Digital Storytelling through Authoring Simulations with Teacher Moments

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Abstract: In this paper we explore how to support teacher educators to author their own digital clinical simulations to prepare K-12 pre-service computer science teachers. Teacher educators have the potential to create simulations about relevant content for their teacher preparation programs and contextualize those simulations for their students. To benefit from this unique perspective, we support teacher educators in authoring simulations. We consider the relationship between authoring simulations and digital storytelling to inform our authoring tools and supports. In this study, we report results on what kinds of supports are needed for authoring simulations based on a co-design workshop with 12 teacher educators from nine U.S. states across all regions of the country. We examine how these authors set context, select content, and engage in the simulation authoring process to gain insight into supporting teacher educators as digital storytellers.

Introduction

In this study, we describe digital clinical simulation (DCS) as a scripted simulation where the participant in the simulation interacts with scripted conversational prompts that are approximations of interactions a teacher might have. When it comes to authoring DCSs, teacher educators have the potential for curricular expertise which is defined as the ability to select and convey content appropriate to the learner within a particular context (Ennis, 1994).

We describe a digital platform called Teacher Moments that uses authoring tools to facilitate digital storytelling. We examine how the platform can support teacher educators in building simulations for training pre-service teachers. Teacher Moments is a mobile app that immerses novice teachers in multimedia vignettes of challenging classroom decisions. Participants provide improvisational audio responses to scenarios involving students, parents or other school personnel (Thompson et al., 2019). Responses are recorded for reflection, discussion, and expert feedback, and data can be analyzed by researchers for program evaluation purposes.

While teacher educators may be well prepared to author DCSs based on their ability to contextualize learning material, we hypothesized that they would require support to author simulations in a digital platform. The need for support is apparent when we recognize that authoring simulations for training is a form of digital storytelling (Dörner, Grimm, & Abawi, 2002). Creating tools to author digital stories requires design expertise about how to author a digital story (Dörner et al., 2002). While teacher educators are thought to have curricular expertise, they may not have expertise in authoring digital stories.

Digital storytelling is comprised of multiple components, such as purpose, story, plot, and narrative (Sharda, 2007; Smeda, Dakich, & Sharda, 2010). In this study, we focus on supporting teacher educators in setting the *purpose* of their digital stories. *Purpose* is defined as the "goals, aim and objective of the story" (Smeda et al., 2010). We support teacher educators in selecting the purpose by identifying a problem of practice—defined as a challenging interaction a pre-service teacher will encounter when they become a K-12 classroom teacher. To illustrate the strategy for teacher educators to author simulations for teacher education, we first define the gap that Teacher Moments fills in the use of simulations for teacher education and illustrate why the platform is a good candidate for authoring tools. Second, we illustrate a typical simulation in Teacher Moments and draw explicit connection between the simulation and components of digital storytelling. We then outline the development of authoring tools and prototypes of supports for teacher educators to author simulations. The aim of this work is to empower teacher educators as digital storytellers to generate simulations that are relevant to pre-service teachers along dimensions of problems of practice (or purpose) and context. This work raises the following three research questions:

(RQ1): What kinds of contexts do teacher educators describe when authoring digital clinical simulations?

(RQ2): What problems of practice do teacher educators consider when authoring digital clinical simulations?

(RQ3): How do teacher educators describe the experience of authoring digital clinical simulations?

From Analog Simulations to Digital Clinical Simulations

There is a long tradition of using simulations in teacher education. We start by considering analog simulations where the simulation occurs in face-to-face settings. For example, role-playing is considered an effective practice in teacher education (Kilgour, Reynaud, Northcote, & Shields, 2015). While this approach provides opportunities for practicing conversations, there are a few limitations. One of the limitations is that reflection on the content of the conversation is considered both critical and difficult to achieve due to the logistics of recording such conversations (Richards, 1985). Another limitation in the literature on role-play is that depending on the partner you are assigned, the quality of the activity may be variable (Nestel & Tierney, 2007).

