Chapter 13
Digital Media in the Classroom: Emergent Perspectives for 21st Century Learners

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ABSTRACT
The purpose of this chapter is to highlight the engagement, social connectivity, and motivation to learn observed in two classes of students, one a grade 9/10 information technology class, the other a grade 3 class of learners classified with learning disabilities. The common factor in the two classes was the way the teachers were rethinking literacy for the 21st century learning by simultaneously engaging students in an event of creating computer programming to address a competition task whilst also addressing curriculum demands. The chapter explores the way the teachers were learning to develop the conditions for emergent learning systems in their classrooms as the first steps to reform the current education system. Drawing on complexity theory, the authors suggest that these students are offering two microcosmic examples of where global systems are heading. The goal of the chapter is to help shift school teaching from its present disconnect between the real world outside students’ classrooms and the contrived, dated world of typical school-based curriculum practices.

INTRODUCTION
In the fall of 2006 our ethnographic research study began in a response to increasing social concern regarding adolescent (dis)engagement in school literacy practices. We began data collection in a grade 9/10 Information Technology (IT) class wherein students were in the process of creating their own videogames as a way to learn programming. The work with these initial participants spurred the proliferation of several strands of subsequent research, and only inspired
more questions about the ways in which youth are immersed in gaming and programming. With our work with the grade 9/10 class, we began to understand videogames have the potential for immersive, emergent learning where relationships develop to become more fluid, organic interconnections where the students and teacher are both learning and guiding each other. Our theoretical perspectives shifted to frame our research with emergent and complexity theories (Hopper, 2012; Merkel & Sanford, 2009; Sanford & Hopper, 2009; Sanford & Merkel, 2011; Sanford, Merkel & Madill, 2011). The initial work with the IT class was the impetus from which a longitudinal study began, investigating ongoing engagement with videogames by a core group of students. In 2014 this study continues to morph as said participants are now in university and in the work force and currently conduct study groups as our ‘in-house expert’ research assistants. This multitudinous research has also inspired the curriculum design and perspective in a grade three classroom in which one of the current researchers teaches. Below are two vignettes to consider, from the 2006 initial study with grade 9 students and from a 2013 grade 3 classroom, respectively:

2006: The lab is bustling. Students are seated--sort of--searching through a variety of windows open on their computers. Fingers click and clack keys, and there are murmurs of “Oh! I just died!” and calls from across the room: “Sam! I just figured it out!” Some students get up and peer over the shoulder at a friend’s computer. Where is the teacher? He is working one-on-one with a student and there is a list on the board where students may sign up if they would like some guidance from the teacher, but otherwise they are on their own. Alone, that is, with their friends, the internet, software tutorials and ‘cheats’, blog and wiki sites, game forums, YouTube and of course, their past experiences with technology and/or gaming. The students approach problem solving in a multiplicity of ways (Squire, 2008) and realize that their expertise is developing in order to make them more capable. One student, Sam, is immersed, working through a problem and we are surprised that he has yet to ask for help from the teacher: “Ok, never during this time have you raised your hand for help,” one of us points out. Sam replies: “No, I don’t know if the teacher could figure it out anyway. Might be able to, but I want to figure it out myself ‘cause what am I going to learn if I just let him do it.” The students are all working at different paces and timelines, on different steps and problems, and on different projects of their own choice but with the same software, the same initial challenge to create a video game. They are engaged, immersed, and are both teachers and learners in not only their individual learning process, but also the collective learning and knowledge acquisition of the class.

2013: The classroom is bustling. Students are seated—sort of—searching through a variety of computer programming tools on their computer screen to solve an exploratory problem-based learning task. These are grade 3 students, grouped in pairs and their task is to move a robotic car with a computer program. These particular students are faced with a personal challenge they will experience for their lives in schools -- they all have been diagnosed with language based learning disabilities. They are given a few simple directions and told “the only way to learn how to make your robot move is to try and fail and then fix it—go ahead!” Up for the challenge, they fill numbers in boxes.

“Okay, let’s try 3 units for rotation—I think that will get the robot to knock the block off”, says one student, Isabelle. Isabelle and her partner download the program they have created, disconnect the robot from the computer and place it on a testing ground, a large square platform. They want their robot to move from the centre of the square to the edge where it should knock a block off, but