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journal homepage: [www.elsevier.com/locate/ijedures](http://www.elsevier.com/locate/ijedures)*Teaching within a Story: Understanding storification of pedagogy*Isabella Aura<sup>a,b,\*</sup>, Lobna Hassan<sup>a,b</sup>, Juho Hamari<sup>a</sup><sup>a</sup> Gamification Group, Faculty of Information Technology and Communication Sciences, University of Tampere, Tampere, Finland<sup>b</sup> Faculty of Humanities, University of Turku, Turku, Finland

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## ABSTRACT

Storification is an emerging pedagogical technique, albeit research lacks the understanding of its benefits and detriments. This study examines a school in the US that has storified majority of their learning environment into various fictional and nonfictional worlds for students to learn in and for teachers to incorporate in their pedagogy. 11 educational staff and 79 students were interviewed, and classes were observed for 10 days to ground a theory of storified pedagogy. Storification, employed in physical learning environments and in teaching practices, supported pedagogy and decreased student misconduct at the school. Storified pedagogy empowered students through story morals and a sense of transportation, and enabled classrooms to turn into personalized spaces, enhancing the school experience and students' academic performance.

## 1. Introduction

Nowadays, educators face a plethora of challenges to maintain effective and engaging pedagogical environments. With digitalization and growing immigration, student groups are not only increasingly heterogeneous (in terms of race, gender and religions), but students' attention spans itself have significantly decreased over the years with the rise of social media, YouTube videos and pervasive spread of games (Rymes, 2012). It has, hence, become even more important for teachers to cope with the changing times, and perhaps utilize some of the same emerging technologies and engagement practices to create interesting learning environments for students. We have seen increased utilization of serious and educational games (Connolly, Boyle, MacArthur, Hainey, & Boyle, 2012; Vos, Van Der Meijden, & Denessen, 2011), gamification (Majuri, Koivisto, & Hamari, 2018), storification (Akkerman, Admiraal, & Huizenga, 2009), and roleplay (Heyward, 2010) amongst other engagement strategies and technologies becoming popularly utilized in education.

Of special interest to this research is the growing popularity of storification in education. Storification commonly refers to the wrapping of an activity inside a(n) fictional or nonfictional narrative so that the activity becomes more engaging (Deterding, 2016). Storification within curricula or school activities is not completely new to education (Connelly & Clandinin, 1990; Sadik, 2008), and has shown several merits (Armstrong & Landers, 2017; Prins, Avraamidou, & Goedhart, 2017). However, the levels of storification we see today are unprecedented, understudied, with indiscernible effects. Case in point; a unique school in the United States, one of an increasing number around the globe, that is the subject of this case study. Located in a low economic area with poor home conditions and at-risk children, teachers transformed the majority of their curricula, classrooms and school hallways to align with fictional (e.g., Harry Potter, Disney, Star Wars) and nonfictional (e.g., Grand Canyon, sports arena, ocean) worlds through re-designed curricula and unique classroom design so as to create engaging, comfortable and home-like school experience for students.

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The aim of this ethnographic case study is to examine such holistic, school-level storification so as to answer: How do teachers employ storification in their pedagogy? And; How is it experienced to affect teachers' and students' attitudes, experiences and behavior? With qualitative data collected from a storified school the aim is to generate a grounded theory of storified pedagogy and to provide practical implications. Such a study is necessary to develop an understanding of how to use these strategies to bring about positive, rather than detrimental outcomes.

## 2. Background

### 2.1. Storification

Stories and storytelling are useful to attach meaning to new learning (Piipponen & Karlsson, 2019), thus making new information more comprehensible, relatable and relevant, consequently increasing retention (Parker & Lepper, 1992; Stewart, 2012). An established theory from the work of Bernstein, is that of code theory; language and contexts of pedagogical communication influence learning and school cultures, where students shape their values and practical views of the world (Bernstein, 1971). When lessons are communicated through stories that students identify with, and through meaningful and rich language that is within the vocabulary of the students and relevant to them, learning becomes more attainable for students (Bernstein, 2003). Therefore, it is not surprising that educators have, unwittingly or not, long utilized storytelling to enhance their pedagogical toolbox to make learning more interesting and engaging for students, whether that is in connection with or in separation of Bernstein's code theory (Bernstein, 1990).

Different terminologies have been used to describe these practices, such as, but not limited to; story-based learning and narrative-centered learning environments (e.g., Dettori & Paiva, 2009; Glaser, Garsoffky, & Schwan, 2009; Mcquiggan, Rowe, Lee, & Lester, 2008; Rowe, Shores, Mott, & Lester, 2011). Recently, the term; *storification* emerged as a term connected, not only to these storytelling strategies in education, but additionally to broader strategies of engagement online and offline. Storification refers to the more holistic use of stories in a way that creates and communicates a narrative to its audience in a more engrossing and pervasive way (Akkerman et al., 2009). With storification, activities, for example, in education, are encoded (Bernstein, 1971, 2003), and wrapped inside a story in a comprehensible way, so as not to just build connections between said activities, as is commonplace in earlier story-based practices, but also to immerse learners in realities outside the immediate ones (Deterding, 2016), where the new teachings are contextualized and made more relevant. Such heightened immersion and connection building can engender creativity (Tanggaard, 2014) and feelings of transportation; an increased cognitive and affective attention allocation that can make individuals more absorbent (Deterding, 2016), thus making education both; more engaging and effective. Studies show that storification can indeed increase students' engagement (Prestopnik & Tang, 2015). In addition to transportation and engagement, storification can enhance students' learning, retention and motivation, as well as bring enjoyment to learning activities (Akkerman et al., 2009; Dickey, 2011).

