

# SCALABLE GAME DESIGN

## challenge

Participation in IT education is dwindling at all levels (K-12, CC, 4 year colleges) and especially low with women and minorities.

Support for STEM does not include IT education.

Computer Science is considered by K-12 students "hard AND boring."

IT is not part of policy discussions.

Most states do not have IT training requirements for teachers or IT standards.



## funding

NSF ITEST (Innovative Technology Experiences for Students and Teachers) program: > \$100M total, \$1.5M this project.

Not tax payer but H1B visa funds.

## project

Mission: Reinventing computer science and STEM education in public schools by motivating & educating all students including women and underrepresented communities through game design & computational science starting at the middle school level.

This ITEST project is one of the few models integrated with K-12 IT education.

Scope: tech hub, inner city, remote rural and Native American communities in Colorado and South Dakota.

## partners

NCWIT, Community Colleges, Tribal Colleges, AgentSheets Inc., Colorado Association of Black Professional Engineers and Scientists, CSTA.

## investigators

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## background

University of Colorado is a leader in STEM education.

Chancellor Phil DiStefano has recently briefed President Obama on STEM education.



## strategy

Integration into required courses to broaden participation through the inclusion of women and minorities.

Support of teachers by community/tribal college students.

Start with game design for motivation then transfer computational thinking skills to science.

## results

Real need: planned for 1200 students in 3 years, already instructed over 1300 students in first semester.

Not the usual suspects: in many K-12 computer science courses participation of girls in computer science courses is less than 10%. This project's average is 52.3% girls.

Some of the participating middle schools instruct over 900 students per year.

Students want to participate in more game design courses: 78% girls/68% boys, 74% minority/76% white.