One strategy to address the variable quality of the teacher-teacher interaction is to setup role-play where one person is a student and the second is a paid actor. This approach is frequently used with medical students to practice patient interactions (Dotger, 2013). In medical education, this approach is referred to as clinical simulations, which have been used when training the actor is considered critical to delivering authentic interactions (Dotger, 2013). While many medical simulations have medical students interact with actors, some medical simulations are set where students interact with mannequins. The use of actors verses mannequins raises questions of authenticity (i.e. how close is the simulated experience is to real world experiences) and fidelity (e.g. to what extent am I interacting with a lifelike partner in the simulation) (Hamstra, Brydges, Hatala, Zendejas, & Cook, 2014). The use of actors represents a focus on the fidelity of the simulated experience (Hamstra et al., 2014). However, when using mannequins for the simulation, and the simulation is about an authentic problem, students have a capacity for willful suspension of disbelief which can bring realism even when fidelity is low (Hamstra et al., 2014). While clinical simulations address the variable quality of role-play, students must be physically co-located within simulation rooms and have access to the resources necessary to either train actors or purchase simulation equipment, which can be prohibitive.

Mursion, a virtual reality career training platform controlled by live actors, addresses the barrier of access to a physical simulation room by having paid actors interact with teachers in a virtual space (Hudson, Voytecki, & Zhang, 2018; Peterson-Ahmad, Pemberton, & Hovey, 2018). In Mursion, a paid actor manipulates avatars in the simulation as a controller (Hudson et al., 2018) while users have opportunities to practice interactions through a virtual environment. Mursion occurs in a virtual space (Hudson et al., 2018; Peterson-Ahmad et al., 2018) and uses controllers prepared to manipulate the actions of the students (Hudson et al., 2018), so we classify this as a virtual clinical simulation. While virtual clinical simulations – simulations between students and actors facilitated in virtual space – have a clear strategy to address the barrier of physical access, the remaining key challenge is creating virtual environments and preparing controllers to address a wide range of challenges that teachers face in a variety of different contexts. This approach towards contextualization may be cost prohibitive to many communities.

Teacher Moments addresses the barrier of access to a physical simulation room by having students interact with computer-generated dialog. Rather than interacting with an actor, the student interacts with unintelligent agents that script what students, parents or other school personnel might say during the simulation. The agents are considered unintelligent as they do not dynamically respond to what the student-user says. The Teacher Moments simulations may be less authentic than interacting with an actor, but early evidence suggests it is authentic enough for students to find it useful for learning (Thompson et al., 2019). When simulations are authentic to the student, then they will be more likely to bring realism to the experience (Hamstra et al., 2014). We illustrate the spectrum of analog to digital simulations in Figure 1, proposing the gap of DCS we aim to fill with Teacher Moments.

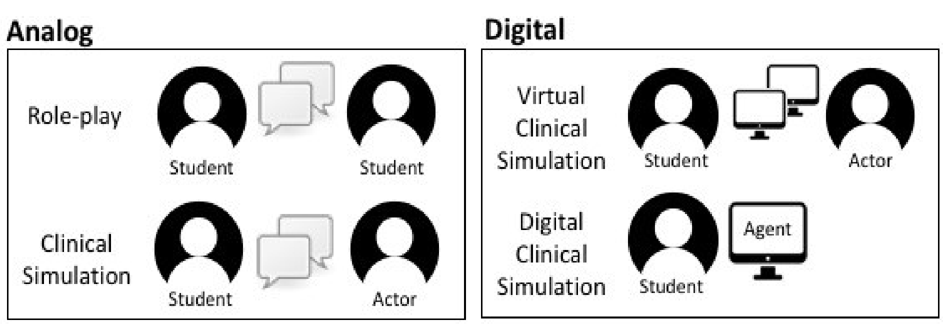

Figure 1 Simulations from analog to digital

A Digital Storytelling Perspective on Teacher Moments Simulations

When connecting a Teacher Moments simulation to digital storytelling we consider that digital stories are comprised of events, story, plot, and narrative which are related but unique (Sharda, 2007; Smeda et al., 2010). An event is an incident that takes place in the story while a story is a sequence of events. The plot is the way in which events are linked to create emotional engagement, and the narrative is the actual order of events (Sharda, 2007; Smeda et al., 2010).

