

Using digital storytelling to facilitate critical thinking disposition in youth civic engagement: A randomized control trial



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ABSTRACT

Purpose: Digital Storytelling (DST) is a storytelling practice that is interwoven with digital media, including images, texts, sounds, and other elements. This study specifically designed a DST project based on a dialogic orientation and examined to what extent it could promote young participants' critical and reflective mindsets. **Method:** By using civic identity as a heuristic production theme, a Randomized Control Trial (RCT) was conducted in Hong Kong in 2019. Participants were youths in Hong Kong, aged 16–24. They were randomized into a group receiving intervention ($n_1 = 36$) and a control group that did not receive the intervention ($n_2 = 51$). Participants shared photos on social media, chatted online and offline with facilitators, and finally produced their digital photo stories.

Results: Participants in the intervention group increased their self-esteem and critical thinking disposition. Their ethnocentric views also declined. Participants in the control group became more closed-minded, but participants in the intervention group remained at a stable level.

Implication: This study provides initial evidence showing that DST might be used to develop youth participants' CT disposition in civic engagement activities.

1. Introduction

Digital Storytelling (DST) is a storytelling practice that is interwoven with digital media, including images, texts, sounds, and other elements (Chan & Yau, 2019). The term DST sometimes refers to a specific genre, for example, a video lasting a few minutes (Lambert, 2010). It is also used as a general umbrella term (Botfield, Newman, Lenette, Albury, & Zwi, 2017; Chan & Yau, 2019; Miller Scarnato, 2018) covering different sorts of digital production activities which may be referred to by different terms, such as photovoice (Catalani & Minkler, 2010) or youth media production (Buckingham, 2003; Dahya, 2017; Johnston-Goodstar, Richards-Schuster, & Sethi, 2014). DST has been increasingly popular in education (Schmoelz, 2018), human services (Botfield et al., 2017; De Vecchi, Kenny, Dickson-Swift, & Kidd, 2016; Johnston-Goodstar et al., 2014), and even commercial sectors such as tourism (Clarizia, Lemma, Lombardi, & Pascale, 2017).

There are a variety of DST conventions that involve different process steps and serve different purposes (Chan & Yau, 2019; De Vecchi et al., 2016; Sage, Singer, LaMarre, & Rice, 2018), and a comprehensive review of DST is beyond the scope of this paper. This present study mainly references an emerging stream of literature that tends to present DST as a practice model that uses digital media production to enhance reflective intrapersonal and interpersonal dialogues (Chan & Holosko,

2019; Deborah, Marilys, Susan, & Jenny, 2016; Lenette, Cox, & Brough, 2015; Markus, 2012; Stacey & Hardy, 2011; Wijnen & Wildschut, 2015).

First and foremost, these practices generally adopt a social constructivist or narrative perspective to understand self and social reality (Lenette et al., 2015; Wood, Fredericks, Neate, & Unghango, 2015). A commonly shared presumption is that human experiences are not merely facts, but stories, in which events are selected and organized for a particular audience. Predicaments or closed-minded biases are caused by internalized hegemonic storylines that are unhelpful or counter-productive. The overall intervention goal, therefore, is to help people deconstruct dominant but “thin” storylines (incoherent, unreasonable, unhelpful), and thicken subordinate but “thick” storylines (coherent, reasonable, helpful) (White & Epston, 1990). It is assumed that storytellers will become more aware of their strengths, alternative voices, and potential options in relation to a specific topic.

As such, one of the most common intended intervention outcomes is a dispositional capability which is usually referred to as *critical thinking* (CT) – “the propensity and skills to engage in activity and mental activity with reflective skepticism focused on deciding what to believe or do” (Fasko, 2003, p. 8). CT is a key factor contributing to various developmental strengths, such as effective learning (Stupnisky, Renaud, Daniels, Haynes, & Perry, 2008), self-efficacy (Phan, 2009), and which

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is particularly important in civic engagement (Asia News Monitor, 2016; Banaji & Buckingham, 2013). Different academic disciplines have different emphases in defining CT, but most include both cognitive and dispositional dimensions (Sosu, 2013). The cognitive dimension includes such features as analytical skills, argumentation, and making conclusions. The dispositional dimension includes features such as the habit of using different information sources, reflective openness, and open-mindedness (Bailin, Case, Coombs, & Daniels, 1999; Facione, 2000).

Moreover, these practices adapt existing consultation/counseling techniques to enable reflective intrapersonal and interpersonal dialogues (Chan & Holosko, 2019; Lenette et al., 2015). For example, the *re-authoring conversations* technique from narrative practice (White, 2007) presumes a story contains two landscapes: the landscape of action (LOA), and the landscape of identity (LOI). LOA refers to a sequence of concrete events within the plot. LOI refers to the protagonist's consciousness within the landscape of action. Facilitators may ask about events, circumstances, sequences, time and plots based on the LOA; they may also ask other questions to elicit values, beliefs, aspirations, and commitments based on the LOI. Zigzagging between these two landscapes can constitute a reflective dialogic structure of understanding that can re-root or disrupt taken-for-granted storylines. This is because overlooked but significant life events can potentially be drawn together again, and protagonists can confer these events with meanings they previously lacked.

