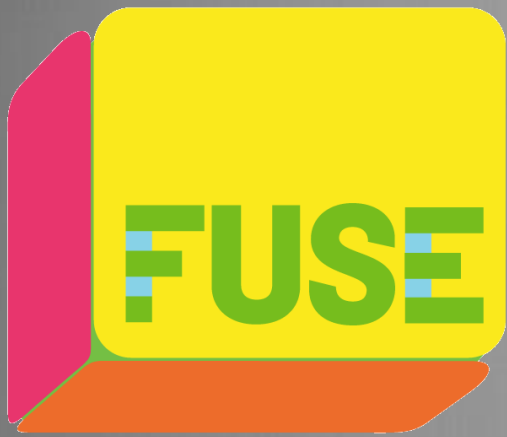


# FUSE Studios: A Sustainable Partnership Model within a Challenge, Choice, and Interest based STEAM learning environment

Reed Stevens  
Northwestern University  
Learning Sciences

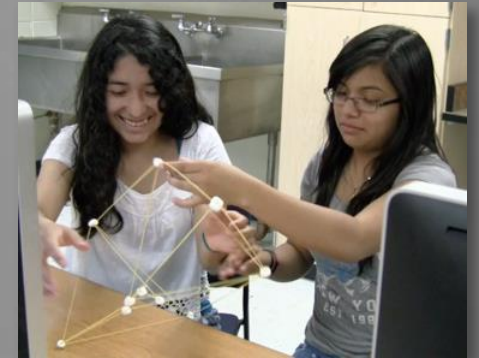
STEM Forum  
Washington, DC  
November, 9 2015

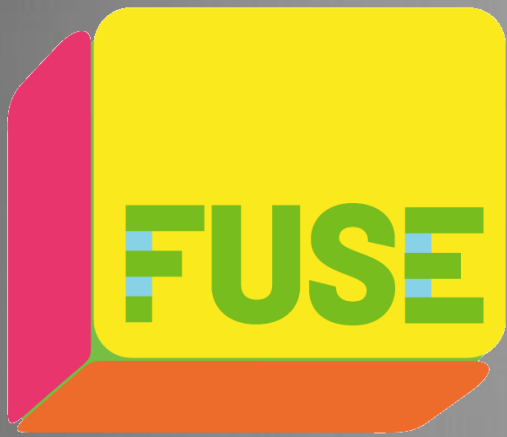
FUSE is designed by researchers and educators at Northwestern University. FUSE is generously supported by grants from the National Science Foundation under NSF grants DRL-1348800 and DRL-1433724, the MacArthur Foundation, and Hive Chicago. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation. © Reed Stevens & Kemi Jona



# Why FUSE?

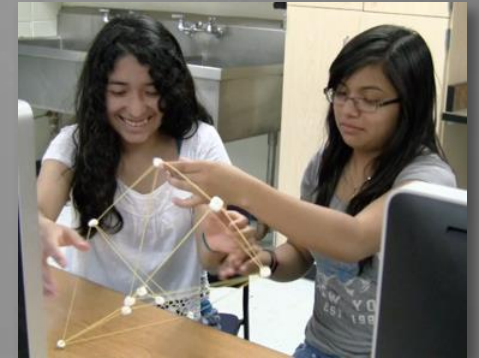
- ✦ Traditional American STEM education...
  - ✦ serves only a small fraction of high achieving students as a path to future activity
  - ✦ does a poor job cultivating interest in any students
  - ✦ has proven hard to change
- ✦ FUSE Studios as an alternative (or complement) to typical American STEM education—textbook based, prescribed curricula, assessment through homework and testing, no student choice, indifferent to student interests
- ✦ Could we adapt understandings from research on effective learning environments outside of school to create an alternative for STEM/STEAM learning in schools?