In a Teacher Moments simulation, the user goes through a sequence of slides that are organized by four categories: *context*, *anticipate*, *enact*, *reflect*. *Context* slides typically provide text to describe the context for the simulation such as the school background (e.g., you teach at a high school). *Context* slides may make the purpose of the simulation explicit (e.g., you are managing a conflict between students during a group work assignment). After reading the *context* slides, participants interact with *anticipate* slides that ask the participant questions that prime them to think about what might happen during the simulation (e.g., what do you think a teacher's role is in student's academic success?). After setting context and asking anticipatory questions the participant enters the *enact* slides. The *enact* slides are usually a series of conversational turns where the participant is provided with dialog and asked to respond (e.g., "StudentA: I hate group work, can I just do this by myself?"). The sequence of *enact* slides can represent either conversational turns with one digital conversation partner (e.g., a student) or can be authored as a series of vignettes where the participant interacts with a variety of conversation partners (e.g., talking to multiple students working on a group project). After going through the *enact* phase, participants interact with *reflect* slides where they are asked to reflect on their experience in the simulation. At times, *reflect* slides retrieve and display responses the participant provided during the simulation and are used to ask questions about their behavior. For the purposes of this study, we mainly focus on participants' use of authoring tools for the context slides.

We can consider each slide in the *enact* phase of a Teacher Moments simulation to be an event. The sequence of *enact* slides would constitute the plot. As Teacher Moments simulations follow a simple linear format, this is described in terms of digital storytelling as a very low level of complexity for the narrative (Smeda et al., 2010). While the simulations in Teacher Moments are very simple in terms of narrative, we anticipate that the straightforward nature of these simulations predispose them to distributed authorship by teacher educators. We rely on the perspective that with simulations, the relevance of the content of the simulation produces engaged students who make the simulation closer to a real experience (Hamstra et al., 2014). To achieve simulations that are relevant to students, in this study we rely on teacher educators to author contextualized scenarios about relevant problems for pre-service teachers.

Creating Authoring Tools and Supports for Teacher Educators

A framework for creating authoring tools for digital storytelling (Dörner et al., 2002) suggests that three groups must work together to create a digital storytelling authoring system: (1) the technology group who understands how technology can support authoring digital stories, (2) the design group who are experts in authoring digital stories, and (3) the application authors, defined as the users of the authoring system. In this study, we considered staff and researchers at our lab to be the design group as they were the most familiar with authoring simulations using the Teacher Moments system. The application authors in this study are the 12 teacher educators recruited to author digital stories (see *Participants*), and the technology group in this study is a group of developers with expertise in multi-media web application development. The design group provided functional requirements to the technology group and the design group created low fidelity prototypes of supports for the application authors (see *Materials*). With added features and functions to create a simulation in Teacher Moments.

In the editor (see Figure 2), the simulation is authored through a series of slides. First, the author adds slides to the simulation. Second, the author adds slide content. We use the title of the slide to distinguish the phases of *context*, *anticipate*, *enact,* and *reflec*t. The author can edit a slide by adding components, with each component falling into one of three categories: *content*, *prompts*, and *embed previous response*. The *content* component is a "Rich Text" editor that supports images, video, and text. *Prompts* are intended to allow the author to elicit a response from the user. Teacher Moments supports "Text Input Prompt", "Audio Response Prompt", and "Multiple Button Prompt" (with single select functionality). The "*Embed Previous Response*" component displays a previous response from the simulation (i.e., text, audio, or multiple button responses) designed to support users reflecting on how they previously responded. Once a simulate is authored, Teacher Moments provides authors with functionality to preview the simulation and publish the simulation, making it available for others to use.