Furthermore, these practices demonstrate that digital media offers communicative opportunities that cannot be offered by face-to-face dialogues. For example, participants can continually revise and reprioritize their expressions (Chan & Holosko, 2019), use the internet to collect ideas and information to support production (Kent, 2016; Matthews & Sunderland, 2017), share resources online among teammates (Lally & Sclater, 2012; Paiewonsky, 2011), download media materials to support production (Emert, 2014; Mnisi, 2015), and distribute stories and collect feedback via social media (Davis, 2011; O'Mara & Harris, 2016).

Taken together, this present study posits that DST is an intervention approach utilizing digital media production to enhance reflective dialogues, it adapts consultation techniques, and it helps nurture participants' critical mindsets. Nonetheless, as reflected in a range of recent reviews (Botfield et al., 2017; Chan & Yau, 2019; de Jager, Fogarty, Tewson, Lenette, & Boydell, 2017; De Vecchi et al., 2016; Miller Scarnato, 2018), there is extremely scant research reporting the empirical outcomes of DST, let alone research which specifically evaluates such a dialogic approach to DST or includes CT disposition as an outcome measure. Therefore, this study specifically designed a DST project based on such a dialogic orientation, and evaluated its potential efficacy using a randomized control trial (RCT).

2. The project

Based on the above theoretical and methodological considerations, the DST project examined in this study used the most basic production genre (digital photo story), followed specific steps, and adopted specific conversation protocols. Such arrangements were used to help standardize the program processes and facilitate data analysis. The following sub-sections will present the general process steps of the project.

2.1. The process steps

2.1.1. Phase 1: setting a specific context for participants

The project used digital communication media to set a learning context. In this study, the production theme was Hongkongers' ethno-national identity (rationale will be detailed in the next section). Participants were recruited on a rolling basis for six months, and eligible participants were invited to join a closed social media group. Because it was a closed social media group, participants needed to be

approved by project facilitators before they could join the project group. Only current members could see the list of members in the group, and view what members posted in the group. Facebook was used because it was still the most popular social media platform in Hong Kong at the time of the study. Facebook's sophisticated access control settings also allowed researchers to create a closed group environment (Chan & Ngai, 2019; Chan, 2018). That is, before the project began, a group had already been there, facilitators had already posted proper examples, images and brief texts to the group, presenting a diverse and nonjudgmental atmosphere.

2.1.2. Phase 2: exploring unique storylines via conversations

The project used digital communication media to support narrative practice based conversations. In this study, each participant shared captioned photos over a three-week period in the Facebook group (see Fig. 1 for an example of these captioned photos). Facilitators worked in teams and chatted with individual participants using re-authoring conversation techniques. That is, facilitators purposively enabled participants to zigzag between abstract conceptualization and concrete events. At the end of each week, a token award was offered to the participant who received the highest number of responses (i.e., likes and comments). After three weeks of such online interactions, each participant had a face-to-face presentation with one of the facilitators. At this presentation, each participant introduced all the photos they had posted, then selected five, and prioritized them. Each participant verbally explained their decisions for choosing and prioritizing these selected photos.

2.1.3. Phase 3: producing media content and sharing it with broader audiences

This study only adopted a simple production genre – digital photo story. These digital photo stories could be shared online, depending on both the participant's willingness and the story quality. Incentives were offered to all those who completed the project, and high-quality stories were further rewarded. Participants who produced high quality stories might obtain subsidy to further refine their production. Participants knew that selected stories might be published on a website, and that local schools might use those stories in learning and teaching, and might invite participants to meet students in these classes.

2.2. The production theme – civic identity

Currently, civic identity in Hong Kong is a highly topical and complex issue. Hong Kong was a British colony, and was handed over to the People's Republic of China (PRC) in 1997. The vast majority of its seven million residents are ethnic Chinese, of whom one-third were born in Mainland China, Taiwan or Macau. Less than 10% of the population are non-Chinese: major ethnic groups include Filipinos, Indonesians, Indians, Pakistanis, and Nepalese (Hong Kong 2016 population by-census—Main results, 2017). The term *Hongkonger* itself has no legal definition, and different types of Hong Kong residents may have different nationalities. For example, there are nonpermanent Chinese residents who hold a Hong Kong Identity Card and who are PRC citizens, there are permanent Hong Kong residents who hold a non-Chinese passport, and there are people who have permanent residency and a Hong Kong SAR passport (HKSAR, 2019). As such, civic identity has historically been a complex construct in Hong Kong. Terms such as ethnic/cultural/national/civic identities are used interchangeably and the boundaries are blurred (Chan, 2013; Kan, 2012). Moreover, in some way, the general public may not care much about this vagueness.

Yet, in recent years, Hong Kong has experienced notable polarized views and overt violence. These have created social pressure on young people to affirm a “politically correct” position on national identity. Some government-supported institutions have tried to promote a comprehensive idealized sense of PRC Chinese national identity, which has triggered much resistance (Leung & Yuen, 2012; Ma, 2010; Vickers



Fig. 1. An example of a captioned photo. Caption: Even though Hong Kong is a small city, it is easy to find cuisines from different cultures, and yet, Hong Kong has its own unique local food style.

& Kan, 2003). Conversely, some local activist groups have promoted a radicalized version of nativist nationalism, advocating that Hong Kong itself should be considered as a nation that is not part of the PRC (Hong Kong Free Press, 2016; Lam & Lum, 2018; Lum & Chung, 2019).

