**project**

- **goal**: get computer science into middle schools
- **approach**: scalable game design to motivate and educate students to learn about computer science through game design
- **research**:
  - transfer to STEM: “now that you can make the game, can you make a science simulation?”
  - computational thinking (an NSF priority)
- **scope**:
  - years 1-3: strategic exploration of Colorado spectrum
  - years 4-8: scale up to US.
today

- goals:
  - meet local (Boulder, Denver) collaborators
  - what to expect: video
  - summer program: Spring preparations
  - evaluation

- quick intro
we got an $1.5 million National Science Foundation grant through the NSF ITEST program

- ITEST
  - $115 million federal investment
  - 130,000 students, grade 6-12
  - 4,300 teachers
  - 1,700 parents and caregivers
**our goal: bring computer science into public schools**

- most ITEST programs are after school programs
- motivate and education through scalable game design
- support computational thinking
- facilitate computational science
- provide access to ALL students including women and minorities, e.g., BVSD “forced elective”
4 areas

- Tech Hub: Boulder, BVSD
- Inner City: Aurora
- Rural: Pueblo
- Remote/Tribal: Ignacio, CO, and Oglala, SD
a LARGE project

Oglala, SD to Ignacio, CO
715 mi – about 12 hours 40 mins
Boulder to Ignacio

346 miles
about 6 hours
53 mins
From Boulder to Oglala, South Dakota

392 miles, about 6 hours 21 mins
process: middle school

**middle school: 6th Grade**

- **motivational focus:**
  - computer science is interesting; I can do this

- all 6th grade students
  - motivational survey
  - trained middle school teacher
  - teach k-12 students how to make a simple frogger-like game, administer motivational questionnaires and organize family participation

- required game design module
  - 1 week

- family show & tell
  - motivational survey

**middle school: 7th or 8th Grade**

- **STEM focus:**
  - game design connections to math & science, computational science

- self selected 7th grade students
  - motivational survey
  - trained middle school teacher
  - trained community/tribal community student
  - teach k-12 students how to make sophisticated games and simulations including math and science, administer motivational questionnaires and organize family participation

- elective game design module
  - 4 weeks

- family show & tell
  - motivational survey
process: high school

self selected high school students

motivational survey

elective transition 1 week

high school

computer science skills
focus: software engineering, programming, object oriented design

elective
game design using Java, C#, Flash
8 weeks

trained high school teacher

on the job training

university

community/tribal college

workforce

teaches k-12 students how to use programming languages such as Java, and C#; helps students making transition from visual tools
workplan

- immediate goal: Summer workshop:
  - Community/Tribal college students June 1-5
  - teachers + college students: June 7-12
CU Spring

- summer program organized
- curriculum designed
- Cyberinfrastructure (Web 2.0) developed
  - Scalable Game Design wiki
    - http://scalablegamedesign.cs.colorado.edu/wiki/Main_Page
  - Scalable Game Design arcade (game/sim exchange)
School districts

- teachers recruited for Summer
- Aurora: 4 teachers?
- BVSD: 6 teachers
- Ignacio: 2 teachers
- Oglala: 1 teacher
Community/Tribal Colleges

- **Goal:** need to recruit students
  - **Timing:** early Feb., k-12 schools require background checks

- **Organizations**
  - Community College of Aurora
  - Pueblo Community College
  - Oglala Tribal College
  - Ignacio, Fort Lewis, State College
questions for you

◆ summer courses:
  ◆ what besides learning to make games + computational science simulations? (e.g., wiki skills)
  ◆ how to best interact with community/tribal colleges?
more info

http://scalablegamedesign.cs.colorado.edu
Teacher program

Teachers will learn

▪ how to teach computer science through scalable game design
▪ how to guide students in designing and building games
▪ how to work with game design patterns
▪ how game design maps to the ISTE standards
▪ how to use the AgentSheets software

Teachers will receive

▪ up to 3 University of Colorado (Boulder) continuing education credits
▪ a stipend of $25/hour
▪ travel and subsistence expenses
▪ support from research team, including lesson plans and other teaching material
▪ support in the classroom from undergraduate students local to each region (from CU, community colleges, tribal colleges)

Teachers will have to

▪ attend an all-expenses-paid week-long summer workshop at the University of Colorado in Boulder. Summer 2009 workshop is tentatively scheduled for June 7-12, 2009.
▪ teach a one-week motivational game-design module in a required (or "forced elective") computer education course using teaching material provided by research team
▪ teach a four-week in-depth game design module in an elective course using teaching material provided by research team
▪ administer motivational questionnaires to students
Teachers are encouraged to

- contribute to Game Wiki by improving existing teaching material and submitting new ones
first US-wide Native American Game Design class