Figure 2 Authoring Tools for Teacher moments

The first point we focus on in supports is the purpose for authoring the story, one of the components of digital storytelling (Smeda et al., 2010). We frame the purpose for teacher educators by asking them to identify a problem of practice. We define problem of practice as a challenging interaction a pre-service teacher will encounter when they become a classroom teacher. After selecting a purpose for authoring a simulation the next step is to provide supports for authoring.

To support authoring in a simulation, we provide four potential approaches to setting simulation context. The template supported setting the context by providing examples of 1) school background, 2) providing the time/day/location, 3) using scripted dialogue, and 4) using teacher observations about the school. In Table 1, we provide examples of each of the four context support types. Our expectation was that teacher educators would use these supports to describe contexts relevant to the K-12 schools where their pre-service teachers will be placed.

Table 1. Support for Context slides

Support	Examples
1.1 School Background	You teach CS in a community college. Your student body is comprised of mostly Latino/Hispanic students.
1.2 Time, Day, Location	Your weekly schedule is 7:00 a.m. - 3:00 p.m. In your course at 8:00 am, you will teach computer science to high school students in the 9th grade
1.3 Dialogue	William: Do you mind if I work by myself? Maybe Carol and Maria can work together? You: William, you have been working for years in industry, we want to learn from you! Please share some of your wisdom. Also, Maria and Carol have great ideas to share too!
1.4 Observation	You recently taught recursion in class. Students are confused about how recursion works and they don't know how to program, and it is now time to program in teams to share knowledge. Students start to pair up in traditional ways, i.e., usually with their friends.

In addition to authoring support for establishing a problem of practice, we provided support across authoring the three phases of anticipate, enact, and reflect so that authors could expand the problem they select into a DCS. We suggested anticipating: 1) their role as a teacher, 2) the needs of the student, 3) how to achieve their goals, and 4) what might generally happen. We suggested enacting: 1) response to dialogue and 2) response to student work. We also suggested reflecting on: 1) an equity dimension, 2) whole or part of the conversation, 3) bringing something from the individual experience to a group conversation, 4) the role of the teacher, and/or 5) the experience of the student.

Participants

We recruited fellows to participate in this study by publicly advertising a fellowship to teacher educators who prepare pre-service K-12 computer science teachers. There were 151 applicants for the fellowship, of which 15 were selected for phone screens and 12 were awarded the fellowship. Selection was based on geographic diversity, previous experience with issues of equity, educational technology, and artificial intelligence in the classroom. The fellows indicated that they would work with, on average, 20 pre-service teachers each over the course of the study. The selected fellows represent geographic diversity as they are from nine different U.S. states across all regions of the U.S. (two from the Northeast, five from the Southeast, two from the Midwest, one from the Southwest and one from the West Coast).

Procedure

We conducted a two-day, in-person workshop with the 12 fellows. On the first day we had the fellows use existing simulations, provided them with details about designs for simulations, and presented three case studies of how Teacher Moments simulations had been implemented previously in teacher education contexts. We outlined how dimensions of equity relate to simulation design, and then had fellows co-construct problems of practice that K-12 computer science teachers would face when entering the classroom. Fellows each selected a problem of practice to author a DCS on, using supports provided in a low-fidelity prototype of the Teacher Moments platform. Finally, the fellows answered four questions as exit tickets about their experience on the first day of the workshop. On the second day of the workshop, the fellows tested a simulation created by a peer and provided feedback before exploring potential future directions for the Teacher Moments system. Finally, the fellows self-reported where they were on a learning curve comprised of the dimensions of competence (i.e., how comfortable they felt with the authoring tool) and awareness (i.e., how aware they were of their own knowledge/lack of knowledge). We then ran a focus group discussion describing the four quadrants of this learning curve.

Co-Constructed Problems of Practice List

We asked teacher educators to co-construct a list of problems of practice on a shared document to help inform their and the other fellows' storytelling.