Gameful and playful approaches to education, such as serious games (Connolly et al., 2012), game-based learning (Alt & Raichel, 2020; Hamari, Shernoff, Rowe, Coller., & Edwards, 2016; Plass, Homer, & Kinzer, 2015), gamification (Hamari, 2019; Landers, 2019), simulations (Rumore, Schenk, & Susskind, 2016; Rutten, Van Joolingen, & Van Der Veen, 2012) and roleplay (Cakici & Bayir, 2012; Heyward, 2010), are prevailing ways to make learning an interactive and interesting experience for students (e.g., Malone, 1981). A recurring and significant feature of these techniques is their extensive employment of narratives and stories (Hassan & Hamari, 2020; Ke, 2016), often falling under the umbrella of storification practices. Storification focuses on the motivational utilization of stories, across contexts. It is a growing trend in educational settings, either as part of these approaches, or as a standalone implementation, albeit little research exists to support its pedagogical benefits. Understanding how stories and storification impact learning and pedagogy has the potential to inform all of these practices across disciplines, along with, arguably, facilitating enhanced learning.

### 2.2. Storified learning environment

In order to understand storification in the pedagogical context, there is a need to consider it in relation to existing, prevalent teaching approaches. As storification is often employed in education to make learning more engaging and interactive, it is often aligned with constructivist learning and how it attempts to make learning active and encourages individual and social meaning-making (Piaget, 1977). While traditionally, classroom activities are often behaviorist, i.e., teacher-centered and emphasizing rewards in relation to stimuli (Hassad, 2011), storification is perceived to align with modern effort to accentuate child-centered learning, where students are given more responsibility and autonomy over their own learning (e.g., Brouwer, Jansen, Severiens, & Meeuwisse, 2019). Accordingly, storification can be positioned as a strategy to create socially constructivist and interactive education and perhaps develop learning environments into social and open spaces. Nonetheless, to perceive storification and storified pedagogy in relation to a larger pedagogical framework, be it constructivism, behaviorism, or any other, further study is necessary to understand how it is implemented, experienced and utilized by educators and students.

Educators are often responsible for managing the learning environment and practical applications in it (Gremmen, van den Berg, Segers, & Cillessen, 2016; Salokangas, Wermke, & Harvey, 2020), whether storified or not. Outcomes from storification highly depend on how they make sense of and utilize storification, reflect it in the physical environment of their classes, the digital tools utilized (e.g., websites, movies or games), and also in the social and psychological atmosphere they create through it.

Studies show that classroom design parameters explain some of the variation in students' school experience and outcomes (Barrett, Davies, Zhang, & Barrett, 2015). Physical aspects of classrooms, such as furniture and aesthetics, contribute to the comfort level of students and therefore learning and teaching outcomes (Barrett et al., 2015; Cheryan, Ziegler, Plaut, & Meltzoff, 2014). As for storification especially, ownership and flexibility tend to influence learning outcomes in these environments as unique facilities and

modifiability allow different activities within the classroom (Barrett et al., 2015). Hence, while learning environments should be planned in accordance with learning goals and students' needs (Cheryan et al., 2014; Puteh et al., 2015), it is essential to make them interesting and pleasurable spaces for students (Barrett et al., 2015).

### 3. Methodology

The aim of this ethnographic case study is to investigate how teachers employ storification in their pedagogy, and how it is experienced to influence teachers' and students' attitudes, experiences and behavior. To these ends, a qualitative anthropological approach through grounded theory methods (Glaser & Strauss, 1967) was adopted to generate new theory of storified pedagogy, and also to set it in the context of existing theories. The research approach was inductive; allowing relevant ideas to develop throughout the research process, which is typical for grounded theory studies (Charmaz, 2006) as discussed in the analysis sections.

#### 3.1. Case study description

This case study is of a public American elementary-middle school (K-8), attended by 350 students, 19 teachers and 9 educational staff. Educators transformed the school's in-class pedagogical practices and the majority of its curricula delivery, hallways and classrooms to mirror various fictional (e.g., Harry Potter, Disney, Star Wars) and nonfictional worlds (e.g., Grand Canyon, sports arena, forest) to foster learning and positive student behavior. The transition organically began a couple of years ago by some of the teachers and with the principal's approval. Gradually, the transition proceeded through curriculum implementation redesign, massive paintings and murals in some of the school hallways and classrooms redesigns, growing into large-scale storification of the school as seen in Fig. 1.

