Teachers' appropriation of game-based pedagogy: A comparative narrative analysis

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Abstract: This article examines the process of change through the narratives that two teachers tell to describe their journey over time while participating in the Statecraft X game-based learning program. Data from post dialogic session interviews is used to elicit the challenges and areas of improvement that teachers identify. The two teachers, whose case-study is being used in this paper, had contrasting experiences to share with respect to their professional goals and motivations. One of the teachers did not experience many perturbations, while the journey for the other teacher was loaded with personal and professional struggles. Insights from teachers' narratives indicate some patterns of change that made appropriation successful for one and much less so for the other. These include (a) moving from not adhering to lesson plan to real time 'thinking on the feet' (b) shifting from teacher centric to student centric classrooms, and (c) 'letting go of control' to facilitate more active student learning. These changes have implications for teacher professional development with respect to game-based learning and teachers' readiness for 21st century classrooms.

Introduction

Digital games have been used in classrooms over the past few decades with mixed reviews about its success. One of the challenges in advancing game-based learning is the preparation of teachers for handling innovative pedagogy [1]. The introduction of innovative pedagogies in schools often requires educators and students to make substantial shifts in their teaching and learning process. This is not easy and requires constant reflection and support. In this paper we focus on experiences of two teachers through their narratives as they enact the Statecraft X (SCX) game-based learning program.

1.   Need for meaningful professional development

Digital games provide a powerful platform for 'authentic learning' where learners get an opportunity to experience complex situations first-hand as opposed to merely using these games for instructional and review purposes. However adopting and integrating serious games in the regular teaching and learning process has had a history of challenges, and the teacher's role in facilitating this uptake has been surfaced as an important requirement. A definitive shift in mindset is required for teachers to take-up game-based learning in the classrooms. However, this does not always come readily. Often support is needed in understanding how to ensure effectiveness of games use in class [2].

For game-based learning, effective professional development needs to be provided in terms of training, hands-on experience with game, and opportunities need to be built in for

reflection and reconstruction of knowledge as well as for follow-up support. This is where professional development often lags and new pedagogy is misinterpreted. To overcome these barriers and to provide meaningful professional development support to teachers in the SCX game-based learning program, we planned a phase-based professional development program. We began by conducting a four-day workshop, where teachers were acquainted with the theoretical underpinnings of the game-based curriculum and experienced playing the game. During the enactment of the SCX curriculum, we supported their development through reflective, reflexive, guided appropriation model (RRGA) proposed by Chee [3]. In the model, reflection refers to the process of looking back and thinking upon one's actions, and reflexivity is the capacity to make one's own actions the target of critical interrogation with a view to improving existing practice. RRGA stresses the process of reflection that teachers need to do on their teaching practice along with being reflexive. This process aids in scaffolding and appropriation of an enhanced practice.

2. Research background and purpose

The current SCX project emanated from an earlier project that focused on development of the SCX game, its curriculum, and classroom interventions. The preceding project led to theorization of game-based learning in terms of three constructs - play, performance, and dialog [1] and demonstrated efficacy with respect to student learning. One of the felt needs of the previous project was to better prepare the teachers to enact the game-based curriculum in a manner consistent with the learning design. In light of this, the current project aimed to level up teachers' capacity to enact game-based learning in their classrooms. In order for teachers to be ready for 21st century classrooms, they need to make significant shifts in their practice. As a consequence, there have been numerous demands for preparation of teachers. Our approach to teacher professional development was guided by the following research questions: (a) What are the specific challenges that teachers face in implementing a game-based learning curriculum, and how might these challenges be addressed? (b) What are the trajectories and profiles of teachers' appropriation and ownership of game-based learning pedagogy in the classroom?