Low Fidelity Prototypes of Supports

To support authoring DCSs for teacher education, we created a low fidelity prototype of authoring supports around four phases of the simulation: context, anticipate, enact, and reflect. We suggested they create 2-3 *context* slides, 2-3 *anticipate* slides, 8-12 *enact* slides, and 4-6 *reflect* slides. Each of the slide types had their own template with instructions to add text on the left using supports on the right (see Figure 3).

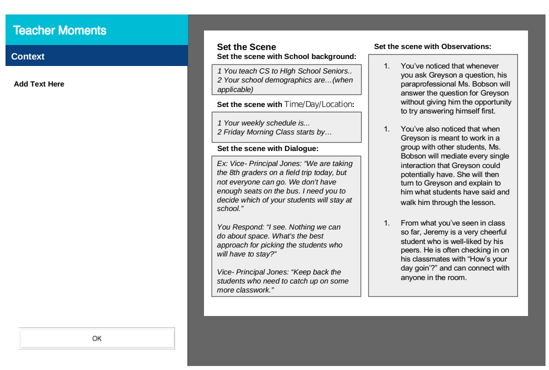

Figure 3 Low fidelity prototype of supports

Co-design Workshop Exit Survey Questions

The first day of the co-design workshop focused on authoring DCSs. We administered the following four questions at the end of the day to collect data about the experience teacher educators had while authoring simulations.

1. I used to think _____ now I think _____?
2. What worked well?
3. What was most helpful?
4. What changes would you recommend for future workshops?

Learning Curve Activity

At the end of the second day of the co-design workshop, we asked fellows to reflect on any activity from the workshop and self-identify how they felt during the activity in terms of the learning curve. After writing their name on the quadrant that described their experience, we ran a focus group discussion describing the experience for each quadrant.

Analysis

To answer RQ1, we conducted thematic analysis on the context slides authored by fellows to describe dimensions used to set the context of simulations. We then mapped the context themes to the supports. To answer RQ2, we conducted thematic analysis on the co-constructed list of problems of practices. To answer RQ3, we conducted thematic analysis on the exit survey questions and reported the number of fellows in each of the four quadrants of the learning curve activity.

(RQ1): What kinds of contexts do teacher educators describe when authoring digital clinical simulations?

We conducted a thematic analysis on the context slides and four themes emerged (see Table 2): *institutional setting* (10 of 12 fellows); *engagement* (8 of 12 fellows); *demographics* (6 of 12 fellows); and *background knowledge* (5 of 12 fellows).

Table 2. Context slides theme descriptions

Theme	Description	Examples
Institutional setting	Institution type in an urban/rural setting	"A total of 13 students studying computer science fundamentals in CS at a Community College"; "You are a teacher of CS for high school seniors";
Engagement	Students/teacher engagement	"The students have been attentive so far, and many seem even very excited …"; "Veteran Teacher 1: Good luck. We hope you stay, but don't blame you if you leave for a better school.";
Demographics	Race, SES, IEP, ELL	"Your students are 70% white, 20% black, and 10% Hispanic."; "94 % African American, 5.5% Latinx and 0.5% Multi-Racial."
Background Knowledge	Presence/Absence of skills for Students/Teacher	"However, many of your students have no experience with computer science."; "students know more than the teacher …"

When mapping the themes from the context slides to the supports, Table 3 illustrates evidence of a high level of support utilization. The *institution* theme was set in context slides using approaches described in the *Time, Day, Location* support. The *demographics* theme was set in context slides using approaches described in the *school background* support. The *background knowledge* and *engagement* themes were set in context slides using approaches described in the *dialogue* or *observation* supports. Overall, there was evidence of support utilization as indicated by Table 3. The thematic analysis on the context slides surfaced that this engagement was set using the dialog and observation supports. The remaining context themes had a one-to-one mapping onto the supports provided. These results indicate that teacher educators using the provided supports generated very specific contexts for DCSs.