At the school, storification is seen to be implemented on a continuum from being part of both physical environments and pedagogical activities, to either one of these, to not being incorporated in teaching or classrooms at all by some of the teachers. Additionally, as part of the storification, teachers started to employ flexible seating opposed to traditional seats and assigned seating (Stapp, 2018), further adding to the modifiable and flexible learning environments being created. Many teachers started utilizing new teaching methods to support their existing, relatively traditional, educational tools, and altered their pedagogical thinking in order to make optimal use of the new environments and make education even more immersive and engaging for the students.

#### 3.2. Participants and data collection

Data collection took place during a two-week ethnographic fieldwork to the school. As a common anthropological procedure, a researcher observed several classrooms between the 6th and 8th grades that were taught by six teachers and attended by approximately 90 students. After initial participatory observations, theoretical sampling, as part of grounded theory (Creswell, 2012), resulted in adding questions in the interview guide utilized to interview educational staff and students at the school. The combination of observational ethnographic fieldwork and interviews allowed the researcher to go back and forth between the same people and settings, and to check hunches and follow leads of memo writing at an early stage of fieldwork to revise remaining data collection (Creswell, 2012). Theoretical sampling was used to increase knowledge of the studied people and phenomenon, and to strengthen the credibility of data (Charmaz & Bryant, 2011).

As summarized in Table 1, a total of 11 educational staff at the school were interviewed. Eight were teachers, two were educational staff, and one was the principal of the school. Interviews lasted from 10 to 45 min and were carried out in the teachers' classrooms, so that they could demonstrate their work during the interview. Additionally, a total of 79 students from the 7th and 8th grades participated in 15 focus groups of three to six students, the average being five per group. 7th and 8th graders, being the oldest at school (12–14-year-olds), were chosen for the focus groups because they had the most experience with the storified classrooms. The average age of the participating students was 12.8 years ( $SD = 0.75$ ). The majority of them were White (89 % White, 11 % Hispanic), and nearly half of them were boys (49 % boys, 51 % girls). Students formed the focus group compositions themselves with the help of their



Fig. 1. Storified classrooms and hallways.

**Table 1**  
Breakdown of participants and data collected.

|                                     | Number of people | Time               | Transcript sheets |
|-------------------------------------|------------------|--------------------|-------------------|
| <b>Observations</b>                 | ≈ 100            | 10 days; ≈ 50–60 h | 40                |
| <b>Educational staff interviews</b> |                  | 226 min            | 106               |
| 2nd grade                           | 1                |                    |                   |
| 5th grade                           | 2                |                    |                   |
| 6th grade                           | 1                |                    |                   |
| 7th and 8th grade                   | 4                |                    |                   |
| Other educational staff             | 3                |                    |                   |
| In total                            | 11               |                    |                   |
| <b>Student focus groups</b>         | 15 groups        | 361.81 min         | 463               |
| 7th grade                           | 41               |                    |                   |
| 8th grade                           | 38               |                    |                   |
| In total                            | 79               |                    |                   |
| <b>Graduates</b>                    | 27               | 12.37 min          | 14                |
| <b>In total</b>                     | ≈ 130            | ≈ 70 h             | 623               |

teachers, so that the groups were of people comfortable with each other. Additionally, 27 school graduates (14–18-year-olds) were interviewed as a group to get insight from former students on their experience at the storified school.

Participation in the research was voluntary, confidential, had no influence on academic or job performance and participants were able to withdraw from the study at any point. Written consent for participation in the research was collected from students' guardians through a form in which research objectives were outlined. None of the guardians withdrew their children, nonetheless, students at the school were also encouraged to only voluntarily participate. Accordingly, four students declined to participate in the focus groups. Students and teachers received candy of the value of approximately 0.5 USD after the interviews to thank them for their participation, as did students who did not wish to participate in the focus groups. Data was collected through audio recording, note-taking and photographs. Field notes and audio were transcribed, and anonymized for privacy.

### 3.3. Analysis

This case study employed grounded theory methods (Glaser & Strauss, 1967), based on a constructivist approach (Charmaz, 2006; Charmaz & Bryant, 2011). With this approach, the aim was to understand the feelings, attitudes and experiences of the study participants in an exploratory, rather than a confirmatory manner (Charmaz, 2006). The generated theory is not discovered, but co-constructed by the researchers and the participants (Charmaz & Bryant, 2011), accordingly, it is essential to bring out participants' views and voices in this approach.

The analysis process included coding (initial, focused and theoretical) (Charmaz, 2006; Charmaz & Bryant, 2011), constant comparison (data with data, data with codes, codes with codes, codes with categories and categories with categories), as well as memo writing and sorting, in order to elaborate ideas and thoughts about the data (Creswell, 2012). However, a grounded theory study is not a linear process (Charmaz, 2006). It requires open mindedness and researcher's awareness of their own biases and background, so that categories can inductively emerge from the data and not be forced into preconceived notions (McGhee, Marland, & Atkinson, 2007). To minimize these biases, coding was conducted independently by two researchers and the emergent codes and categories were later on compared and reconciled. Additionally, a dialogue between the researchers was maintained to foster understanding of the generated theory (Charmaz, 2006).