3. Research setting and method

3.1 Participants

For the purpose of this paper we have chosen two teacher participants, X and Y (names withheld to maintain confidentiality) from two schools where the SCX curriculum was implemented. Case study approach was followed to examine teacher's experiences "under the microscope." This approach also supported the study of factors that enabled them to change their practices, their personal challenges, and challenges they faced in the context of the school system. We chose these particular cases because they provide meaningful understanding of the teachers' journey and also form insightful cross-case comparison. X and Y were social-studies teachers in the age range of 25-30 years. Both believed that it was their responsibility to teach students the required content and that a well-managed classroom facilitated this process. The teachers were self-motivated and were willing and active participants in the project, and their schools supported implementation of the SCX program. Yet, from the beginning of the intervention, they differed in their teaching goals, their beliefs, motivations and their expectations from students. These differences led to different trajectories of the change process.

3.2 SCX game-based learning program

The SCX game-based learning program focuses on the principles of citizenship and governance that are a part of the social studies curriculum at secondary three level in the Singapore school system. The game is played on Apple iPhones, where players govern their towns, manage their resources, and thus perform the role of governors. In doing so, they enact citizenship as opposed to learning *about* citizenship. Central to the SCX curricular program is its dialogic pedagogy that is used to advance the understanding of citizenship and governance. Dialogic pedagogy draws on the theoretical idea of dialog in the Bakhtinian sense, where ideas are exchanged and lived and are full of personal values and judgments [4]. In dialogic pedagogy, understanding is co-constructed in the classroom and students learn concepts in personally meaningful ways. Teachers serve as facilitators of dialogue by helping students make connections to real-life situations.

The SCX curriculum comprises six sessions spread over three weeks. The first session is introductory, where students are acquainted with the game and a pre-intervention survey is administered. The next four sessions are dialogic, where each teacher facilitates a session comprising 20 students who are engaged in the game-play. The final (sixth) session comprises of student speeches, a summative assessment (essay) and a post-intervention survey. The summative assessment is also administered to a comparable control group, where students are taught Citizenship using the traditional method.

As a part of professional development, teachers were interviewed by the researchers once before the start of the intervention and then from sessions two to six, using a semi-structured interview guide. Each interview typically lasted between 30 to 60 minutes. It was audio recorded and later transcribed. The researchers observed all the classroom sessions.

3.3 Narrative Analysis

Narrative analysis refers to a variety of approaches for studying the "storied nature of human development" [5, p. x]. Clandinin and Connelly [6] draw on a Deweyan view of experience as characterized by situation (place), continuity (past, present and future) and interaction (personal and social) to view narratives. Narratives provide a way to keep experience and action unified. This allows for greater understanding of experiences [7]. In our study, we examined teachers' narratives to obtain a better understanding of their professional development during implementation of the SCX curricular program.

Narrative analysis has temporality as an important characteristic. It differs from discourse analysis which deals with the structure of spoken language and is organized in specific ways to make a particular reality appear 'real'. Narrative analysis entails systematic interpretation and representation of informant's stories. The process includes attending, telling, transcribing, analyzing and reading the experiences [8].This approach appeals to educators and has become an influential research methodology within teacher education [9].

4. Data analysis

This segment of the paper centers on the analysis of narratives of the two teachers who participated in the SCX program. In the sections that follow, we focus on teachers' journeys while they enacted the SCX program. We highlight the contrasts in their experiences and account for reasons that made their journey so different. These comparisons help us understand what the process of teacher change can entail.

4.1   Teacher X's journey enacting the SCX program

X decided to become a teacher early on in her life. She had about six years of teaching experience. Her decision was based on practical concerns of stability and her personality fit. She emphasized the importance of imparting values and worked towards making her students independent thinkers so that, 'even if I take myself out of the classroom, - the end goal would be [that] they are people who [will be] able to come to a certain conclusion on their own.' Teacher X was personally open to trying new pedagogies, but with caution. She was not a gamer and was initially against the idea of games. She saw them as, 'eat[ing] her curricular time' until she was convinced of the value of SCX by experiencing it herself.