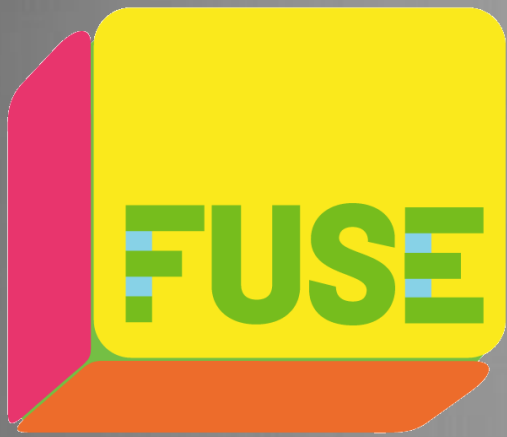


# Overview of FUSE Approach

- ✦ STEAM challenges that 'level up' like video games
- ✦ Challenges designed *from* young people's interests and progress *toward* more complex STEAM work
- ✦ Youth control choice of challenges and pace, whether to work alone or together
- ✦ In schools, after school programs, public libraries, and community centers
- ✦ Youth self-document challenge completion (to unlock next challenges)
- ✦ Many forms of help resources: other participants, facilitators, prepared online materials, online mentors (soon)
- ✦ Adult facilitators act as coaches and guides