It is currently questionable whether an extreme PRC Chinese national identity or an extreme nativist-separatist identity can really fit the lived experiences of most Hongkongers. First, it may be difficult to define who is purely native in a migrant city such as Hong Kong, where many citizens were themselves not born. In addition, among locally born Chinese Hongkongers, many identify with a broader range of cultural identity symbols. Further, some Hongkongers with permanent residency status may hold passports from other countries or not have a passport. Despite this diversity in reality, polarized views have become dominant discourses, at least in current everyday media coverage.

Calling for a pure national identity can sometimes be dangerous as it can easily become a call for imagined idealized essentialism no matter if it is purely PRC Chinese or purely nativist-separatist. Davies (2008) broadly defined *extremism* as not allowing for a different point of view, holding one's own views as being exclusive, not allowing for the possibility of differences, and wanting to impose this view on others, by whatever means deemed necessary. In this sense, hate rhetoric, moral

fundamentalism, cults, extreme nationalism, and extreme separatism all fall somewhere on this spectrum. Within the context of civic education, some scholars suggest that it is more desirable to enable individuals to embrace resistance to singular identity labels, and accept a more hybrid (mixed) identity (Bhabha, 1994; Davies, 2008). People may explore and acknowledge the multiplicities embedded in their own identity. For instance, an individual can be simultaneously Asian, Chinese, British, female, music-loving, durian hating, etc.

Against this background, the project presented here was designed to enable young participants to talk about their own civic identity. The project aimed to help participants deconstruct dominant but thin storylines (e.g., empty slogans, imagined enemies), and thicken subordinate but thick storylines (e.g., lived experiences, concrete cultural artifacts).

3. Method

Randomized controlled trial (RCT) is considered one of the most reliable forms of scientific evidence in social research. However, the body of literature on DST does not provide much empirical evidence from RCT studies. In RCTs, trial participants are randomly allocated to

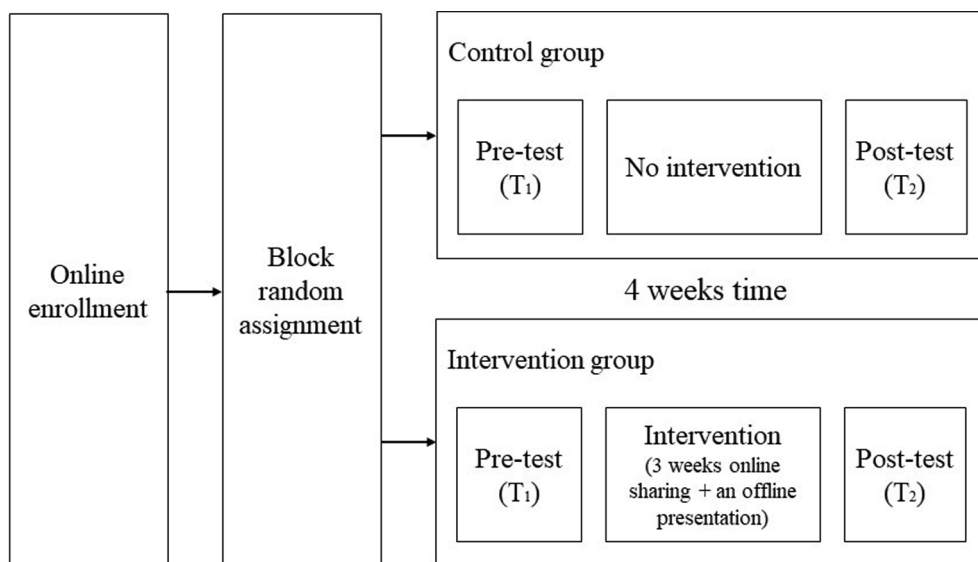


Fig. 2. Workflow diagram of the research.

either the group receiving the intervention or to a group not receiving the intervention. Although RCT has its own limitations (for example, it may not adequately address the heterogeneity among a population), it allows for empirical insights that cannot be easily obtained by other designs (see Fig. 2 for the workflow of the research).

3.1. Participants

The project aimed to engage 80–100 Hongkongers on an ongoing basis between October 2018 and May 2019 via the internet. Participants would indicate their consent for participating in the research when they enrolled in the DST project. They were randomly assigned to either the intervention group or the control group. Because the enrollment was on a rolling basis for six months, participants were also randomized on an on-going basis. Stratified blocked randomization was used and conducted by a trained research assistant through a computerized process. This strategy was used to avoid imbalances in the number of subjects in gender distribution. Each stratum adopted a block size of two or four (i.e., whenever the study received two or four new enrollments, randomization would begin). Block sizes of two or four candidates (i.e. even numbers) could guarantee that an equal number of participants were assigned to the intervention group and control group, while the small size enabled timely group assignments immediately after a small number of participants enrolled in the project (Gupta et al., 2015).

3.2. The intervention

The project followed the three-phase model described earlier in this article (see Section 2.1), and adopted some common strategies (Tucker & Blythe, 2008) to ensure that the program was implemented as planned. These included: (a) Training: the Principal Investigator (PI), the research assistant, and three student helpers worked as facilitators; all received training in narrative practice based conversation techniques; (b) Supervision: the moderator team met weekly during the project to monitor progress, and to check whether all conversations were in line with the conversational protocols based on the textual materials available (i.e., replies in the Facebook group, transcripts from offline presentations); and (c) An operation guide: a definitive set of

narrative practice based conversation skills were stressed and used throughout the project.