X was nervous about facilitating the first SCX dialogic session and confessed to spending many hours on preparation. After her first session she felt that the lesson had gone 'better than her expectations' as her students had participated actively. In the post session interview, she elucidated the challenges with regards to physical arrangements of the room that she faced. After the second session, she seemed quite disheartened with the fact that she was not 'getting it'. Realizing this fact, in second post dialogic session interview she said:

> But I still feel like I haven't gotten the hang of the whole technique, just that whole fluency, the whole process, it's still not there yet ... but I'm a bit more conscious, a bit more aware ... still need to figure out how you know to connect all those dots.

As an experienced teacher, X believed in planning her lesson beforehand. For her, careful and meticulous lesson planning was essential to quality teaching. She found it 'annoying' when her session did not go well even after planning. This fact was surfaced by her early in the program when in the second post dialogic session interview, she said, 'I think as a teacher you don't feel very professional going in not knowing exactly what's going on because most of the time the slides are prepared [in advance].'

From the third session onwards, X started to improve, and she realized it herself. She got away from adhering to a pre-prepared lesson plan. She relied more on working from student's responses and holding a meaningful conversation with them. She consciously sought to bring about a change in her practice, which reduced her stress. In the final post dialogic session interview, she said:

> I don't prepare. I really don't. ... And I realize that it takes the burden away... preparation is ongoing ... I am more interested in what is going on. ... You don't really have to sit there and plan per se how the whole thing is going to unfold.

In the same interview, she reflected on some of the practices and ideas that she previously had and how they had changed over time as she advanced with the SCX program. Her refined notion about questioning was that students' responses guided her to pitching her questions. She stated:

> I think in the past I used to think of scaffolding as some form of structure, format, from step 1 2 3 4, but the interesting thing about the dialogic session is ... how I want to scaffold the lesson according to the responses they give me ... So actually the kids are the ones who are building up the entire lesson.

Toward the end of the SCX program, X also realized that in the process of reflecting on her practice and being self-aware, she had adapted her teaching style to the needs of her students and achieved better engagement. In the final interview she commented:

> I just see them [students] as individuals, they may have different needs or they learn slightly differently... So engagement may not necessarily come in form of academic kind of talk and I think sometimes they need breaks in between. So I am quite conscious of that, so with the 3D [referring to students in one class of the Sec 3 level] I do sidetrack a little bit sometimes — we talk about our shoes, hair, I think that helps.

Our observations of her sessions showed that with deliberate change in her practice, the learning environment in her class had changed, with sessions becoming more intense and

fluid. Students in her class performed well in the summative assessment task. X explained her journey through the SCX game-based learning program by a narrative that highlighted her personal growth and change:

> *You know how a pearl is formed—you have a grain of sand—it's like you know you have an oyster and then there is this grain of sand comes in and you are really irritated by it, really annoyed that there is this grain of sand but of course you kind of allowed that a grain of sand to come in. ... some excretion and that's how the pearl is formed when it hardens. And then you become this pearl, that's something precious, and I think my journey is something like that.*

4.2   Teacher Y's journey enacting the SCX program

Teacher Y had completed a year of teaching at the time of the intervention. Her desire to become a teacher was to help struggling students by providing the 'right teaching method'. She placed great importance on education due her personal experiences and believed that education was the route to earning: 'I see myself, my parents are not educated so… I know how hard it is. … It really motivated me to work harder because in Singapore you have to study hard and when you study you get a qualification and that's how you earn money.' Y wanted to try game-based learning pedagogy in her class for aiding students to 'visualize something about governance and stuff.'

It was observed that in Teacher Y's school there was a perceptible lack of student involvement in the game. This could be attributed to the school choosing to use the web version of the game over the iPhone version. An additional reason might be that the number of hours students were permitted to play the game was rather low. As a consequence, in the first session, only one student had played the game in her group. Despite this, Teacher Y was content with her lesson and asserted that '… today's lesson did go quite okay for me, but it's just that I didn't get the feedback.' She identified the strength of her session as her ability to carry out the entire session with only one student's experience of the game.