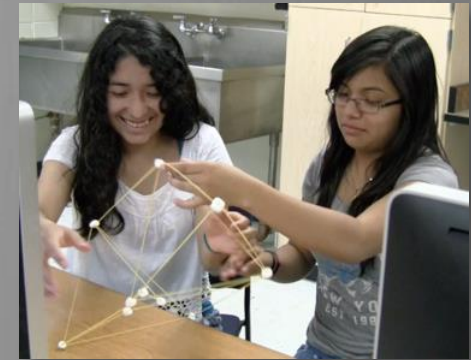


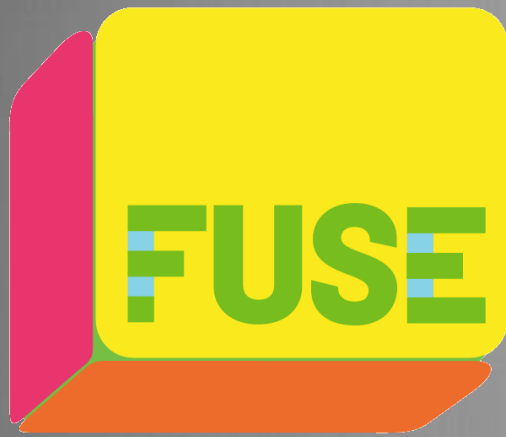




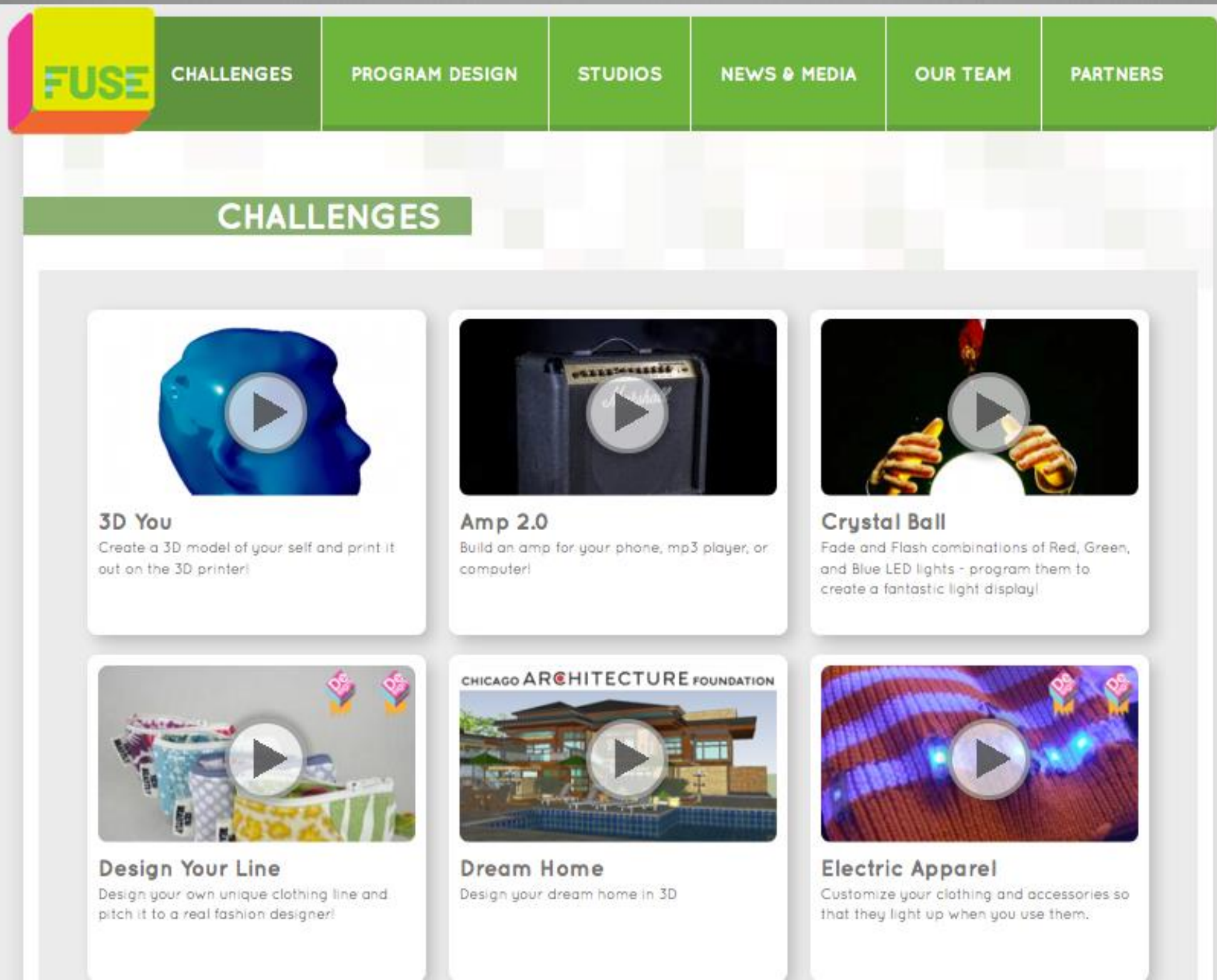
# Overview of FUSE Approach

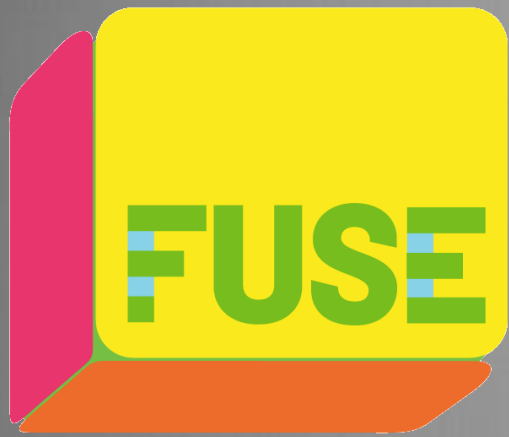
- ✦ Learning goals for youth participants are not exclusively or primarily STEM content goals but interest development, creativity, adaptive problem solving, persistence, autonomy, willingness to 'fail' ("failure is just another try"), resource finding. (21st Century Skills)
- ✦ Experiences with a lot of tools and practices that fall between cracks of typical school subjects: (e.g. programming, robotics, 2D and 3D design, engineering practices).
- ✦ Design approach builds from youth interests and toward real STEM/STEAM work practices. Challenges designed with industry and academic disciplinary partners.