3.3. Data collection

Each participant had their own starting time and termination time, and their own pretest and posttest time points. Participants in both the intervention group and the control group participated in two waves of assessment. In the pretest (T₁), which was conducted immediately after confirming enrollment, participants answered a self-reporting online questionnaire. In the posttest (T₂), which occurred four weeks after the pretest, participants completed the same online questionnaire. Selected background socio-demographic data were collected at the time of online enrollment before the pretest, including gender, academic level, and area of study. Conversations on the Facebook group were recorded, retrieved and copied from the Facebook group. Face-to-face verbal presentations were also recorded.

3.4. Measures

Critical Thinking Disposition (CTD) was measured by the critical openness subscale (including seven rating questions) in the Critical Thinking Disposition Scale (Sosu, 2013). The subscale was translated into Chinese and used in a previous pilot study researching DST (Chan & Holosko, 2019). A higher CTD score indicated a stronger CTD.

Self-Esteem (SE) was measured by the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1979). The Chinese version of the Rosenberg Self-Esteem Scale has been widely used in local studies and has demonstrated good psychometric properties (Lau, 1989; Yeung, 1998). A higher SE score indicated a higher SE level.

Need for Closure (NFC), also referred to as the Need for Cognitive Closure, refers to an individual's aversion toward ambiguity, and desire for a firm and clear answer to a question (Webster & Kruglanski, 1994). It was measured by a shortened 15-item Need for Closure Scale (Roets & Van Hiel, 2011). The Chinese version of this scale demonstrated proper psychometric properties (Moneta & Yip, 2004). A higher NFC score indicated a stronger NFC.

Participants' views on identity were measured by six Likert-type rating questions inspired by related studies. First, participants' views on

the nature of ethnicity were measured by the statement: “*People from different ethnic groups can be clearly recognized by physical features*”, which was inspired by the theoretical discussions about the epistemological nature of the concept of ethnic identity (Zagefka, 2009). A higher score implied a stronger agreement on an essentialist view of ethnic identity. Second, participants’ ethnocentric tendency was measured by the statement: “*Most other cultures are backward compared to my culture*”, which was extracted from the Generalized Ethnocentrism Scale (Neuliep, 2002). Likewise, a higher score implied a higher level of ethnocentrism. Third, participants’ levels of agreement with various identities were measured by four question items adapted from the Ethnic Identity Survey which has been regularly conducted by a university since 1997 (HKUPOP, 2016). In this study, the measured identities are: Hongkonger, Chinese, Asian and Global-Citizen. Higher scores indicated higher levels of agreement.

The response sets of all the scales used in this study were adjusted to 10 points, in which 1 = *extremely disagree*, and 10 = *extremely agree*. They were adjusted in order to fit participants’ frames of reference, and therefore to enhance instrument reliability (Coelho & Esteves, 2007). Because the targeted participants were local students, they were familiar with percentile-based assessment frameworks (e.g., in Hong Kong, many school assignments use 100 marks to represent full marks). Therefore, it was assumed that a 10-point scale would be more consistent with students’ prior experiences, rather than other numeric scale-ranges. All scales measuring psychometric properties reported good to excellent test-retest reliability ($N = 44$): CTD, $r = 0.84$; NFC, $r = 0.90$; SE, $r = 0.92$; $p < .01$. Questions measuring participants’ views on identity also reported excellent test-retest reliability: $r > 0.90$; $p < .01$.

3.5. Study hypotheses

This DST model hypothesized that intervention participants will be more aware of their strengths, and aware of different options and voices. As such, three directional hypotheses were formulated: Hypothesis 1 – Self Esteem (SE) scores will increase from T1 to T2; Hypothesis 2 – Critical Thinking Disposition (CTD) scores will increase from T1 to T2; Hypothesis 3 – Need for Closure (NFC) scores will decrease from T1 to T2.

The study reported in this paper used a crafted heuristic production theme concerning Hongkongers’ ethnonational identity. Intervention group participants were assumed to be more aware of different cultural values, and were expected to have a less egocentric viewpoint after completing their digital stories. Two directional hypotheses were formulated: Hypothesis 4 – Scores from the item reflecting an ethnic essentialist view (“*People from different ethnic groups should be clearly recognized by physical features*”) will decrease from T1 to T2; Hypothesis 5 – Scores from the item reflecting an ethnocentric view (“*Most other cultures are backward compared to my culture*”) will decrease from T1 to T2.

This study assumed that there would be changes (regardless of direction) in intervention participants’ levels of agreement with various ethnocultural identities. These depended on what the subordinate storylines in individual participants’ pre-existing identity-related narratives were. A hypothesis was posed: Hypothesis 6 – Levels of agreement with at least one of the four ethnocultural identities (four independent questions) will change from T1 to T2.

3.6. Data analysis

To evaluate intervention outcomes, results from the intervention group and the control group were analyzed. Differences in participants’ demographic characteristics between the two groups were assessed by Chi-square tests. Differences in participants’ baseline measures between the two groups were assessed by two-sample t -tests. Within-group

pretest-posttest differences in each group were assessed by paired t -tests. Analyses were performed using MS Excel as well as the IBM Statistical Package for the Social Sciences.

