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**SMU ENGINEERING AND EDUCATION PROFESSORS RECEIVE NSF GRANT TO RESEARCH TEACHING COMPUTER SCIENCE AND COMPUTATIONAL THINKING THROUGH COMMUNITY GAMING**

**DALLAS (SMU)** – The [Lyle School of Engineering](#), [Guildhall](#) and the [Simmons School of Education & Human Development](#) at SMU will use a \$1,521,615 grant from the National Science Foundation to research teaching computer science and computational thinking through the popular video game, Minecraft. Research will span the fields of game design, human computer interaction, machine learning, curriculum design and education assessment by integrating STEM+C (computing) based curriculum directly into Minecraft. The project will help advance knowledge in game-based learning by building on techniques and experiences from commercial game design. The game and infrastructure produced through the research will serve as a vital computing resource for middle and high school educators.

The grant was awarded to Corey Clark, deputy director of research at SMU Guildhall and an assistant professor of Computer Science at Lyle, Eric Larson, associate professor in Computer Science at Lyle and Leanne Ketterlin Geller, professor and Texas Instrument Endowed Chair in Education at Simmons. Research begins this month with funding extending through 2022. Their aim is to create a more stable, ethical, and inclusive data science workforce by broadening the interest in data science to a more diverse population of K-12 students.

“We’re presented with the challenge of finding creative ways to positively impact student outcomes in STEM and the value it can provide in the learning experience,” said Ketterlin Geller. “We struggle with K-12 student engagement in math and science so this project is an optimal way to help us generate new interest while meeting our education goals and seeing students succeed and excel in these fields.”

“A key initiative of STEM+C is to cultivate the skills for the next generation of data scientists, information scientists, and engineers. Video games provide a technique to engage the next generation of students in a fun and intuitive manner,” said Clark. “Games are developed around fundamental activities, or gameplay atoms, which reflect the experiential learning process through a trial and error in-game conveyance/feedback loop.”

Research will integrate curriculum that aligns with education standards such as Common Core Standards in Mathematics (CCSS-M), Next Generation Science Standards (NGSS-2013), Computer Science Teachers Association (CSTA-2017), and California Computer Science Content Standards (CACS-CS 2019) into the successful loops found in Minecraft. These loops contain game mechanics that have shown to engage a large demographic of players across age, gender, race, and socio-economic factors. The project will integrate feedback from educational stakeholders, including teachers and students. Key outcomes from engaging in gameplay that are assessed include changes in students’ interest, attitudes, beliefs, and self-efficacy in STEM+C, engagement in collaborative open-ended solution making, and achievement in related computing and mathematics concepts.

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### **About the Lyle School of Engineering**

*SMU's Lyle School of Engineering, founded in 1925, is one of the oldest engineering schools in the Southwest. The school offers eight undergraduate and 29 graduate programs, including master's and doctoral degrees, through the departments of Civil and Environmental Engineering; Computer Science; Electrical and Computer Engineering; Engineering Management, Information and Systems; and Mechanical Engineering. Lyle students participate in programs in the unique Deason Innovation Gym, providing the tools and space to work on immersion design projects and competitions to accelerate leadership development and the framework for innovation; the Hart Center for Engineering Leadership, helping students develop nontechnical skills to prepare them for leadership in diverse technical fields; the Caruth Institute for Engineering Education, developing new methodologies for incorporating engineering education into K-12 schools; the Linda and Mitch Hart Institute for Technology, Innovation and Entrepreneurship, combining the innovative forces of Lyle and the Cox School of Business to integrate their expertise, resources and guidance to develop technology prototypes and create viable business plans; and the Hunter and Stephanie Hunt Institute for Engineering and Humanity, combining technological innovation with business expertise to address global poverty.*

### **About Guildhall**

*Since its genesis, SMU Guildhall has set the bar in game development education. Recognized as one of the best game design graduate programs in the world, SMU Guildhall works collaboratively across disciplines and industries to train the next generation of game developers. It's long held a seat in the Top 10 rankings for game development programs across the world by the Princeton Review, sitting at Number 1 for the past two years. In addition to its Team Game Production curriculum, the Guildhall has been commended for the high quality of its faculty of industry veterans and professionals as well as its career services achievements. The program has graduated over 800 alumni, who now work at more than 270 video game studios and tech companies around the world. The program's achievements can also be seen in its high-caliber game successes including record breaking downloads, awards, and contest wins. SMU Guildhall offers both a Master of Interactive Technology in Digital Game Development degree and a Professional Certificate of Interactive Technology in Digital Game Development, and it is the only program to offer specializations in all four cornerstones of game development — Art, Design, Production, and Programming. For more information, visit [guildhall.smu.edu](http://guildhall.smu.edu).*

### **About Simmons School of Education & Human Development**

*The Annette Caldwell Simmons School of Education and Human Development at SMU reflects the University's vision of serving the most important educational needs of our city, region and nation, graduating students for successful careers in a variety of fields and providing educational opportunities beyond traditional degree programs.*

*Recognized as a unique and transformative leader in education research, practice and policy, the School is committed to rigorous, research-driven programs that promote evidence-based, effective practices in education and human development.*