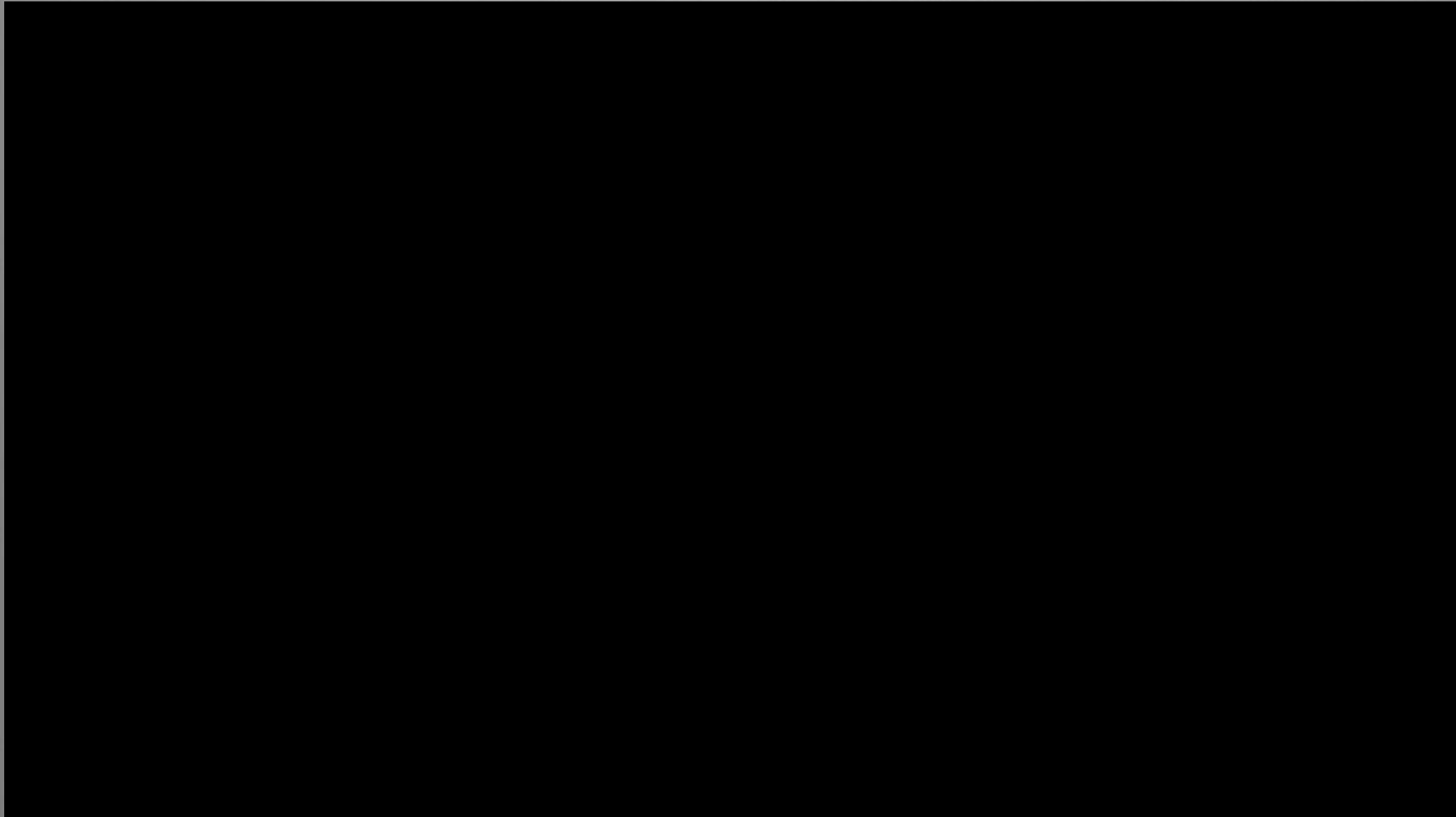


# Website offers a menu of challenges

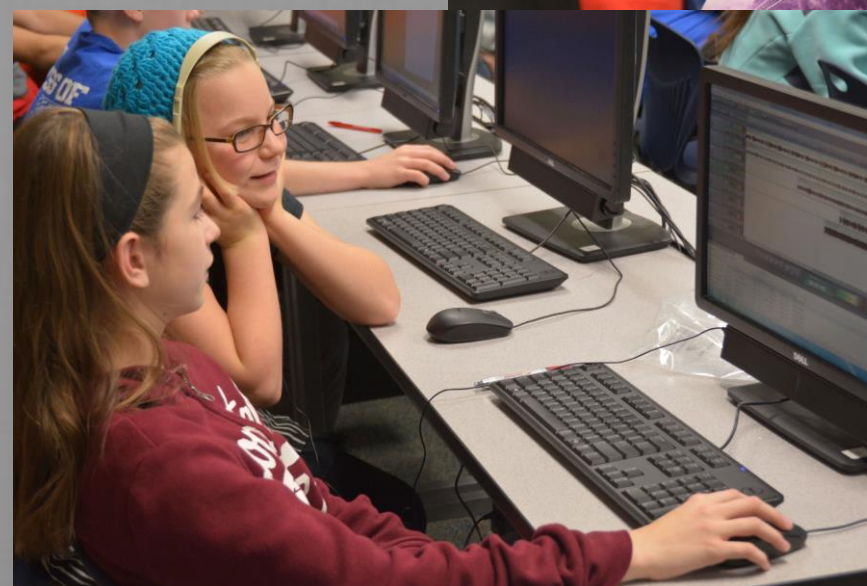
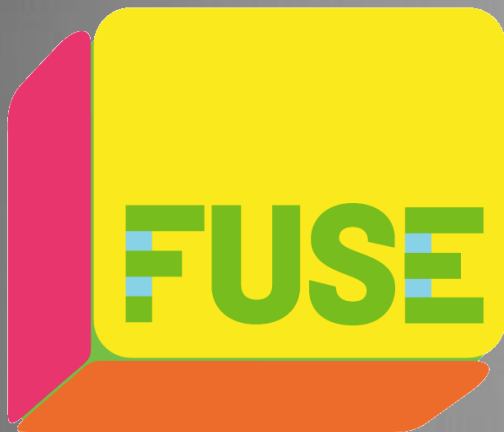