4. Results

4.1. Socio-demographic characteristics and baseline measures

Originally, 121 participants enrolled in the program. Thirty-four dropped out after the program started (23 from the intervention group, and 11 from the control group). There was no significant difference between the group of participants who took part in the study and those who dropped out in terms of gender ($\chi^2 = 0.15$, $p = .70$), education level ($\chi^2 = 9.02$, $p = .11$), or subject area ($\chi^2 = 10.78$, $p = .06$). The mean age of the participant group was 20.05, and the mean age of the dropout group was 20.76. This mild difference was statistically significant ($t(119) = -2.07$, $p = .04$) but neglectable because they reasonably represent young people from the same year and the same age range. Overall, these socio-demographic profiles indicated that those who dropped out were comparable to those who remained in the study. This high attrition rate is often related to the ease of online enrollment: participants might have easily enrolled online without serious consideration, and might have later found that the project did not fit their interests after trying it for the first few days. A dropout rate between 40% and 80% has been noted in other online learning systems (Bawa, 2016). The online enrollment method used in this study considerably increased the efficiency of subject recruitment, but it also shared common limitations of other online learning systems.

Eventually 87 participants completed the study. All participants who completed the study were between 16 and 24 years old, 56 were female and 31 were male. All were enrolled in tertiary-level institutions. There was no significant difference between the intervention and control groups in terms of gender, education level, subject area, or age (see Table 1). There was also no significant baseline measure difference between the two groups (see Table 2). The homogeneity of both groups serves as a foundation justifying within-group and/or between-group comparisons at post-intervention.

4.2. Outcomes

We hypothesized that DST participants will be more aware of their strengths, alternative voices, and potential options (Hypotheses 1, 2, 3). In addition, participants were assumed to be more aware of different cultural elements embedded in their own identity, and were expected to have a less ethnocentric viewpoint (Hypotheses 4, 5). Further, because of such reflective processes, this study assumed that there would be changes in participants’ levels of agreement with some ethnocultural identities (Hypothesis 6). The outcomes were mostly in line with all these hypotheses (see Table 3). Most observed changes indicated small to medium effect sizes; in which $d = 0.2$ is considered small, $d = 0.5$ is considered medium, and $d \geq 0.8$ is considered large (Sullivan & Feinn, 2012).

Finding 1: The SE scores of the intervention group increased ($+0.50$, $p < .001$, $d = 0.73$), while the SE scores of the control group did not indicate significant change. The self-esteem score showed the largest effect size among all measures. This finding showed that participants in the DST project developed a more positive view of themselves over time.

Finding 2: The CTD scores of the intervention group increased ($+0.35$, $p = .02$, $d = 0.40$), while the CTD scores of the control group did not indicate significant change. This finding indicated that participants in the DST project became more aware of diverse information sources.

Finding 3: The NFC scores of the intervention group did not decrease as predicted, while the NFC score of the control group

Table 1
Differences in selected demographic characteristics between the intervention group ($n_1 = 36$) and control group ($n_2 = 51$).

Demographic variable		Intervention Group n (%)	Control Group n (%)	Results
Gender	Female	24 (66.7)	32 (62.7)	$\chi^2(1) = 0.14, p = .71$
	Male	12 (33.3)	19 (37.3)	
Education level	Bachelor's degree (government fund)	13 (36.1)	19 (37.3)	$\chi^2(5) = 2.22, p = .82$
	Bachelor's degree (self-finance)	4 (11.1)	4 (7.8)	
	Associate degree	15 (41.7)	21 (41.2)	
	Professional diploma	2 (5.6)	5 (9.8)	
	Secondary school	1 (2.8)	0 (0)	
	Not applicable	1 (2.8)	2 (3.9)	
Subject Area	Biology and medical science	3 (8.3)	5 (9.8)	$\chi^2(5) = 3.37, p = .64$
	Technology	4 (11.1)	1 (2.0)	
	Social sciences	11 (30.6)	18 (35.3)	
	Physical science	1 (2.8)	2 (3.9)	
	Arts and humanity	5 (13.9)	7 (13.7)	
	Not applicable	12 (33.3)	18 (35.3)	
	M (SD)	M (SD)		
Age	20.25 (1.46)	19.86 (1.79)	$t(85) = 1.07, p = .29$	

Note. $N = 87$.

significantly increased ($+0.34, p = .001, d = 0.47$). This finding indicated that participants who did not participate in the program became more closed-minded over time.

Finding 4: In the intervention group, the scores reflecting ethnic essentialism decreased ($-0.83, p = .05, d = -0.34$), while the control group did not indicate any significant change. This finding indicated that participants in the DST project became less reliant on physical appearance to judge the ethnicity of a person.

Finding 5: In the intervention group, the scores reflecting ethnocentrism significantly decreased ($-0.78, p = .03, d = -0.37$), while the score of the control group significantly increased ($+0.55, p = .02, d = 0.33$). This finding indicated that participants who did not participate in the program became more ethnocentric over time.