Table 3. Context slides theme descriptions

	1.1 School Background	1.2 Time, Day, Location	1.3 Dialogue	1.4 Observation
Institutional setting	-	10	-	-
Demographics	8	-	-	-
Background Knowledge	-	-	-	5
Engagement	-	-	2	6

(RQ2): What problems of practice do teacher educators consider when authoring digital clinical simulations?

The 12 fellows created a list of 61 problems of practice during a 30-minute exercise (see Table 4). We identified six themes in the list of problems of practice co-constructed by the fellows: *Student engagement* (11 of 61); *group work* (11 of 61); *appropriate challenge* (9 of 61); *accessibility* (7 of 61); *emotion regulation* (5 of 61); and *conceptual understanding* (5 of 61). See Table 4 for descriptions and examples of each theme. In addition to the six themes, there were a series of problems of practice that were mentioned by three or fewer fellows in the list, including: technical resources, ethical issues, assessment, cheating, workforce readiness, and class discussions. Overall, the teacher educators were able to quickly identify many problems of practice, demonstrating their familiarity with the problems of practice confronting K-12 computer science teachers. After generating the list, we asked teacher educators to pick one problem of practice as the purpose of the simulation they would author.

Table 4. Problems of Practice Themes Generated During Fellow Workshop

Theme	Description	Examples
Student engagement	Students doing minimal to no work on assignments	1. Student have gone off task doing other activities 2. Students doing just the very basic assignment
Group work	Preference to work alone or preference for different task types	1. Students are pair programming and one student in the pair says they work better independently 2. When you have assigned a group project and a student is adamant about working alone
Appropriate challenge	Assignment is to easy or to hard	1. Students seem to be lost after instruction is provided 2. Student completes the assignment quickly before others
Access	Pulling students out of computer science class due to IEP or ELL status	1. Pulling out students with IEPs for specialist time from CS classes when the school has a CSforAll vision 2. Conversation with principal about ELL or IEP students being scheduled to be pulled out during CS class
Emotion regulation	Frustration, Sadness, melting down	1. Getting stuck and melting down 2. Student is crying at her desk
Conceptual understanding	Connecting concepts/applications with computer science	1. Elementary students don't see the relationship between unplugged CS activities and computer science 2. Students fail to see the purpose of the content, not grasping the applicability of CS and/or programming

(RQ3): How do teacher educators describe the experience of authoring digital clinical simulations?

We first conducted thematic analysis on exit survey items administered at the end of the workshop's first day, during which fellows had begun authoring DGSs. The twelve responses to each of the four questions generated one data set of 48 responses which resulted in four themes: *peer feedback* (11 of 48 responses), *authoring* (11 of 48 responses), *activity variation* (8 of 48 responses), and *supports* (8 of 48 responses). See Table 5 for descriptions and examples of each theme. As the focus of this study was on supporting teacher educators to author simulations, we were interested in whether exit ticket responses commented on the usefulness of the supports that we provided. When looking at the comments which highlighted authoring supports, they indicated that they were well supported in their learning of how to author DGSs. The main criticism about supports was a need for more support authoring the scenario.

Table 5. Exit Survey Themes

Theme	Examples
Peer Feedback	"Discussion with other participants"; "Hearing questions people had on other scenarios was really interesting. It made me realize how unique the different perspectives were and how we all brought our own passions (and pain-points) to the activity.";
Authoring	"I used to think that creating a practice space would be more complicated, now I realize they can be generated in shorter period of time and refined over time."; "I also appreciate that it is largely generative/hands-on, not simply listening."
Activity Variation	"Having people write case studies and then present them to others is a really nice design"; "Writing a case and getting feedback on it."; "Working the thinking by ourselves and then Group discussions then sharing out worked very well."
Supports	"I learned a lot today, specially how to contextualize scenarios to different backgrounds. I just needed more guidance on how to create the scenario part."; "The scaffolded slides for creating the practice space were super helpful!";

We next considered how teacher educators classified their learning experiences from the learning curve activity (see Table 6). 8 out of 12 fellows self-identified as aware-incompetent, 3 out of 12 fellows self-identified as aware-competent, and 1 out of 12 fellows self-identified as unaware-competent. We then conducted a focus group discussion to describe those experiences. The majority of fellows (8 out of 12) described aware-incompetent experiences when they reflected on the workshop.

