



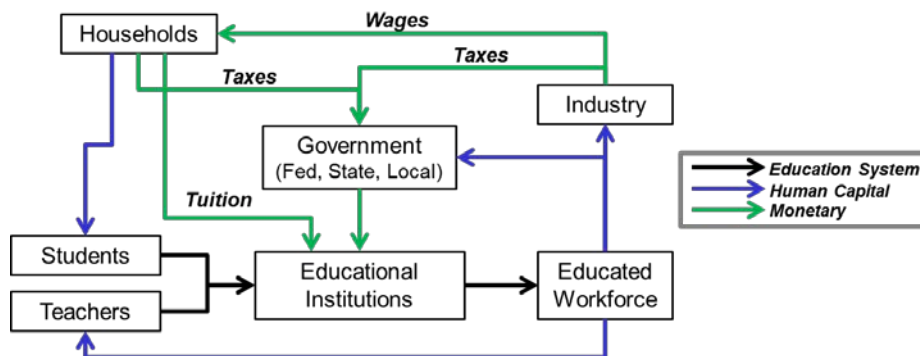
## The Shifting Paradigm of Education in the 21<sup>st</sup> Century

Many point to education as the cornerstone of a great society. We look at education as the great enabler, subscribing to the idea that the better educated our people are, the better positioned we are as a country to lead in the global marketplace. Indeed, the White House introduces their Education web site with the quote:

“If we want America to lead in the 21st century, nothing is more important than giving everyone the best education possible — from the day they start preschool to the day they start their career.”

Our education system produces the workforce that leads the growth and development of our nation. However, education in America is viewed by many to be lacking. People point to dropping test scores, soaring cost (especially of higher education), and slipping rankings among other nations and question the quality and efficacy of our education system.

A systems view of education reveals many different stakeholders, actors, and interactions. Figure 1 provides a greatly simplified view of this system. While the actual system is much more complex, with regulatory functions, socio-economic factors, and workforce dynamics, we can see from the simplified view the general cycle and impact that the education system has on society.



**Figure 1: Simplified System Diagram of Education**

It is often said that we are living in the information age. The management and exchange of information is at the forefront of almost every aspect of our lives and there is no more fundamental example of information exchange than education. Yet our education system is only now catching up to the technology of the 21<sup>st</sup> century. Studies have shown that the current generation, which has grown up immersed in electronic media, learns differently. Knowledge dissemination and retention paradigms are shifting and educators are trying to find new ways to communicate with this generation of Digital Natives.<sup>1</sup> We also see this paradigm shift in higher education through the rise of distance learning programs and Massive Open Online Courses (MOOC).<sup>2</sup>

Data collection and review is also emerging as a powerful tool in the development of curricula to best support the needs of the local community. By tracking information about students' educational background and their eventual place in the workforce, we can potentially create educational paths that provide our workforce with the right tools to be



successful in their work environments. This can be seen in action in Mississippi's statewide longitudinal data system (SLDS). The SLDS was started under a grant from the U.S. Department of Education and Mississippi is one of 47 states who have received over \$600M since 2009 to investigate the implementation and efficacy of such a system.<sup>3</sup> Overall, the paradigm of education appears to be shifting and technology and information will play a vital role.

### **The Problem Statement**

*What systemic changes can we make to education in America to produce the best-trained workforce possible and what role will technology play?*

There are many issues that can be addressed when looking at the American education system. However, at its fundamental core is the assertion that education, from pre-k through post-graduate, produces a workforce capable of leading America in the global marketplace. A well-educated society can have immeasurable benefits from the local community to the national scale. In this information age, how can technology help us improve our education system? In what ways can we improve the dissemination and retention of information and its transformation to usable knowledge keeping in mind that learning at its most basic level is best achieved when there is interest in the topic? What can be done to ensure that we are producing the right workforce for the tasks at hand today as well as in the future?

This is an extremely broad and complex topic. We are asking you to implement a complex systems based approach to decomposing key aspects of this problem and present a solution or solutions to address the issue you choose to tackle leveraging technology.

A good systems engineering approach addresses technical, social, economic and policy aspects and should include:

- An analysis of the current problem and the needs of the stakeholders
- A structured, multi-disciplinary approach to weigh the pros and cons of various alternative solutions
- An implementation and deployment concept
- A strong argument for why your ultimate solution is the best, based on a set of figures of merit tied back to stakeholder needs

We are looking for knowledgeable, multi-disciplinary student teams that are capable of compiling a strong technical overview and delivering a compelling technical argument.

1: Prensky, Marc "Digital Natives, Digital Immigrants", *On The Horizon*, Vol. 9, No. 5, 2001.

2: "College is free!", *CNN Money*, <http://money.cnn.com/2013/05/01/pf/college/free-online-courses.moneymag/>

3: *Statewide Longitudinal Data System Grant Program*, <https://nces.ed.gov/programs/slds/index.asp>