Finding 6: Participants in the intervention group changed their levels of agreement with three of the four ethnocultural identities, while the control group participants only slightly changed their level of agreement with one of these identities. In the intervention group, participants' levels of agreement with Chinese identity increased ($+0.61, p < .05, d = 0.41$), their levels of agreement with Asian identity decreased ($-0.64, p = .02, d = -0.43$), and their levels of agreement with being a global citizen identity also decreased ($-0.61, p = .05, d = -0.34$). In the control group, participants' level of agreement with Asian identity slightly decreased ($-0.41, p = .04, d = -0.30$).

5. Discussion

These results showed that most psychosocial outcomes were achieved as planned, lending further support to the potential efficacy of

DST, particularly of such a dialogic approach to DST. The discussion below aims to illustrate in what ways various dialogic structures were embedded in the practice, and in what ways they could have facilitated those outcomes.

5.1. Being self-confident and open-minded

It is worth noting that at the time of this study, Hong Kong was saturated with polarized political views which tended to drive citizens to take sides and close their minds to opponents' views. Participants in the control group became more closed-minded, but participants in the intervention group remained stable (see Finding 3) and also significantly increased their self-esteem (see Finding 1). These results implied that such a positive self-view resulting from the project might not be simply a kind of narcissistic illusion based on the negligence of alternative voices (Gabriel, Critelli, & Ee, 1994; Gregg & Sedikides, 2010; McGregor, Nail, Kocalar, & Haji, 2013).

As noted at the beginning of this article, CT includes both cognitive and dispositional aspects. However, not all types of civic engagement activities can serve to promote a balanced and constructive mindset, and CT can be truncated to refer to only a critical standpoint at a cognitive level. For example, some collective propaganda movements blindly reinforce in-group favouritism, which exploits our natural tendency to favor in-group members over out-group members (Hornsey, 2008), resulting in biases (or even hostility) toward ideas held by out-groups. Also, recent studies have revealed an "echo-chamber effect": this refers to a situation in which social media have enabled people to read and share their favored narratives regularly and intensively, hence reinforcing their respective confirmation biases and social identities,

Table 2
Differences of baseline measures between the intervention group ($n_1 = 36$) and control group ($n_2 = 51$).

Measure	Intervention M (SD)	Control M (SD)	Difference M	Independent t	p (2-tailed)
NFC	6.15 (1.06)	6.41 (1.35)	-0.26	-0.98	0.33
CTD	7.27 (1.13)	7.22 (1.05)	0.05	0.19	0.85
SE	5.81 (1.48)	5.49 (1.57)	0.31	0.94	0.35
Essentialist View	4.97 (2.34)	4.73 (2.35)	0.25	0.48	0.63
Ethnocentric View	4.17 (1.84)	3.75 (1.85)	0.42	1.05	0.30
Identifying with "Hongkonger"	9.11 (1.14)	9.27 (1.46)	-0.16	-0.56	0.58
Identifying with "Chinese"	5.36 (2.70)	5.94 (2.87)	-0.58	-0.95	0.34
Identifying with "Asian"	8.81 (1.65)	8.98 (1.42)	-0.17	-0.53	0.60
Identifying with "Global Citizen"	8.33 (2.07)	8.41 (2.07)	-0.08	-0.17	0.86

Note. NFC = Need for Closure, CTD = Critical Thinking Disposition, SE = Self-esteem.

Table 3
Differences of pretest-posttest results between the intervention group ($n_1 = 36$) and control group ($n_1 = 51$).

Measure	Group	Pre M (SD)	Post M (SD)	Difference M (SD)	Predictions	Results	paired <i>t</i>	<i>p</i> (2-tailed)	Effect size (Cohen's <i>d</i>)
NFC	Intervention	6.15 (1.06)	6.28 (1.16)	0.13 (1.08)	Decrease	No change	0.71	0.48	0.12
	Control	6.41 (1.35)	6.75 (1.32)	0.34 (0.73)	No change	Increased	3.37	0.001	0.47
CTD	Intervention	7.27 (1.13)	7.62 (1.01)	0.35 (0.87)	Increase	Increased	2.42	0.02	0.40
	Control	7.22 (1.05)	7.38 (1.10)	0.15 (1.01)	No change	No change	1.07	0.29	0.15
SE	Intervention	5.81 (1.48)	6.31 (1.39)	0.50 (0.69)	Increase	Increased	4.38	< 0.001	0.73
	Control	5.49 (1.57)	5.57 (1.61)	0.08 (0.90)	No change	No change	0.62	0.54	0.09
Essentialist View	Intervention	4.97 (2.34)	4.14 (2.17)	-0.83 (2.48)	Decrease	Decreased	-2.02	0.05	-0.34
	Control	4.73 (2.35)	5.00 (2.34)	0.28 (2.38)	No change	No change	0.83	0.41	0.12
Ethnocentric View	Intervention	4.17 (1.84)	3.39 (1.71)	-0.78 (2.10)	Decrease	Decreased	-2.22	0.03	-0.37
	Control	3.75 (1.85)	4.29 (2.09)	0.55 (1.67)	No change	No change	2.36	0.02	0.33
"Hongkonger"	Intervention	9.11 (1.17)	9.31 (1.17)	0.19 (1.24)	Change	No change	0.94	0.35	0.16
	Control	9.27 (1.46)	9.29 (1.17)	0.02 (1.45)	No change	No change	0.10	0.92	0.01
"Chinese"	Intervention	5.36 (2.70)	5.97 (2.52)	0.61 (1.48)	Change	Changed	2.48	0.02	0.41
	Control	5.94 (2.87)	6.22 (2.54)	0.28 (1.88)	No change	No change	1.04	0.30	0.15
"Asian"	Intervention	8.81 (1.65)	8.17 (1.91)	-0.64 (1.50)	Change	Changed	-2.56	0.02	-0.43
	Control	8.98 (1.42)	8.57 (1.57)	-0.41 (1.37)	No change	Decreased	-2.14	0.04	-0.23
"Global Citizen"	Intervention	8.33 (2.07)	7.72 (1.81)	-0.61 (1.81)	Change	Changed	-2.03	0.05	-0.34
	Control	8.41 (2.07)	8.29 (1.67)	-0.12 (1.63)	No change	No change	-0.52	0.61	-0.07