Initial coding included coding of individual actions, elements and segments of data as literally as possible, which was conducted by using analytical questions such as "What is happening in the data?" and "How is the participant describing storification?" (e.g., Charmaz & Bryant, 2011). In gameful and playful practices, utilized elements and practices often spark changes in behaviors and attitudes (Hunicke, LeBlanc, & Zubek, 2004), hence, we coded storification elements, as well as the behaviors, feelings and sense-making associated with them. This was followed by a focused coding to develop abstract concepts through comparing and combining the initial codes into broader categories. A core concept of *storified pedagogy* was identified at this stage. In the third step, theoretical coding; categories were explored and analyzed in relation to each other, reduced and integrated towards conceptual terms, which revealed three theoretical dimensions of *personalized space*, *empowerment* and *academic performance*. Furthermore, the dimensions' relations to the core concept were examined.

## 4. Findings

Focused coding around how teachers employed storification in both the physical environment of their classrooms and in their teaching practices revealed six categories of describing perceptions and experiences of storified pedagogy discussed in this section: *alignment (integration) with teaching*, *providing a purpose for education*, *atmosphere (signaling)*, *student (mis)behavior*, *accommodating student abilities* and *sense of transportation*.

#### 4.1. Alignment (integration) with teaching

The extent to which storification was aligned with teaching and curriculum delivery differed across teachers. Teachers who incorporated storification in their teaching (English classes) did so by selecting storybooks that allowed them to deliver their standards through the storybooks instead of traditional readings or workbooks. Additionally, the storybooks were next planned to be reflected in word problems in e.g., math classes and were often utilized to activate class discussions, especially those around morality and responsible behavior. Teachers, additionally, created student tasks and activities around the stories and the themes of the classrooms, such as crafts work, student projects, and group discussions, in order to let students construct their own meaning of the studied book in relation to the subjects they were studying. One of the teachers explained how they utilize storybooks in class as:

“Right now we’re doing kind of this timeline, and we’re going to go back and look through some of the things and trace some of the flashbacks and some of the character development and things like that. I usually will give them some type of a choice project where they can either create a graphic version of it... There’s some online websites that we’ve used before, to do things like that. Some of them really enjoy drawing and let’s say, for example, I want them to illustrate a scene, or last year I had students who, with a novel that we read at the end of the year, made playlists for the characters and they had to talk about like the lyrics of the songs and why they chose those lyrics and those songs and how they apply to different things that happened in the story and just things like that, where they’re kind of looking at it in more than one way.” - Teacher #3

The teaching approaches that were employed most commonly in the storified classrooms were constructivist and social constructivist (see e.g., Piaget, 1977). Most teachers felt that the students were more relaxed, active and ready to ask and answer questions in class. Storification, especially flexible seating, was perceived by them to have encouraged classroom interaction and cooperation as students were better able to lend a helping hand to each other. One of the teachers believed that the change encouraged students to engage and participate more in their education at large beyond participation in class. She saw, for example, an increase in students turning in their homework after the storification and flexible seating were implemented. The general, new, social atmosphere strengthened a positive attitude towards education:

“Definitely since I have moved to flexible seating, I have fewer students who are failing the class due to failure to turn in work. It seems like they want to help each other more and they are more encouraging to do your homework. If someone doesn’t turn something in, they will say: “What, you didn’t? Why didn’t you do that? I can’t believe it!” Or: “I can’t believe you left your book at home. Why did you do that?”. . . In the past, I used to have a lot of students that- they just wouldn’t do it. And I would have half of the class that didn’t turn in their vocabulary work. I don’t have that anymore and I don’t know if that’s directly this (gesturing towards the classroom) or if it’s something different with the mindset of the students, but I definitely saw that as a result. I mean, like, after this change. So, we don’t have nearly the number of students just failing to comply with assignments that we used to.” - Teacher #3

#### 4.2. Providing a purpose for education

While teachers incorporated the stories and themes into their teaching in different ways; from mere decorations to redesigning their teaching, the majority of the teachers felt that storification strengthened their impact on the students, helped them provide a purpose for education to their students and brought a new excitement to their job. One teacher described her teaching in her Harry Potter themed classroom as:

“We focus on the part of Harry coming from such a rough background, because our kids come from the poorest of the poor and without any kind of support. And so, we focus on that show and look how amazing he [Harry Potter] became just by doing what he wanted to do, in making himself become incredible by his own desire, not because he had someone backing him and pushing him. And we are trying to tell them: “You can do anything you want to do, you just have to want to do it”. . . I don’t really focus on the Harry Potter theme that much in my teaching, it’s just here for decorations and for the Harry’s story for us to stress to them.” - Teacher #6

