Chapter 19
The Politics of Video Games in STEM Education

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ABSTRACT

This chapter considers broad issues related to videogame design and art educational policy issues. Discussed are Science, Technology Engineering, and Math (STEM) funding proposals, and recent moves to add the arts to this equation. Following this is a discussion of Quest to Learn, and their curricular structure, which incorporates complexity thinking, and relates to STEM, but deals more with game design as opposed to specifically being about videogames. The paper closes with recent statistics on videogame sales, and youth media use, making the argument that videogames are becoming part of a larger network of gaming experiences, and are not limited to one particular mode of delivery.

INTRODUCTION

During the 2011 U.S. State of the Union address, many Democrats and Republicans sat side by side as they paid respect to the recent Tucson, Arizona shooting victims, President Barack Obama highlighted the role that education might play in economic recovery. In this speech he referred to the 'Sputnik moment' that is upon the current generation of Americans, stating that "We need to out-innovate, out-educate, and out-build the rest of the world." (SOTU 2011).

As part of his educational agenda – specifically his *Educate to Innovate* reform plan -- President Obama emphasized the importance of student achievement in the areas of Science, Technology and Engineering, and Math, also known as STEM. The STEM coalition aims to prepare U.S. public school students for careers in these fields, as well as strengthening the role that these fields play within the U.S. public school system:

Encourage and inspire more of our best and brightest students, especially those from underrepresented or disadvantaged groups, to study in STEM fields; Improve the content knowledge and professional skills of the PK-12 STEM teacher workforce and informal educators; Recruit and retain highly-skilled STEM

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teachers; Improve the resources available in STEM classrooms and other learning environments; Encourage partnerships between state and local educators, colleges, universities, museums, science centers, STEM research and development organizations, and the business, science, and technology communities that will improve STEM education; and encourage better coordination of efforts among federal agencies that provide STEM education programs (STEM. http://www.stemedcoalition.org/objectives/)

STEM educational approaches are currently being explored in public educational systems around the world. In the United States, STEM is being promoted to ensure that American schoolchildren remain competitive in a global marketplace. Recently, the Obama administration has taken up STEM as a central component of not only educational reform but also economic reform. As President Obama stated in his 2011 State of the Union address: "Instead of funding the status quo, we only invest in reform, reform that raises student achievement, inspires students to excel in math and science, and turns around failing schools that steal the future of too many young Americans, from rural communities to the inner city" (SOTU, 2011).

While the comments made by President Obama cited above certainly touch upon a number of important social issues, from gun violence to poverty to the funding of public education, the issue that I will address in this chapter is that of STEM. This contemporary educational movement finds itself in the nexus of these issues for reasons that I will discuss. Many have been critical of the emphasis on math and science in STEM educational approaches, seeing the potential for reification of high-stakes testing and the political components of the No Child Left Behind. Others see STEM as a blatant attempt to hand over public education to commercial interests, preparing members of a 21st century workforce instead of helping to raise well-rounded global citizens.

Some art educators have criticized the absence of the fine arts from this conversation. Prominent advocates such as John Maeda, former president of The Rhode Island School of Art and Design, have suggested that the Arts should be added to STEM, creating STEAM. One of the goals behind the STEAM movement is to use the arts to highlight interdisciplinary connections that exist between the academic 'silos' of Science, Technology, Engineering, and Math[1]. Proponents of this move have started to look to interdisciplinary forms of artistic production and design to explore potential educational opportunities for critical forms of social engagement and meaningful interdisciplinary interactions.

One example of current STEM programming that has made an attempt to incorporate art and design concerns is the National STEM Video Game Design Challenge. This competition was started in September 2010 by the Obama administration, and featured three competition categories: Middle School, Collegiate, and Developer (www.stemchallenge.org). The National STEM Video Game Design Challenge has been endorsed by businesses such as Microsoft, nonprofit organizations like the Joan Ganz Cooney Center at Sesame Workshop, and the U.S. Department of Education. The $300,000 competition, has, at the time of this writing, completed its fourth annual contest. It aims to reinforce science and math standards, and incorporates three unique options for entering: creating a game design script, making a playable game in Gamestar Mechanic, Game Maker, or Scratch, or designing a game in what they term an 'open platform' such as Flash, Game Salad, or Kodu (stemchallenge.org).

The STEM/STEAM debate raises issues regarding the reconceptualization of the field of Art Education; as I have indicated, it begins to touch upon numerous questions regarding video game design and art educational practices. One question that is made all the more pressing in an era of limited funding for art education is as follows: If digital game design concerns were included within the larger disciplinary structure of art education, might the arts find more support within the funding structures and