Table 6. Learning Curve Themes

Quadrant	Description
Unaware-Incompetent	[N/A]
Aware-Incompetent	1. Not having experience about particular situations and at times overthinking what to do. 2. They had experience with a lot of contexts, but a lack of experience with different possible actions and potential responses within those contexts. 3. "Confused." "Struggled." "Aggravated." "Wrestle with it." 4. Looking up best practices to formulate questions about what to do. 5. When action was taken there was a degree of uncertainty about those actions. 6. It will take time to unpack their learning and peer feedback may be a part of that process.
Aware-Competent	1. Confident with what they know but also drawn towards staying with what they know. 2. Aware of future goals, but not yet an expert on how to achieve those goals. 3. An ever-growing awareness of what they don't know which provided clarity for the task at hand as well as an appreciation for the complexity of the work
Unaware-Competent	1. Connecting the current efforts to prior similar experiences which felt familiar making assumptions and automated behavior possible

By considering the descriptions they provided of those experiences, it paints a picture that the fellows have context knowledge but lack familiarity with specifics about what happens within those contexts. Specifically, they mention not knowing what kinds of conversational responses from students or colleagues might occur within the context. This lack of familiarity appears to cause confusion and struggle as they formulate their DGS' story. When seeking support, they consider best practices and peer feedback. During the focus group discussion, they specifically mentioned a lack of experience with different possible actions and responses which would only occur when authoring the enact phase. Taking these two points together provides evidence that teacher educators may need more support when authoring the enact phase of their scenarios.

Discussion and Future Work

The results reported from this study are encouraging because teacher educators – whose experience and knowledge make them well-suited to contribute to the development of DCSs – appear to have an interest in authoring DCSs themselves. We confirmed our expectation that teacher educators have a unique perspective on context and problems of practice when authoring DCSs. We see some commonalities between themes from context and themes from problems of practice (e.g., engagement is represented in both context and problems of practice; the problem of practice about appropriate challenge has a relationship with the context theme of background knowledge; the context theme of demographics has a relationship with the problems of practice theme of access). As three of the four context themes have potential relationships with a problems of practice theme, future work should more closely examine the potentially contextual nature for problems of practice. While we found evidence that teacher educators are comfortable setting context and selecting problems of practice for simulations, future work should also examine the extent to which the pre-service teachers they serve perceive these simulations as relevant to their learning.

While the authoring supports were highly utilized, the results indicate room for improvement. Revisions for supports might include restructuring them to make more explicit connections to describing background knowledge of the user's character within the scenario and their engagement. The supports prototyped in this study appeared to be useful, but it was indicated in the exit survey and focus group comments that they fell short in terms of modeling the conversations in the simulation during the enact phase. Teacher educators self-described as not prepared to predict what will happen in the contexts. As this study supported digital storytelling through supports for purpose, the challenge that teacher educators experienced in authoring the enact phase suggests further supports should be developed for additional digital storytelling aspects such as plot, narrative, story characters, and dramatic questions. In addition to the supports we provided, what arose from this analysis is that peer feedback is a critical aspect to this work. Future supports should consider how to incorporate peer feedback explicitly into the authoring system to support aspects of digital storytelling.

When considering how to scale the method of teacher educators as authors of simulations for Teacher Moments there are two questions that should be explored in future work. First, the teacher educators in this study are 12 fellows selected from an applicant pool of 151, placing them in the top 8% of applicants. Future work should consider the extent to which this approach can be applied to more contexts without the selection bias inherent in this recruitment process. Second, one of the underexplored facets of this implementation is specifics in how scenarios are contextualized with respect to issues of equity in the classroom. It would be worth examining how scenarios authored by teacher educators relate to topics such as culturally responsive teaching and digital decolonization to explore if there is a potential for further support development around equity related topics.

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