Furthermore, as communicated by the school principal, the change in the classrooms had not radically changed the way the teachers worked or taught - as traditional methods, such as workbooks, journals, and student projects were still utilized along with digital tools, such as computers and videos - however, the principal felt that storification had enhanced the general atmosphere or mood at school, and through that, it indirectly supported attainment of learning objectives, provided purpose for their jobs and facilitated learning of additional important life skills and morals, especially in the classrooms that had been storified as Harry Potter:

“Have you seen any change in teachers when the classrooms changed?” - Interviewer

“I guess, what they do in the classroom: no. Well, I’ll say, in the back hall I think it has... it sparked them back there, in the Harry Potter hall. It sparked them and some of the other grades. No [referring to changes in teaching], as far as, what they brought- as far as their teaching. But what it has done, has put a new sense of pride in their own classrooms and also a sense of one to keep up... ‘cause the atmosphere does matter.” - Principal

#### 4.3. Atmosphere (signaling)

The incorporation of storification in the learning spaces signaled the teachers’ dedication to the students through showing the lengths of effort and monetary investments they were willing to go through to create a positive atmosphere for the students. Students,

in turn, felt this dedication and often described storification holistically as “cool” or “exciting”, and felt they were happier to go to school than they were before these changes took place. When asked about the general atmosphere in school, one of the students described it as such:

“Everything is normally positive here. There’re never really any negative attitudes. You know, everyone comes here, they’re happy. And so, I think that’s something with the atmosphere with the hallways and classrooms tended for everyone in a good mood. There’s never any negativity going on when everyone’s just happy.” - Student #37

Flexible seating was experienced as a vital part of creating a positive atmosphere in the school. While the intention of redesigning seating was mainly for comfort and perhaps fun, students and teachers believed that it additionally introduced an element of refreshing novelty every day, while teaching valuable social skills:

“Which one do you prefer [assigned or flexible seating] and why?” - Interviewer

“Flexible.” - Students in unison

“We can still do our work but we could talk to our friends.” - Student #24

“Just to change up where we sit every day.” - Student #49

“Is it unfair that some of the students can sit on the couch while others are on hard chairs?” - Interviewer

“We kind of work it out to where you want to sit that day and if someone always sat on the couch, they would let other people take their turn on the couch.” - Student #77

#### 4.4. Student (mis)behavior

Overall, teachers and the principal thought that storification, and flexible seating had an influence on students’ behavior. They provoked feelings of pride and enjoyment in students that were thought to be a key reason for their improved behavior and decreased misconduct. The principal described the change as follows:

“Painting in itself doesn’t make a kid behave better, but when they take pride in something, it does. If you were to ask me, if painting the halls would have done that, I’d probably have said no. But you know, three years later, through the process, yeah, I kind of see it, really. . . I had two girls yesterday, who were cleaning bleachers, because they had written anti-bullying messages, which is, hey, great, I’m like: “I love a positive message, but don’t write it on our bleachers”. That was dumb. But we just. . . we don’t have that kind of stuff [misconduct]. And so, I don’t deal with issues of that kind of matters very much anymore. It definitely has, and it’s gonna, surprise me.” - Principal

Most of the teachers mentioned that before storification, detentions, as part of the school’s discipline plan, were happening approximately weekly with an average of six students, based on misconduct during a one-week time period. During the first year of storifying the classrooms, teachers reported a major change in students’ behavior and a considerable decrease in detentions and misconduct. As time went on and more classrooms were storified, the period upon which detention was decided, grew from one week to a two-week period and eventually, detentions now occur around once or twice a year. Teachers had not expected such a major change in students’ behavior. During the planning and implementation of storification, one of the teachers was sure that the students’ misbehavior would extend to the upkeep of the storified classrooms:

“If you would have told me three years ago that it would make such a difference, I would’ve laughed in your face. . . But I was thinking the whole time we were doing it [storifying]: “They [students] are gonna tear this up. They’re gonna destroy it.” But we have been two years with no detention. We used to have detention every Friday or every other Friday for the kids who had got to the detention part of their discipline plan. And. . . we have not had a detention. I think we had one kid in one earlier this year. That was the first detention we’d had in two years. And they really don’t mess with the stuff. They took such pride in it. It just blew me away. You would have never convinced me. We just wanted to do it, because it’d be fun and different. And it’s turned in to be just incredible for the kids.” - Teacher #6

Furthermore, students were motivated to behave more responsibly and, for example, reduced their littering:

“I did not think that [storification] would change anything. I did not expect their behavior to become better and I did not expect a cleaner room. . . So, if I had known that those things were gonna change, I probably would have done it sooner. . . When I swept in the afternoon, I filled up a little garbage can of trash that the kids just threw on the floor; their papers, pencils everywhere. . . Which I still have, but now, when I sweep, I don’t sweep every day. And so, the first year that we did it [storification], that group of kids I went for the first month of school and did not sweep and when I finally swept, the only thing I had, was a pile of dust, like just dirt from shoes.” - Teacher #1

