphic novels. In comparison to the literature review which produced no results in anime or manga applied in knowledge translation, manga was reported by two participants in Phase Three, while anime was reported by seven out of eight participants. Most importantly, participants reported a total of 35 different works in the digital humanities, with no overlap among eight participants. This demonstrates not just the wide variety of existing works that speak to participants, but also the challenge for the interviewer to possess a base level of understanding of some creative works - to engage in meaningful back-and-forth with participants. Where possible, to reinforce a non-judgmental attitude, and to show a willingness to bond with the participants, every participant response in the *Collection* category that was known to the interviewer was acknowledged with a follow-up probe.

A key unexpected finding emerged in the *Collection* category: while all participants listed more than one favorite work in the digital humanities, the majority of these works are never mentioned again in the rest of the interview. This may be due to a combination of factors. Firstly, the following four categories in the CATER framework may not be seen as relevant by the participants to their favorite works. Secondly, participants may exhibit similar behavior as the first round of interviews: they may have self-censored their initial responses, limiting their favorites to those they deem as more acceptable or appropriate for an academic interview - and that it is only with time that they feel more comfortable discussing works they hold closer to their hearts. Member checking validated both of these factors, with a third factor that was previously unanticipated. One participant reported that their favorite works each deserved dedicated discussion, and that compiling them into a mixture could not do their favorite works justice: "They are all like my children, and it feels bad to omit or forget about anyone."

Action

Freire's conceptualization of critical consciousness, or emancipatory education (1972) involves not just understanding inequalities but also taking action against inequalities. With regards to existing products of knowledge translation - journal

articles and academic conferences - whether or not these KT products inspire action from marginalized populations is pending further research that is based on the perspectives of marginalized populations themselves. Given the importance of action in Freire's conceptualization, understanding how digital humanities may inspire action was determined to be a critical component of this pilot.

All eight participants reported that their favorite works have inspired them to take action, although many required probing to provide a positive response. The range of actions reported beyond what was suggested in the interview guide includes: researching whether something in the story was true; starting a side job to support their creative endeavors; saving up to visit the country where a story has taken place; finding more works by the same creator; and creating social media presence to discuss their favorite works. From the perspective of knowledge translation, digital humanities as platforms of information appear to be capable of inspiring more than the internal absorption of new knowledge, but also external, concrete actions. The particular intricacies of what causes creative, fictional works to inspire real action in the physical real world - and whether they are at a level comparable to the action inspired by traditional KT outputs such as journal articles and conference presentations - are worthy of future investigation.

Unexpectedly, the majority of participants answered "no" to the initial query in the Action category. This may be due to the fact that taking action may seem too much like "fan behavior", which is often conceptualized as immature, overly-devoted, or plainly irrelevant to a research setting. Member checking, however, did not produce results that confirmed this suggestion. Conversely, member checking uncovered another layer of the terminology. What is considered "action" may be something entirely natural and instinctive, to a point where participants do not feel that they are doing anything extra. As reported by a participant, "It's not really an action, just an interest for fun." The conceptualization of the word *action* will benefit from future refinement.

Transformation

With regards to transformation, it is theoretically important to assess that the digital humanities were in fact performing the task of

knowledge translation by providing participants with increased access to knowledge - as opposed to simply affirming previously held beliefs. In other words, the digital humanities may only be considered valid KT tools if they have the potential to change perspectives, beliefs, or worldviews.

This category was the most challenging to assess. Describing a before-and-after can be difficult without an experimental research design, and even more difficult for an outside observer to collect data for and assess. Participant responses to the specific probe "Would you say any movies, series, animations, etc. was life-changing to you?" were overwhelmingly positive; at the same time, none of the responses pinpointed exactly what has changed in their lives as a result. The pilot study showed that it can be difficult to verbalize transformation, particularly if the participant now feels far removed from their former self. One participant suggested another conceptualization: "It was always there...I just finally found something that was relevant". This process is akin to the one described by bell hooks in her writings on pedagogy and empowerment education.

"I came to Freire thirsty, dying of thirst...and I found in his work (and the work of Malcolm X, Fanon, etc.) a way to quench that thirst. To have work that promotes one's liberation is such a powerful gift..." (hooks, 1994, p.50)

In the analogy of water, the learner does not need to be taught by someone else that water is good. The pre-existing thirst in itself confirms the validity of water. If bell hooks have always known that water was what she needed, conceptualizing that participants did not know what they were looking for in the digital humanities may err on disregarding the innate learner in all of us. As a result of quenching her own thirst, bell hooks described "liberation" - a transformation in its own right.

This raises the important question of how to best assess the validity of the digital humanities for inclusive KT. Is the fact that the digital humanities are increasingly used in formal education, even in high levels of postgraduate and professional education, enough to justify their informational potential? Or, what alternative criteria must be met to place digital humanities on the same level as traditional KT outputs?

Emotion

Freire's critical consciousness can come at an emotional toll (1972) as seeing one's oppression and understanding the amount of action required to change existing inequalities can both be tasking. Journal articles and academic conferences, for the sake of scientific neutrality, may often be stripped of emotions. With regards to digital humanities, emotion can be an integral part of the experience; whether this emotion assists or hinders KT forms the rationale of this category of study.

