

**Thesis Portfolio**

**Assessing Student Learning of Systems Thinking Concepts in an Online Learning Module**  
(Technical Report)

**The Influence of Social Media on College Athletes**  
(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science  
University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree  
Bachelor of Science, School of Engineering

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## **Sociotechnical Thesis**

Higher education has been evolving and adapting to a vast variety of changes within in the past few decades. One of the biggest changes that higher education has begun to embrace is the use of technology in the classroom, specifically transitioning to online virtual courses. This transition can be difficult for many, so it is important that students in all academic disciplines understand the idea of “systems thinking” and how they can use that to solve any problem or challenge they are faced with. The technical portion of this thesis attempted to find a way to disseminate the ideas of systems thinking to a diverse population of those in higher education. An online module was created to teach the basic concepts of systems thinking to users. The platform of the module, Thinkific, was chosen through a gap analysis of existing online course platforms. After the creation of the module, students in both the College of Arts and Sciences and in the School of Engineering and Applied Science at the University of Virginia completed a pre-test, the module itself, and a post-test. The results of the pre- and post-test were analyzed quantitative and qualitatively. After analyzing the results, there were two major findings. The first was that online learning increased learning and understanding concerning key systems thinking concepts, and the second was that there was no significant difference in the learning between CLAS and SEAS participants.

The STS part of this thesis focused on the influence of social media, specifically Twitter, on college athletes. Twitter is one of the largest social media platforms in the world, and is used by many college athletes and college athletics fans. The app also holds the potential for large amounts of information to be spread rapidly. Within the past few years, examples of the influence of social media on college athletes have become more common and alternative research has been conducted. This part of the thesis researched the role Twitter plays in

cultivating fan-player interaction for college athletes. The research focused on Player-Twitter-Fans relationships and self-image building and public relations strategy by both the players and sports organizations. Athletes from the UVA football and basketball teams were interviewed, as well as fans of the sports. The interview responses were recorded and a qualitative analysis of the responses aided in the answering of the research questions.

The technical and STS theses are not related.