Y also prepared her lesson in advance, and she would pose some questions to the students during dialogic sessions. She was confident that these questions would help her students to understand the game better. She conveyed disappointment in not being able to go through all the questions. In the interview after her first dialogic session she said, '… wasn't very happy… a bit sad, that my lessons did not go as planned. Today … for example I had some questions right, this is what I wanted them to tell me, but …' As the intervention progressed, Y's sessions did not improve, and the students remained largely uninvolved both in game-play as well as in the dialogic sessions. She justified their non-involvement by blaming it on excessive homework that the students had to deal with. Y was content that the SCX sessions gave her a platform where she could use a curriculum innovation (A) developed by her school. She was convinced that by combing the two programs, she would be able to meet the requirements of the school as well as that of the SCX project. From Y's interview after the third dialogic session, it was apparent that she found this mixture fruitful. She commented:

> *I'm feeling better than the previous lesson because … What I'm feeling is that I can make use of the Statecraft game at the same time I can infuse my A package in order to understand governance. So I am feeling very good.*

We observed that throughout the SCX program, Y did not reflect deeply on her pedagogical practices and dwelled largely on the game-mechanics. Throughout the program, Y held on to her belief about planning content for her lessons. During the interview after her third dialogic session, she was asked what she would tell her colleagues if she was asked about the SCX project. Her response highlighted the importance of preparing in advance.

> *What I basically told them is we have to prepare ... because the questions are very important for dialogic. ... So it's about questions, it's about preparation in a different way – not like worksheets, but it's the other way – it's more very high-level thinking.*

As Y progressed to the fourth dialogic session, she found that dialogue facilitation required more preparation and that her students and she herself was bored with it. For Y, dialogic sessions were inflexible and restricted her to asking questions in each session. After the final dialogic session, she was asked if the SCX curriculum had delivered what she had wished. Her answer was:

> *I felt about the facilitation being more work for me because my students are not the type that talks much. ... they do discuss about the game, but I have to always constantly make sure that they ... don't go off line ... after two sessions we realized that we must do something different ... I mean we cannot be repeating the same thing again and again, and it can get boring for us.*

We observed that Y's sessions were very teacher centric and students spent most of their time answering questions posed to them. Another concern that Y shared in the final dialogic session was that despite her reminder to students, they 'did not take down notes' during the session, hence, they would 'forget'.

To summarize, Y's journey enacting the SCX program was relatively uneventful, characterized by dealing with challenges. As observers, we sensed that, even towards the end of the program, Y was not successful in engaging her students dialogically. The performance of her students in the summative assessment task was not very different from the control group students.

5. Discussion and implications

The two teachers had different motivations for entering the teaching profession. They had different expectations of their students, due in part to their personal background. During their participation in the SCX game-based learning program, X and Y had different experiences: X metamorphosed and Y wanted the SCX program shortened. In the case of X, an observable change in her classroom practices was evident. During interviews, she could consciously reflect on what it meant to be an effective teacher. For Y, her classroom practices did not change materially nor was she successful in reflecting on her practices. This section highlights the key reasons that contributed to making the journey of the two participants so different.

5.1 From adhering to lesson plan to real time 'thinking on the feet'

Classrooms are places that are in a constant state of flux. Teachers often make the mistake of meticulously planning their lessons in advance and then getting discouraged if their plan is not fully adhered to. The idea of teachers having a lesson plan ready is culturally rooted. During pre-service training, teachers are encouraged to plan their lessons in detail. Often, schools expect teachers to account for everything that s/he will do in the form of detailed lesson plans. However, this strategy works against the dialogic spirit that needs to be nurtured in 21st century classrooms where students' independent thinking is valued. Teachers need to move away from strictly following lesson plans to conducting sessions with greater openness of purpose. This requires teachers to work with student's ideas and to create an active learning environment in the classroom. In the SCX intervention program, initially both X and Y acknowledged following a lesson plan. However, X soon realized that this strict structure was holding her back, and she moved away from it. In contrast, Y held on strongly to the idea and prepared questions for the sessions. Due to Y's strong adherence

to the notion of lesson plans and X's flexibility to 'go with the flow', it was easier for X to modify and adapt her practices.