While these positive changes persisted for a long time for it to be attributed to a novelty effect, a teacher hinted that perhaps a habituation effect started to take place as students grew used to the new environment and reverted back to some of the behaviors that had decreased. One of the teachers stated that over the past few months, more than two years after storification was started, a few more students had been “careless”, causing trouble at class:

“This year it seems like we’ve had maybe a few more [students] that have been more careless than we have in the last couple of years, and I don’t know if it’s because it’s always been like this to them, whereas the last couple of years it was kind of new. So, I don’t know if that’s what it is, because I think sometimes when you get used to something, you tend to be a little bit more careless with it. . . I think maybe they don’t appreciate it as much.” - Teacher #3

One example of said “carelessness” was an incident that had happened shortly before the observation period; a student broke a

chair, which caused trouble for the whole class. As a disciplinary procedure, students' seats were assigned until the person would confess.

#### 4.5. Accommodating student abilities

Flexible seating, introduced as part of storification, provided a variety of seating and lighting setups that increased the likelihood that students, especially those with disabilities or learning difficulties, would find what fits their needs. Students did perceive it to accommodate different abilities, and especially helpful to students with learning challenges. However, a student with ADHD, communicated that she preferred assigned seats over flexible seating, as knowing where she sits and next to whom gives her an opportunity to focus better on work, and also a chance to ask for help from classmates rather than a teacher:

"I have ADHD, and let me just tell you right now; you don't work with certain people. I get way too loud without noticing it and then get off track of work. I do like the assigned seats because right now, my buddy, his name is (student's name), he sits with me in (teacher's name) room. We talk, but we don't "talk-talk", we'll go "hi" and stuff like that, and then like quiet down when it's work. It's like, if I do have a question- and I'm a shy person... I could ask him: "Hey, I don't know how to do this. Can you help me out?" - Student #46

In addition to flexible seating, to make sure that every student was equally able to positively experience the storification and to keep up with the story books and novels regardless of their reading level, teachers aimed to accommodate student abilities by, for example, assigning seats when needed, observing the performance of individual students, and through utilizing audiobooks simultaneously while students were reading. One of the teachers described the use of audio books as follows:

"Having such a wide range, I guess, of abilities in the class... I mean, some of the students desperately need that audio. They are not capable of reading a book like this and getting the meaning of... comprehending it. I mean, they might be able to get through it and read the words in it, but they're not, you know, they're going to spend so much time trying to decode those words that they're not going to use their brainpower to try to get meaning from it, they're just spinning their wheels trying to know what the words are, what does it say. So, I just found over the years that if we just read it together like that, then it is easier for us to kind of stay on the same page literally and figuratively" - Teacher #3

#### 4.6. Sense of transportation

In addition to redesigning the physical environment and teaching delivery, teachers frequently implemented storification within

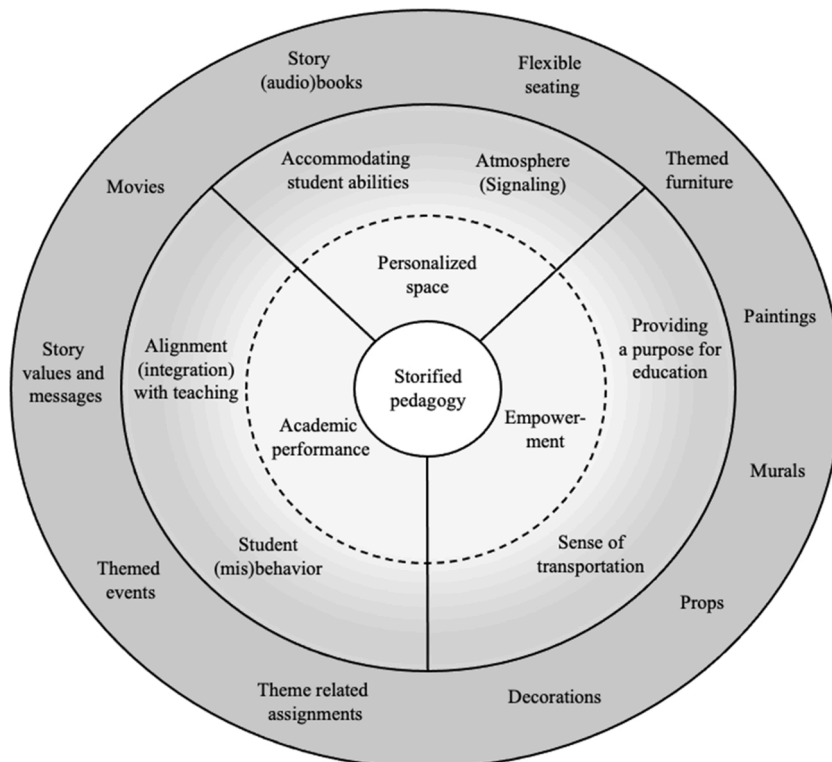


Fig. 2. A model of storified pedagogy.