Note. NFC = Need for Closure, CTD = Critical Thinking Disposition, SE = Self-esteem.

and eventually shaping polarized views in society and making people more closed-minded (Quattrociochi, Scala, & Sunstein, 2016; US Senate, 2008).

A dialogic DST model may support civic engagement activities that develop constructive critical mindsets and help advance the quality of civil society. In this study, young participants demonstrated self-confidence as well as open-mindedness. These mindsets are important for enabling people to respect others' voices while being enthusiastic about spreading their own agendas.

5.2. Dialogue context, presumed audience, and open culture

This DST project implies that it is feasible to use digital communication media to set a dialogue context. In this study, this was an online community presenting a participatory-exploratory orientation. The project used access control, production examples and peer-facilitators to preset a closed social media group that maintained an environment demonstrating diverse values and identities (including photos from Chinese and non-Chinese Hongkongers). While ethnolinguistic identity in Hong Kong was a politicized and polarized issue at the time of the study, this project provided a nonjudgmental online social network that allowed for ambiguity. The online group maintained an atmosphere that emphasized openness and ambiguity. Participants therefore did not have a strong need to take a side, and most noted that they enjoyed the overall process.

Some program outcomes indirectly reflected such an orientation. For example, intervention group participants tended to consider diverse information sources (see Finding 2) and did not become more closed-minded (see Finding 3). These data implied that intervention group participants were more able to endure different views after producing and presenting their stories. Moreover, participants generally demonstrated a high commitment to the project. The self-esteem score showed the largest effect size among all measures (see Table 3), meaning that participants generally had a very positive self-appraisal upon completing the project. This also implied that participants should have positive experiences in the project. After the project, participants were asked whether they would like to let their posts remain accessible to the group after the trial, and/or whether they would like to leave the group after the trial. All 36 participants opted to let their posts remain accessible to the group, and 35 opted to stay on as group members.

These observations echo recent research which generally noted that presumed audiences can significantly shape internet users' online self-expression (Chan, 2006, 2010, 2018; Dahya, 2017; Kedzior & Allen,

2016). In storytelling, the very first thing storytellers do is to posit themselves in a communication context, asking questions such as who is talking to whom, from where to where. That is, if a communication context can never be neutral, DST practitioners may need to proactively set a context which is in line with specific educational goals.

5.3. Interpersonal dialogues supported by digital media

This DST project implies it is feasible to use digital communication media to support reflective dialogues. In this study, learning outcomes partly reflected the impacts of such an approach. For example, upon completing their production, participants tended to be more reflective, as they were more aware of their own strengths (see Finding 1), and more aware of different information sources (see Finding 2). It is worth noting that this study took place during a period when Hong Kong citizens' social context was saturated with polarized political views, which likely raised the NFC scores of participants. While the NFC score of the control group significantly increased with medium effect size (+0.34, $p = .001$, $d = 0.47$), the NFC score of the intervention group did not change significantly (see Finding 3). This finding possibly revealed that in a social context saturated with polarized political views, general youth in Hong Kong became more closed-minded than the DST participants did.

In this DST project, most conversations were on social media: they were visualized and retrievable, which enabled participants to continually revisit their contributions and construct meaning. These processes provided opportunities for participants to reassess and revise their previous views. As noted earlier, a core conversational technique applied in this DST approach was re-authoring conversation, in which the zigzagging between the two levels of landscape (LOA and LOI) can reroot/disrupt taken-for-granted storylines. In this study, retrievable dialogues and captioned photos helped facilitators (and protagonists) reconceptualize these landscapes, and facilitated reflective dialogues.

In addition, these social media conversations were asynchronous. This allowed facilitators to make use of time gaps to pose more reflective questions, and provided more factual information to participants. There were occasions when these conversations helped participants become more aware of instances when cultural fusion and ethnic mixing went beyond the ethnocultural symbols that were embedded in some of their postings. For example: (i) a photo showed that Doraemon is a popular figure among children in Hong Kong; the discussion helped raise awareness that this figure is from Japan, and the story carries a very strong Japanese cultural background; (ii) a photo claimed that an

ice-cream van is part of Hong Kong local culture; the discussion led to the point that these vehicles actually originate from the UK; (iii) a picture showed the logo of *Taobao.com* (a PRC based online shopping website); the participant who posted this picture showed that while some Hongkongers hate the PRC, they are fond of using PRC services such as Taobao; (vi) a collage photo showed foods from different cultures that can be found in Hong Kong, claiming that Hong Kong is a place embracing different cultures. These asynchronous time gaps enabled the facilitators to subtly reveal the history of hybridity behind the city, and challenge prevailing notions of pure identity no matter if that identity is purely PRC Chinese or purely native Hongkonger.

