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).
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.

<table>
<thead>
<tr>
<th>Learning domain must be a <strong>STEM</strong> discipline</th>
<th>Possible Programs</th>
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</thead>
<tbody>
<tr>
<td><strong>Context:</strong></td>
<td><strong>DRK12</strong>: Discovery Research K--12</td>
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<tr>
<td>• K-12,</td>
<td><strong>IUSE</strong>: Improving Undergraduate STEM Education</td>
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<td>• undergraduate,</td>
<td><strong>AISL</strong>: Advancing Informal STEM Learning</td>
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<tr>
<td>• informal settings, all ages</td>
<td><strong>ITEST</strong>: Innovative Technology Experiences for Students and Teachers</td>
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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.

This could include implementing a technology that you developed previously through a RETT/Cyberlearning project.
What is the **primary** focus of the research?  

<table>
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<tr>
<th>Possible Programs:</th>
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<tr>
<td><strong>• Foundational research on STEM learning</strong></td>
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<td><strong>ECR</strong>: EHR Core Research</td>
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<td><strong>• Computer science literacy</strong>: computer science (CS) and computational thinking (CT) education in formal learning settings at the preK-12 levels</td>
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<td><strong>CS4All</strong></td>
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<td><strong>• Human-computer interaction</strong> 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.</td>
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<td><strong>HCC</strong>: Human-Centered Computing</td>
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<td><strong>• Computer science research</strong> (which may have application to education as a use case) e.g., AI, NLP, computer vision, etc.</td>
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<td><strong>RI, III, and other CISE programs</strong></td>
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<td><strong>• Exploration or development associated with putting a technology on the market</strong></td>
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<td><strong>SBIR</strong>: Small Business Innovation Research</td>
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<td><strong>• Fundamental knowledge of the principles and processes of learning</strong> in all domains; this could include augmented intelligence</td>
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<td><strong>SL</strong>: Science of Learning and Augmented Intelligence</td>
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Your project involves “learning” and “technology”
Next steps

• Read the solicitation of the potential program carefully

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

Questions?