extracurricular activities at the school, for example, through dress-up, watching movies and arranging (Harry Potter) themed runs, in order to create an engaging school experience for students. Students stated that collectively the story and theme related activities, and the physical storified environment combined with how teachers put effort in it and how people acted in it, created a unique school experience for them and enabled learning whilst facilitating a sense of transportation:

“It’s like five days a week, you get to go into this wizarding world. It’s amazing.” - Student #79

“You get to escape from your real world and go to this fantasy world that a lot of people dream about going to, when really, it’s school. So, you’re learning and getting stuff out of it while going to someplace and escaping everything else.” - Student #46

Similarly, the school graduates said that storification enhanced their school experience and facilitated the attainment of different learning objectives, for example, regarding the books they read. The notion that they were “inside the story” made the learning experience more engaging and educational, creating a sense of transportation. One of the graduates reflected back to their former school experience as follows:

“I think when we read the Harry Potters and then we were actually like living inside of it at the school... So, we’ll get more into the book. It makes us learn more.” - Graduate

## 5. Discussion

### 5.1. Dimensions of storified pedagogy

This ethnographic case study and its analysis aimed to provide grounds for a theory of storified pedagogy to emerge. After the initial codes were organized into the presented categories, they were organized into three dimensions of *personalized space*, *empowerment* and *academic performance*. These three dimensions gave insights into the influence and implementation methods of storification as part of teachers’ pedagogy. Fig. 2 offers a visual overview of the emergent dimensions of storified pedagogy. While these results come from a singular case study, its uniqueness is the scale at which storification was implemented.

Noteworthy, the relationships between the categories, in the middle level, and theoretical dimensions in the inner level, are not linear nor mutually exclusive, meaning that a category could be reflected in more than a singular dimension, which the dashed line represents. Similarly, storification practices presented in the outermost level have contributed to the emergence of several categories. The following subsections provide an illustration of the theoretical dimensions of the generated grounded theory and underlying categories, placing them within existing educational and psychological theory and provide practical implications of storified pedagogy.

#### 5.1.1. Personalized space

Storification was experienced to influence the atmosphere of the school. Teachers utilized it to create personally meaningful classrooms and teaching practices for them and the students. Teachers’ satisfaction with their work environment and motivation to put effort in it, was visible and appreciated by students, which might have created even closer and more personal relationships between students and teachers (Kumar, O’Malley, & Johnston, 2008). The resulting atmosphere is perceived as one of the key factors that contributed to positive change in students’ behavior. Generally, the closer student-teacher relationships are, the fewer misconduct tend to occur (Claessens et al., 2017; Rudasill, Reio, Stipanovic, & Taylor, 2010).

This case study, perhaps, reignites a time-old discussion on arts spending in education. While arts are of value to most communities (Kay, 2000), funds available to most schools remain relatively limited to extensively facilitate art programs. Arguably, schools with most limited resources tend to also be the ones in poorest communities that could significantly benefit from art programs. One of the reasons storification was implemented in the studied school was to intentionally compensate for adverse home environments and to create an attractive, motivating and homelike atmosphere for students to express themselves and to grow up in.

Nonetheless, storification, as seen from our case study, entails extensive effort; from the thoughtful selection of stories and design of learning environments, to their utilization. A level of coordination is needed to ensure equal learning opportunities for all students, and especially with those with ADHD and on the autism spectrum. Despite this effort, students and teachers at the school would rather be making these investments than reverting back to classical ways of designing classrooms through traditional furniture and relatively plain walls, decorated mainly with educational posters (e.g., Cheryan et al., 2014). This calls for a re-examination of classroom and educational environment design.

#### 5.1.2. Empowerment

Findings, overall, indicate that the storified learning environment at the studied school was implemented in a way that complemented both pedagogy and students’ and teachers’ comfort levels (see e.g., Barrett et al., 2015; Cheryan et al., 2014; Puteh et al., 2015) and in line with motivation and empowerment theory (Hassan, Harviainen, & Hamari, 2018; Reeve, 2002; Ryan & Deci, 2000) and transportation theory (Green & Dill, 2013). Feelings of immersion, transportation and escapism are often a main reason behind how storification is observed to facilitate information retention and learning (Deterding, 2016; Gorini, Capideville, De Leo, Mantovani, & Riva, 2011).

Storification, and this transportation, were, in this case study, further employed to facilitate a feeling of autonomy; that the students are the masters of their own fate despite their backgrounds as teachers employed the protagonists of stories as role-models for the students with the aim to provide purposeful and psychologically empowering environments and role models for them through these immersive powers of arts and stories. The teachers almost unanimously based the storification of their classes and curriculum on stories



that they selected, because they believed the stories, either communicated empowering messages of overcoming adversity and challenges (e.g., Harry Potter), or because they instilled positive morals, such as the value of friendship and family (e.g., Disney). Stimulating feelings of autonomy and mastery (as seen through the storification at the school) is essential for human motivation, as outlined by the self-determination theory (Reeve, 2002; Ryan & Deci, 2000).