These observations echo recent research suggesting that communications on social media can be purposively used to facilitate specific effects, such as creating a sense of continual engagement (Chan & Holosko, 2017); inducing social disinhibition, which makes it easier for users to open up (Chan & Ngai, 2019); allowing users to buy time to collect supplementary information or think about how to respond (Chan & Holosko, 2019); and enabling users to be more active in producing different accounts of events and experiences (Chan & Holosko, 2019; Chan, Ngai, & Wong, 2012).

5.4. Intrapersonal dialogues and integration of ideas

In this study, a collage/fusion production style emerged, and most participants did not value just a singular all-encompassing ethnonational identity. Results from textual analysis are beyond the scope of this paper, but some example media texts may help illustrate such a style, identifying ways that the photos cover diverse ethnocultural elements such as toys, drinks, clothes, and foods from different cultures (see Fig. 1). Scores related to ethnic essentialist view and ethnocentric view decreased over time (see Findings 4 and 5), which were somehow in line with such a blended fusion style.

These findings showed that DST participants' level of agreement with Chinese identity increased, and their levels of agreement with Asian identity and global citizen identity decreased (see Finding 6). Nonetheless, it would be speculation to say which identities were particularly enabled or played down by the DST project because the outcomes of such deconstruction processes depend very much on the subordinate storylines held by individual participants in the outset. While some Hongkongers think that Chinese identity is a hegemonic voice, some may think that it is a suppressed identity. Likewise, some Hongkongers may identify more with a global citizen identity than a local Hong Kong Chinese identity, while some may identify with the opposite. If these changes did imply some meaningful directional changes, they were not purposively designed by the program. It is likely that these results simply reflected that most participants might have underestimated various Chinese-related cultures embedded in their daily lives, and overestimated the weightings of the global citizen and Asian dimensions in their lived experiences.

Overall, these changes in levels of agreement with various ethnocultural identities may suggest that the DST practice triggered participants to reevaluate their personal identification with various cultures. Their views on identities therefore changed across time points. One simple reason to explain this was that digital content was editable and combinable, which enabled participants to continually revisit and revise their texts and ideas. Moreover, different communicative occasions (i.e., questionnaires, captions, photos, verbal narration) might trigger participants to adapt their views differently. For example, photos needed to show something that can be recorded and visualized. Abstract and complex ideological concepts therefore did not have an obvious role to play.

These observations echo research studies concerning the multimodality of new media texts. For example, Burn and Parker (2003) have suggested that in the context of media production, storytellers

have considered different modalities such as text, image, music and speech, all of which have different potentialities and carry different social meanings. Supported by user-friendly media editing tools, ideas can be blended through the editing process (Burn & Parker, 2003, p. 23).

5.5. Limitations of this study

Findings from this study are not without limitations, which inhibit generalizability. First, in this study, the sample size was small and the attrition rate was high, which affected the power of statistical inference. Second, this is only one specific mode of DST in a particular socio-cultural context. Third, additional hypotheses and assessments are required to examine to what extent learning outcomes can or cannot be sustained. Fourth, this study only addressed a production theme related to identity. Additional practice and research is therefore needed to see in what ways DST can be effectively applied to other civic education topics. Finally, macro-level impacts (e.g., how audiences are impacted by media texts) were not revealed or addressed.

5.6. Concluding remarks

As noted at the beginning of this article, there is scant research reporting the empirical outcomes of DST. This study offers some initial empirical evidence showing the feasibility and potential efficacy of DST. It particularly lends support to a dialogic DST approach which adopts narrative practice techniques and utilizes digital media to facilitate reflective dialogues. As discussed, DST can i) provide a dialogue context entailing a presumed audience; ii) support specific modes of interpersonal dialogues; and iii) facilitate intrapersonal dialogues, and hence reflections. Such an approach has extended the scope of narrative practice, and has further developed what is currently missing in the DST literature.

In addition, this study offers some initial evidence showing that DST might be used as an educational tool for developing a critical thinking disposition in civic engagement. This implies the possibility of using so-called soft means to teach rather hard or difficult topics. The production theme used in this study is not a minor issue in Hong Kong or the international context. It is current, topical, political, and emotional. The project worked against a social background saturated daily with political views which might have continually escalated citizens' closed-minded commitments toward contrasting directions. Nonetheless, the study successfully induced a nonjudgmental attitude, and prevented participants from closing their minds in such a context. Although this project is only a specific and simplified version of DST practice in a particular sociocultural context, it offers some theoretical and methodological clarity. Hopefully, it can facilitate further development and research.

Overall, the idea of using DST as a youth civic engagement approach is not new. However, it is still in its infancy, partly because of the lack of experimental research in this area. As such, this study is one minor step in filling this research gap. More rigorous research methods are needed to advance further and examine different DST designs. Also, there may be a need for more interdisciplinary collaboration, requiring partnerships with teachers, storytelling practitioners, social scientists, and data analytics experts. We believe that such cross-sectoral partnerships may create changes that extend beyond each of these disciplines, leading to a more purposeful use of DST in youth services.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.childyouth.2019.104522>.

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