5.2 Shifting from teacher centric to student centric classrooms

The teacher-centered classroom is associated chiefly with the transmission of knowledge. At the beginning of the SCX program, both X and Y saw themselves as central figures in the classroom. We saw evidence for this conception of teaching in the way both the teachers structured many classroom activities as teacher-directed tasks and walked students through them. Shifting responsibility to students was not easy for the teachers. X struggled to find a balance between how much she needed to talk and where students needed to take a more active role in their learning. As the SCX intervention progressed, X came to believe that her central responsibility as a teacher was to be a facilitator. She modified her scaffolding strategies and realized the flexibility that dialogic sessions offer. Our observations of her sessions provide evidence that she went through a deep process of change, whereby she came to understand what it really meant for a teacher to be a facilitator. On the other hand, Y continued her sessions using the format of asking prepared questions. This shift of mindset, from thinking that teachers are the source of knowledge to acknowledging that learning occurs when students communicate amongst themselves in the class, is crucial for 'authentic learning' to occur.

5.3 'Letting go of control' to facilitate more active student learning

Studies in various fields have reported teachers' difficulty in letting go of control in the classroom [10]. Efforts to give up control are often associated with fundamental and difficult shifts in conceptions of teacher and student roles. To shift to a facilitator's role requires time, awareness, and being able to reflect and question one's practice and assumptions in a given context. With the strategy of reflection and reflexivity adopted during post dialogic session interviews, X began over time to see value in getting students' to question, argue, and negotiate amongst themselves. She described it as 'letting go of control' in her classroom, where she would 'step down' from the authority position of a teacher and be a facilitator at the same level as the students. She expressed her eventual comfort with this strategy by saying, 'I am very comfortable letting the kids talk.' For game-based learning pedagogy to make its impact, it is necessary to allow students greater agency over their learning, with teachers acting as facilitators. It was difficult for Y to think of any other ways of facilitating a dialogic session except posing ready questions to the students. Consequently, she engaged in substantial teacher talk during most sessions, while students listened. The outcome was that active student learning did not place, and there were not many takeaways for them.

6. Conclusion

To summarize, X and Y participated in the SCX game-based learning program where they sought to learn how to facilitate student dialogic sessions as a complement to students playing the game. To support teachers in the implementation of game-based learning pedagogy, formal training and hands-on experience were provided. Using the RRGA model, opportunities for reflection and reflexivity were built in. This provided constant support and guidance to the participants during the program. Both the teachers received same training materials and had support from their schools, yet both teachers enacted the curriculum differently. These differences were largely due to differences between X and Y

as teachers and as people and to their personal situations. Despite these differences, both teachers had manifested a common concern for students' performance in standard tests, and they felt that 'drilling' the students was the best way out.

Based on our observations of the SCX game-based program, we realize that professional development that engages participants in narrative inquiry can help them in reflecting concretely on their practices. In doing so, professional development becomes meaningful to the participants. In this study, the RRGA model for professional development worked differently for the two teachers. While it helped both teachers develop an understanding of what game-based learning entails, the intricate connections that teachers make with the pedagogy plays a significant part in how they enact the curriculum. It should also be noted that professional growth requires substantial time and effort and that teachers need to be given time to reflect on their practices. Any approach to professional development must thus be flexible and continuous. Game-based learning, which is finding its way into schools and classrooms of the 21st century, needs to be supported in ways in which its benefits can be maximized. The success of game-based learning depends largely on the ability of the practicing teachers to take full advantage of it. Teachers needed to be convinced that "alternatives to present practice exist and are worth trying" [11].

Based on our study, we find that for teachers to effectively appropriate game-based learning pedagogy, teachers must enact a shift (a) from adhering to lesson plans to real time 'thinking on the feet', (b) from teacher centric classrooms to student centric classrooms, and (c) from dominating the class with teacher talk to facilitating active learning. Supporting teachers' professional growth at the start of the program and during its implementation is critical to an enriching and sustainable use of game-based learning in classrooms.

Acknowledgements

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