### 5.1.3. Academic performance

The re-designed curriculum through the storification was more engaging for students. Teachers reported that students had become more active with homework and class participation, which implies that storification may have had positive effects on student learning, consistent with previous studies (Akkerman et al., 2009; Dickey, 2011; Prestopnik & Tang, 2015). Physical aspects of classrooms contribute to comfort levels and therefore to learning and teaching as well (Barrett et al., 2015; Cheryan et al., 2014). These positive impacts of storification, noted especially by the school personnel, strengthens the perceived potential of storification in enhancing learning and education (Lee, 2012).

Constructivist approaches, combined with the carefully selected storification stories for their moral values, provided teachers means through which they could hold personally relevant and rich discussions with the students, facilitating, not only delivery of curriculum, but building the characters of their students and teaching of extracurricular life skills (e.g., Bernstein, 2003; Valli & Chambliss, 2007). Nonetheless, we observed storified classes, where teaching was anchored in traditional didactic methods (Stewart, 2012), which indicates that storification in a classroom is a tool, like any other that is multifaceted and can be utilized for different purposes (Dettori & Paiva, 2009).

One of the main purposes storification was observed to be utilized for, was delivering pedagogy through vivid stories, which communicated lessons and values in a concrete and relatable way rather than in abstract concepts, which is especially beneficial for children of poor communities (Bernstein, 1990, 2003). This, perhaps, might be of value for diminishing the gap of educational inequality between social classes, as Bernstein's (1971, 2003) code theory suggests that there's a direct correlation between language and societal class. He argues that schools can induce a change of language code for lower socio-economic children and with this a change in the way children relate to their community (Bernstein, 1971, 2003). Drawing from Bernstein's code theory, storification, and the language and values it communicates, might be a powerful tool for helping schools to narrow the achievement gap of students coming from diverse backgrounds.

## 5.2. Practical implications

The degree to which the stories are integrated into the learning environment and teaching practices will differ, as seen from this case study, depending on teachers, their interests and the personal and institutional resources available to them. Nonetheless, this case study showcases that various levels of employing storification can *empower* students, support their *academic performance* and allow them and the teacher *personalized spaces*. Storification does not have to take place on a large scale as is seen in this case study, where almost the whole school participated, but it can perhaps take place through various methods that complement each other in immersing the students into learning.

Storification can be aligned with educational objectives, for example, using adapted word problems, projects, illustrative props in class, or through reading material that fulfills curriculum requirements and supports students' academic performance. Flexible and alternative seating, furniture inspired from the stories, audiobooks or movies, can be employed to augment that work and support students with different abilities in class (e.g., Morgado Camacho, Lopez-Gavira, & Morña Díez, 2017) considering the impact physical environments have on learning.

Stories with perceived moral underpinnings open the door for moral discussions needed for extracurricular skills (Valli & Chambliss, 2007). These discussions can take place in classrooms, or through other, digital or non-digital, learning platforms. Stories that indirectly showcase the value of education can especially be employed to provide a purpose for education to students to perform better to similarly rise above any circumstances. Such stories and physical storified environment can transport students to different realities where they might be more empowered than they are in their immediate reality, and where they might be more inclined to behave positively (Deterring, 2016).

The general decrease in misbehavior, bullying, littering and classroom disruption, reported by the students and teachers of this case study, might indicate that storification can decrease student misconduct. However, storification is not a magic solution to misconduct; negative behavior may start to emerge again due to habituation effects. Nevertheless, such behavior might still be infrequent and deterred by the students themselves, due to the meaning and pride students take in their storified classrooms, creating relatively self-correcting classrooms.

## 6. Limitations and future research

While the selected school was particularly unique for the exceptionally holistic implementation of storification, and was studied from different vantage points, it remains a singular case study. Nonetheless, this study provides a point of departure for more research on storification that it is now becoming increasingly adopted in educational institutions. The studied school was rather small, which could explain some aspects of, for example, the social atmosphere at school. As the data gathering period was relatively short, some findings may be difficult to discern, for example, we cannot fully discern which aspects of pedagogy emerged as results of storification and which were in place due to different teaching styles or teachers' personality. However, as this research is of a qualitative nature, authentic and common experiences reported by the teachers strengthen results' reliability.

The ethnographic fieldwork was conducted by one researcher. While this may have reinforced trustful and respectful relations between the researcher and participants (Christensen, 2004; Herron, 2019), it may contribute to researcher bias. This was taken into account on different stages of the research through discussions, the research, and sharing of anonymized interview transcripts, after necessary clearances, with experienced co-authors. Results and observations were actively presented in research lectures and seminars for larger reflections.

We encourage future researchers to conduct longitudinal examination of change in students' behavior and in teachers' pedagogical thinking before and after storification, perhaps through quantitative as well as qualitative methods. Additionally, research around the digitization of storified, immersive in-class learning environments as studied in this research is needed, possibly through VR, AR and other technological applications. Overall, storification as an emerging trend in education requires more research on its implementation, impact and customization, in order to put its benefits into full effect.

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## Declaration of Competing Interest

The authors report no declarations of interest.

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