Almost all participants were able to recognize the positive and negative impacts on emotion that digital humanities brought to their lives. Overwhelmingly, participants reported negative emotions. At the same time, the fact that these participants were describing emotion in the context of their favorite pieces of digital media suggested that the negative emotions were not entirely negative to their mental health and well-being. None of the participants described the experience of "negative" emotions via the digital humanities as therapeutic, akin to how re-exposure is often applied in clinical practice toward recovery from trauma (Robjant and Fazel, 2010). Rather, as one participant put it, negative emotions from the digital humanities are associated with "putting in work" and "working on" oneself. In the context of KT, this is a particularly important finding. It suggests that individuals experiencing marginalization, like privileged individuals who seek to better themselves through formal education, also intentionally seek out the process of bettering themselves through digital humanities. In other words, part of the motivation for accessing works in the digital humanities is not just entertainment or passing time, but also the conscious decision to benefit from this access.

Originally, the category was conceptualized to assess the mental health impacts of the digital humanities. In research, media addiction has been widely studied (Meng *et al.*, 2022). Participant responses not only acknowledged the potential for addiction but also provided deeper insight into the negative health impacts, with a specific participant emphasizing loneliness that comes from the inability to share their new worlds with other people. The true range of mental health impacts of digital humanities, particularly in the context of

marginalization, deserves more detailed consideration in the future

Unexpectedly, the specific prompt about “comfort watches” did not generate positive responses in general. Although participant responses did not negate the proposition that the digital humanities could potentially improve mood and emotional well-being, multiple participants responded with the fact that “looking for more” when accessing digital media. The intentional seeking of thrills, plot twists, or challenges through the digital humanities may be representative of a deeper quest for new information and new perspectives - or, simply the fact that the excitement digital humanities can bring also has its desirable effects on their mental wellbeing.

Recommendation

Following participatory research methodology, participants are respected as equal contributors of knowledge as opposed to simply subjects of study. In this final category of the CATER framework, participants are directly consulted for their advice on how future digital humanities can serve as effective KT tools.

Participant recommendations for the creation of digital humanities for inclusive KT are diverse, emphasizing common elements such as well-crafted worldbuilding; humanized characters; attention to detail, including aesthetic detail; and the utmost importance of plot. Upon analysis, these suggestions are not divergent from what academia has also considered to be desirable features of rigorous qualitative research, such as communicative resonance (Finlay, 2006), aesthetic merit (Richardson, 2000), vividness, and elegance (Polkinghorne, 1983), and a “story that moves” (Bochner, 2001). What are the common elements of sound KT in non-fictional and creative formats - and how do they ultimately differ? Could KT via the digital humanities be viewed as a form of composite case study in which data from different sources are intentionally merged for not just anonymity, but “artistry” in research (Finlay, 2006)?

CONCLUSION

The pilot study is not intended to provide direct data on what is valid, inclusive KT via the digital humanities from the perspective of marginalized populations. Rather, the emphasis is

on refining a methodology towards respectful, equal-power participation experiences in which participants can freely express their innermost personal interests. The pilot concludes with the following key recommendations for future studies:

1. Targeted sampling should be employed to ensure true inclusion. Specifically for this pilot study, no participants identified as indigenous. Further, no participants expressed disability-related barriers such as vision impairment or hearing impairment, both of which would impact access to digital humanities and access to research participation opportunities.
2. Researchers should anticipate extremely personal narratives and be well-prepared to handle them with sensitivity and care. Although personal questions were intentionally excluded from the semi-structured interview process, seven out of eight participants shared traumatic events from their childhood and their families. The power of discussions surrounding the digital humanities to draw out personal history is a power that must be constrained.
3. All participant responses became increasingly detailed and nuanced as the interview continued, with the highest contact time in a single session being 3 hours and 47 minutes. At the same time, there is observed fatigue in participants, as probes past the 2-hour mark, even when directed at “favorite pieces of digital media” reported by participants in the Collection category, did not produce detailed responses. Single-session interviews may not be the most advantageous; a potential future research design is multiple sessions in succession daily over multiple days, similar to a workshop style, to build upon the previous day’s responses without exhausting the participants. Timing is particularly pertinent to the content of this inquiry and speaks to the depth of digital humanities. No participant had a chance to discuss each of their favorite works after listing their favorites at the beginning of the interviews.
4. Experimental research design could consider truly placing research participants in a position of power. Related to the “workshop” style interview design in the previous point, the pilot suggests tremendous value to facilitate a scenario in which participants teach a mini-

course on their favorite works in the digital humanities. This physical realization of a probe in the *Recommendation* category of the CATER framework can produce informative data that is not captured in an interview. The researcher, as an attendee of the participant's teaching workshop, could then learn what is valuable enough for the participant to work towards communicating and sharing with others, while gathering data on the applied instructional value of the digital humanities in sharing and translating knowledge.

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