Research on Innovative Technologies to Enhance Learning (RITEL) & other Funding Opportunities

WHAT'S IN SCOPE & WHAT'S NOT

WHAT'S NEW

WHERE YOUR WORK MIGHT FIT

Context for RITEL as an NSF Program

◦ Builds upon a long history of NSF programs co-led by EDU and CISE (and in collaboration with SBE and ENG) in emerging learning technologies:

◦ from Advanced Learning Technologies (ALT),

◦ to Cyberlearning,

◦ to most recently Research in Emerging Technologies for Teaching and Learning (RETTL)

◦ Fills a very specific niche as an **incubator program for research on novel learning technologies**

Key Requirements for RITEL

- Research must synergistically advance **both** the learning sciences and computer sciences
  - For learning sciences- research should generate basic knowledge about learning/teaching (principles, processes and mechanisms)
  - For computer science- research could include innovations in algorithmic techniques, data structures, computational methods; in fields such as artificial intelligence (machine learning, human language technology, computer vision) or human-computer interaction (user interface/interaction design)
  - One way to show that a proposal "advances both" computer and learning sciences would be to aim for contributions that appear in interdisciplinary venues of interest

- Projects must be exploratory, future-oriented, ideally take risks

- Encourage projects that broaden participation of people and institutions

- Careful attention to issues of ethics, equity and bias

Scope of topics is wide

Content: any STEM-enabling learning content area

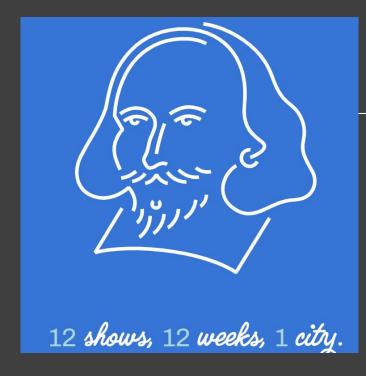Context : any learning context (e.g., formal, informal)

Learner population: any

What's new (RETTL ▢ RITEL)

◦ Projects must respond to needs in authentic (real-world) educational environments

◦ Increased budget size to $900,000

◦ Consideration for under-resourced schools and costs of technology

What's not a fit for RITEL

- Projects that are primarily about **development** of a technology.

- Research that focuses on **evaluating the effectiveness** of a curriculum, teaching, existing learning technology or technology-based intervention.

- Projects that involve **incremental advances of existing technologies** (e.g., technologies already in widespread use or soon to be broadly available for teaching and learning) .

- Projects that research the **deployment/implementation/adaptation of existing technologies** in new learning contexts.

- Projects that focus on increasing **competency in using** existing technology (e.g., computer literacy).

12 shows, 12 weeks, 1 city.

Upon the stage where knowledge's light doth shine, A dialogue unfolds 'twixt scholar and bard divine:

Shakespeare: What noble quest dost thou embark upon this day?

Investigator: A fusion of learning and tech, in RITEL's way. A canvas wide, where learning sciences blend, With algorithms and innovations, a journey without end.

Shakespeare: A venture bold, in science and art's embrace, What visions drive thee in this learning space?

Investigator: To blend principles profound with AI's keen sight, Innovations vast, in real-world's sacred light. An interdisciplinary dance, where learning takes flight, In STEM's broad realm, we seek knowledge's height.

Shakespeare: Take heed, dear friend, let innovation guide, Not mere increments, but risks explored far and wide.

Investigator: Fear not, for the future calls, and we shall respond, In RITEL's realm, where learning and tech abscond. With passion and purpose, our endeavors entwine, In NSF's name, a legacy shall be thine.

Where else might your project fit at NSF?

- Does it focus on a researching a "**learning technology**" (e.g., a technology-based learning intervention or environment) for **STEM learning** that can be used **TODAY**?

- Does it involve "**learning**" and "**technology**" more broadly?
  - If so - What is the **primary focus** of the research?

Your project has a "learning technology" for **STEM** learning with potential applicability **today**

	Possible Programs
Learning domain must be a **STEM** discipline **Context**: • K-12, • undergraduate, • informal settings, all ages	**DRK12**: Discovery Research K--12 **IUSE**: Improving Undergraduate STEM Education **AISL**: Advancing Informal STEM Learning
The primary goal is to **advance the equitable and inclusive integration of technology in the learning and teaching of STEM** from pre-kindergarten through high school.	**ITEST**: Innovative Technology Experiences for Students and Teachers

This could include implementing a technology that you developed previously through a RETTL/Cyberlearning project.

Your project involves "learning" and "technology"

What is the **primary** focus of the research?	Possible Programs:
• **Foundational research on STEM learning**	**ECR**: EHR Core Research
• **Computer science literacy**: computer science (CS) and computational thinking (CT) education in formal learning settings at the preK-12 levels	**CS4All**
• **Human-computer interaction** including the design of technologies that amplify human capabilities and to study how human, technical and contextual aspects of computing and communication systems shape their benefits, effects and risks.	**HCC**: Human-Centered Computing
• **Computer science research** (which may have application to education as a use case) e.g., AI, NLP, computer vision, etc.	**RI, III**, and other CISE programs
• Exploration or development associated with putting a **technology on the market**	**SBIR**: Small Business Innovation Research
• **Fundamental knowledge of the principles and processes of learning** in all domains; this could include augmented intelligence	**SL:** Science of Learning and Augmented Intelligence

Next steps

- Read the solicitation of the potential program carefully

- Send a 1–2-page project summary to the listed Program Officer contact

Questions?