Theoretical Framework Examples

Example 1

Enhancing meaningful learning by integrating technology into instructional design is central to this project. The most influential theory associated with this process is the cognitive theory of multimedia learning proposed by Mayer (1997). It is based on the theory that humans have two ways or "channels" of processing information; auditory and visual, otherwise known as the dual-channel assumption. By leveraging both of these means, and by building connections between multiple representations of the same information, meaningful learning is more likely to occur (Mayer, 1997; Moreno & Mayer, 2003).

Another important contribution to theory about learning with technology is the modality principle, closely related to the cognitive theory of multimedia learning. It postulates that using multiple modalities when presenting information leads to more learning transfer. Importantly, it also focuses on cognitive load, or the amount of information that can be processed and held in the working memory before loss of information occurs. Cognitive overload is often an impediment to retaining information and according to Moreno & Mayer (2003) can be managed by using specific instructional design principles. These theories and principles are the theoretical basis for bringing video, audio and other multimedia presentations and technology into the classroom.

Example 2

This project is based on 2 theoretical areas: Freirean theory of dialogue and society, and the major economics models of assignment such as the Boston Mechanism and Deferred Acceptance.

The first area is Paolo Freire's theory of dialogue (Freire, 1970). Freire states that dialogue, particularly between leaders and community, is essential to liberation and education of the masses by challenging historically held methods via the use of critical thought. Critical thought raises consciousness and questions the assumption that people should fall into established routines or systems, rather than help to form new systems that better address their needs. This emphasis on conscious, collaborative action gives power to community members motivated to redefine aspects of their educational system.

Studies that address community dialogue in the context of school choice and parental preference have found that districts often disregard parental involvement or assume parental preference and choices where little information supports those assumptions (Hastings, Van Weelden, & Weinstein, 2007; Rothstein, 2002; Schneider & Buckley, 2002). Whether by negligence, lack of budget, lack of motivation, or simple ignorance, schools tend to operate on long held beliefs regarding parental preference that may not stand up to examination, but which tend to go unchallenged and largely unpublicized.

Freire's emphasis on dialogue is reflected in this project by my advocacy for parental and community involvement with the development and editing of school assignment mechanisms. Families and community members deserve not only to be part of the conversation, but to be explictily invited to that conversation and involved in the solutions. Additionally, information about these mechanisms must be presented in accessible language, and with appropriate context. This paper serves as a bridge from the inaccessible and often intimidating language of economics and educational theory to the people most affected by the discussion: families and students.

The second area is the area of economic theory that gives us the Boston Mechanism, Deferred Acceptance, Gale-Shapley, Top Trading Cycles, Columbus Student Assignment Mechanism, and other school choice systems. These economic and mathematical theories are similar to those used in college acceptances, medical interns and residents rotation assignments, and even distribution of goods and services. Many rely on a random lottery at some stage of operation, and most take into consideration sets of priorities and preferences. Most also are designed outside of actual district application, and require some amount of editing to accommodate quotas and to prevent uneven distribution of particular attributes (typically race, gender, socio-economic standing, and academic ability).

Studies on assignment mechanisms have found that these popular assignment mechanisms differ in practical application and have been edited and substantially changed as quotas, balance, and equality become higher priorities than efficient assignment (Abdulkadiroğlu & Sönmez, 2003; Chen & Sönmez, 2006; Kesten & Ünver, 2010; Miralles, 2009). Additionally, not all are executed in the same way or with the same rigor, allowing for manipulation or strategy on the part of the participants that change the outcomes of the mechanism, and therefore challenges to the transparency and lack of bias that school districts should make a priority.

These economic theories are a significant part of my project's emphasis in bringing the language and logic of assignment mechanisms to an accessible medium for parents and community members. Understanding how these mechanisms came to be, and how they are put into effect, is an essential part of opening up the dialogue on how students and families are best served by their public school districts. Research into these theories for this project will translate into tools for explanation and education of parents and administrators alike, creating a common language and understanding from which further discussion of assignment can take place.

Example 3

The importance of understanding problem solving effectiveness as well as the importance of leadership is very much related to, and supported by, the attribution theory. Attribution theory fundamental characteristics are linked to the work done by Heider (1958), Kelley (1973), and Weiner (1986). In a recent study done by Martinko, Harvey, and Dasborough (2011) the authors found that the attribution theory has a place in understanding many organizational phenomenon and can further the study of human behavior. The attribution theory is further described by these authors as " [an] individuals' explanations for the causes of their successes and failures and influence expectancies, emotions, and behaviors" (Martinko, Harvey, & Dasborough, 2011, p. 145). This is an important concept when discussing problem solving and leadership because understanding the cause and effect of success or failure is key when discussing group effectiveness.

In addition to the information provided by Martinko, Havey, and Dasborough (2011) other scholars such as, Livi, Kenny, Albright, and Pierro (2008), suggest that attribution does have an effect on the social perception of leadership. The authors discuss a study conducted by Lord (1980), which suggests that problem solving and attribution are directly related when evaluating leadership. While the authors suggest some ways attribution may be better evaluated in the research done by Lord they did find that "[the] results suggest that a large part of the agreement among the group members is probably based on characteristics of the target's expressed behavior in interaction" (Livi, Kenny, Albright, & Pierro, 2008, p. 244). Both sets of authors suggest that attribution theory is an important concept to consider when discussing leadership and can be utilized in understanding the behavior and interaction in groups specifically in problem solving settings.

The attribution theory is reflected in this project by the use of the NASA Moon Exercise, which will create a measurement for success or failure based on leadership. Based on the behavior and interaction between subjects, in accordance with the Attribution Theory, there will be a clear correlation between successful problem solving and leadership method. Attribution Theory also proves to be present in the behavior of test subjects because it is assumed that subjects will alter their behavior based on leadership method in order to complete the task with the highest score which is exactly what authors Martinko, Harvey, and Dasborough (2011) suggest happens when attribution theory is present.

Example 4

This project is based on the framework of comparative education. Comparative education is the study of different countries' education systems. Michael Sadler was one of the first and most influential comparativists in education. Sadler found comparative education valuable for a number of reasons. Sadler's research allows researchers to describe education systems, processes, and outcomes. Moreover, comparative education can be used to support the development of education institutions and practices. From a humanistic

perspective, comparative education can be used to emphasize relationships between education and society. Lastly, comparative education creates global truths about education that are valid in more than one country. Though, in studying other education systems, Sadler emphasized that one must not forget the effect of culture on an education system (Bereday, 1964).

Studies (Bu, 1997; Crossley, 2000; Demerath, 1999) of comparative education have found that comparative education is a helpful tool for various reasons. Countries can use comparative education to aid in reforming education policies. It is beneficial to evaluate why and how one country has had success in education as to produce a possible solution for a failing system. Researchers, also highlight the influence of culture on an education system. The Comparative and International Education Society, continues research in hopes of producing cross-cultural understanding and to further students achievement and development across the world, through international comparative studies (Bu, 1997; Crossley, 2000; Demerath, 1999).

Comparative education is reflected in this project by my purpose and the method in which I am using to look at Singapore's math education system. With the United States trying to improve math performance, analysis of Singapore’s successful math education system can provide the United States with possible solutions. While these two countries are culturally different, among other differences as well, comparative education creates a space to compare the two countries’ math education systems, in hopes of improving the math education system in the United States.