‘Trailers’ introduce challenges  
to invite interest





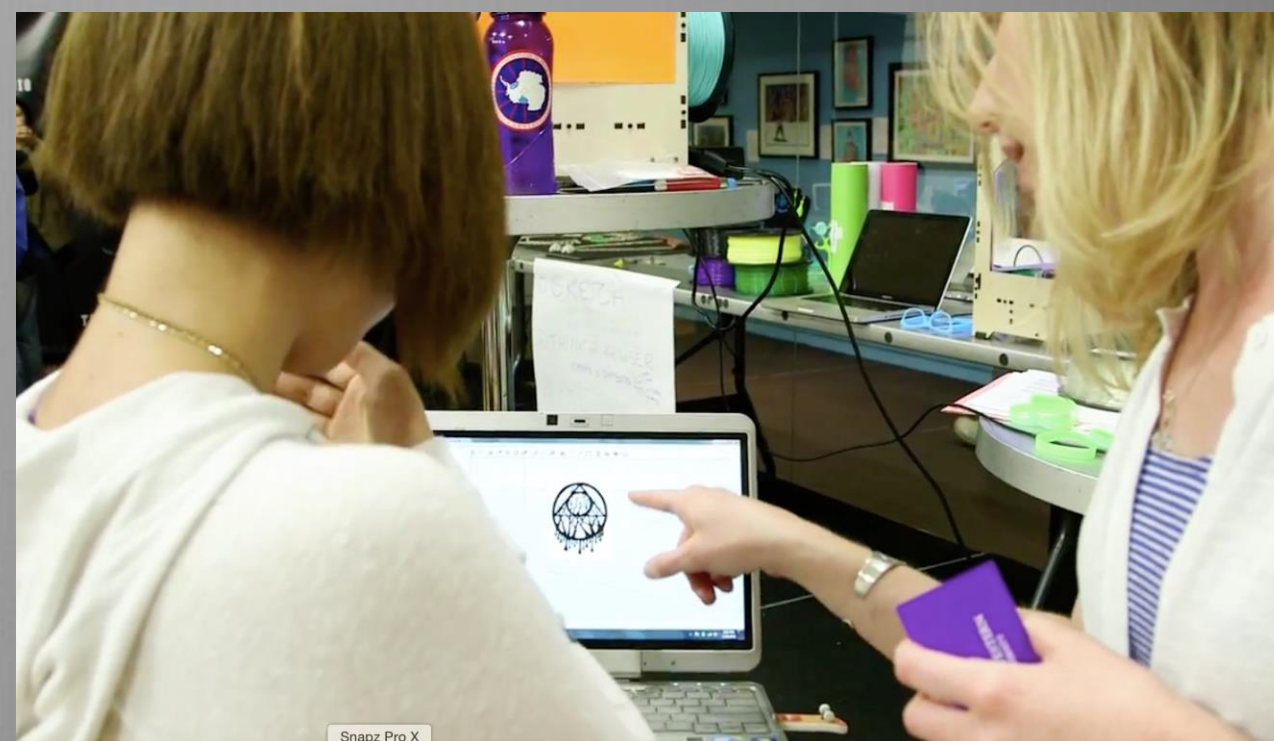


Working together, learning from peers,  
sharing and critiquing ideas

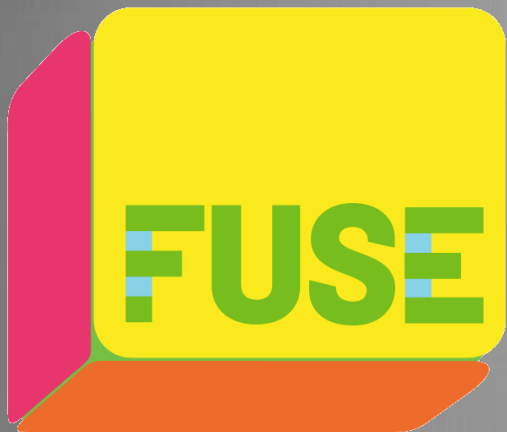


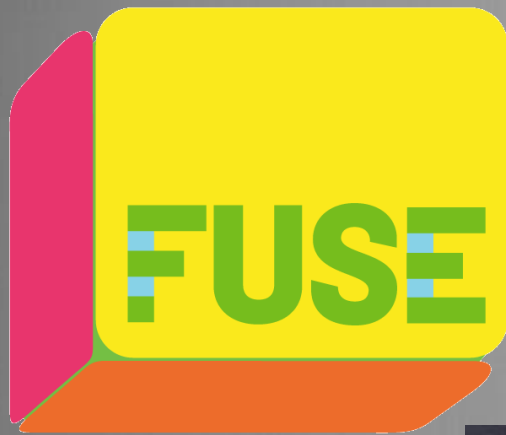


FUSE teachers facilitate, coach,  
guide, encourage, connect

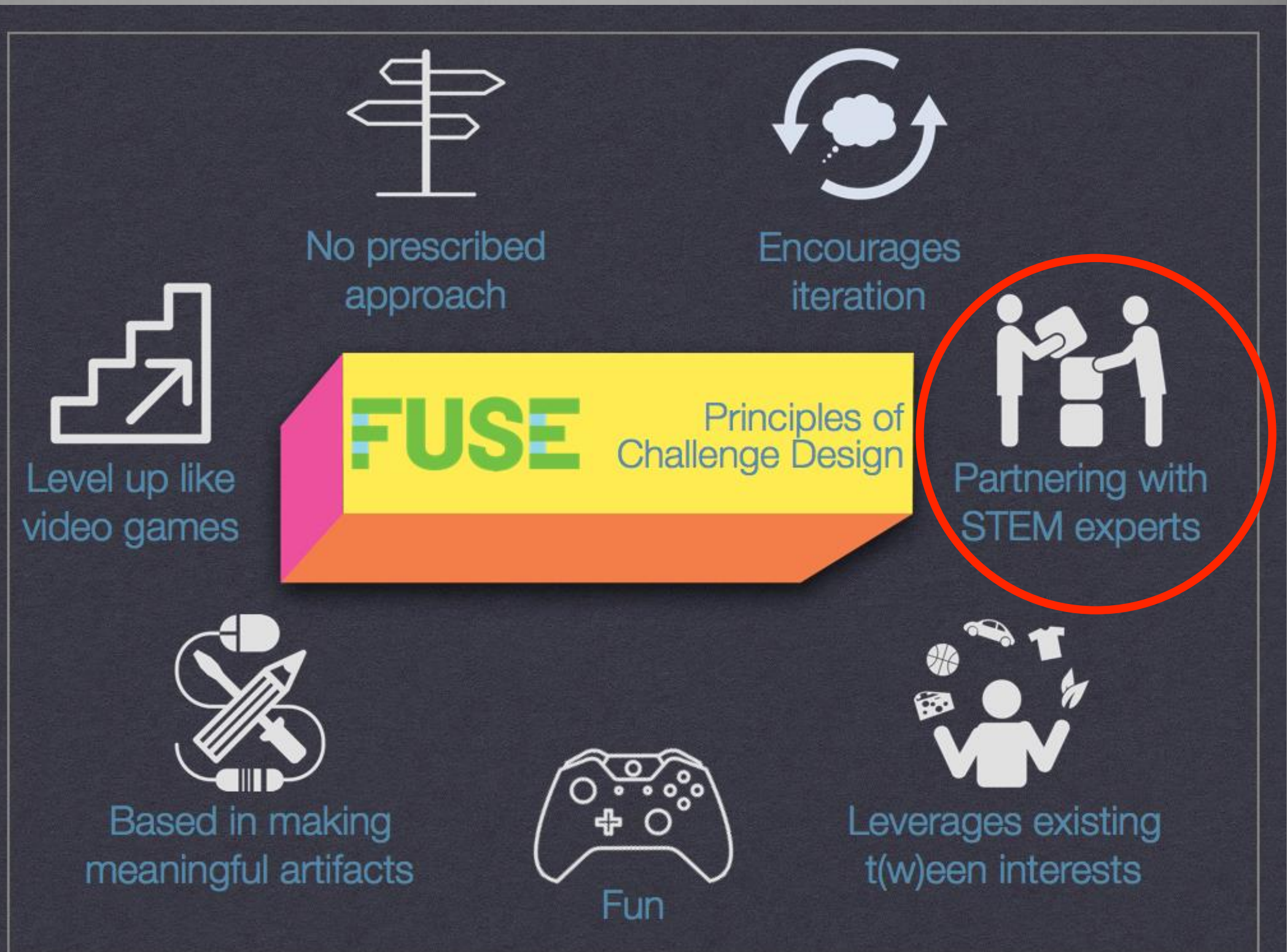




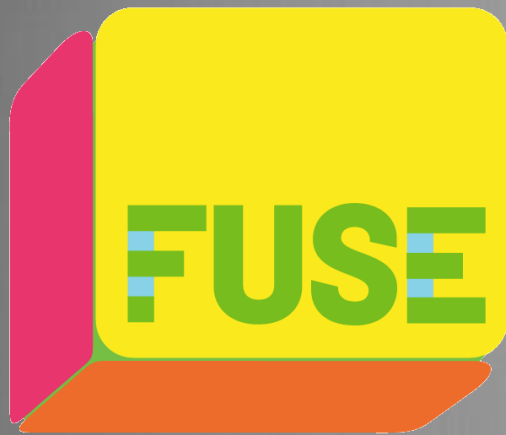




# FUSE Challenge Design







# Sustainable approach to designing challenge sequences with industry and academic-disciplinary partners

- ✦ Challenges designed with partners ensures contemporary STEM/STEAM work is experienced
- ✦ Effort required of partners is reasonable and does not require they become 'education experts'
- ✦ A more enjoyable and less constraining approach compared to traditional curriculum development
- ✦ Offers a dissemination mechanism for outreach efforts by partners
- ✦ Possible expansion points into deeper engagement (via internships, site visits, showcases, etc.) for participants who 'level out' of relevant challenge sequences
- ✦ Broadens horizons of what "counts" as STEM for youth beyond traditional curricula experienced in school
- ✦ Introduces youth to the experience of working with more authentic tools & technologies linked to future STEM career pathways



