



The Central Place of Networked Computing in Enhancing STEM Education

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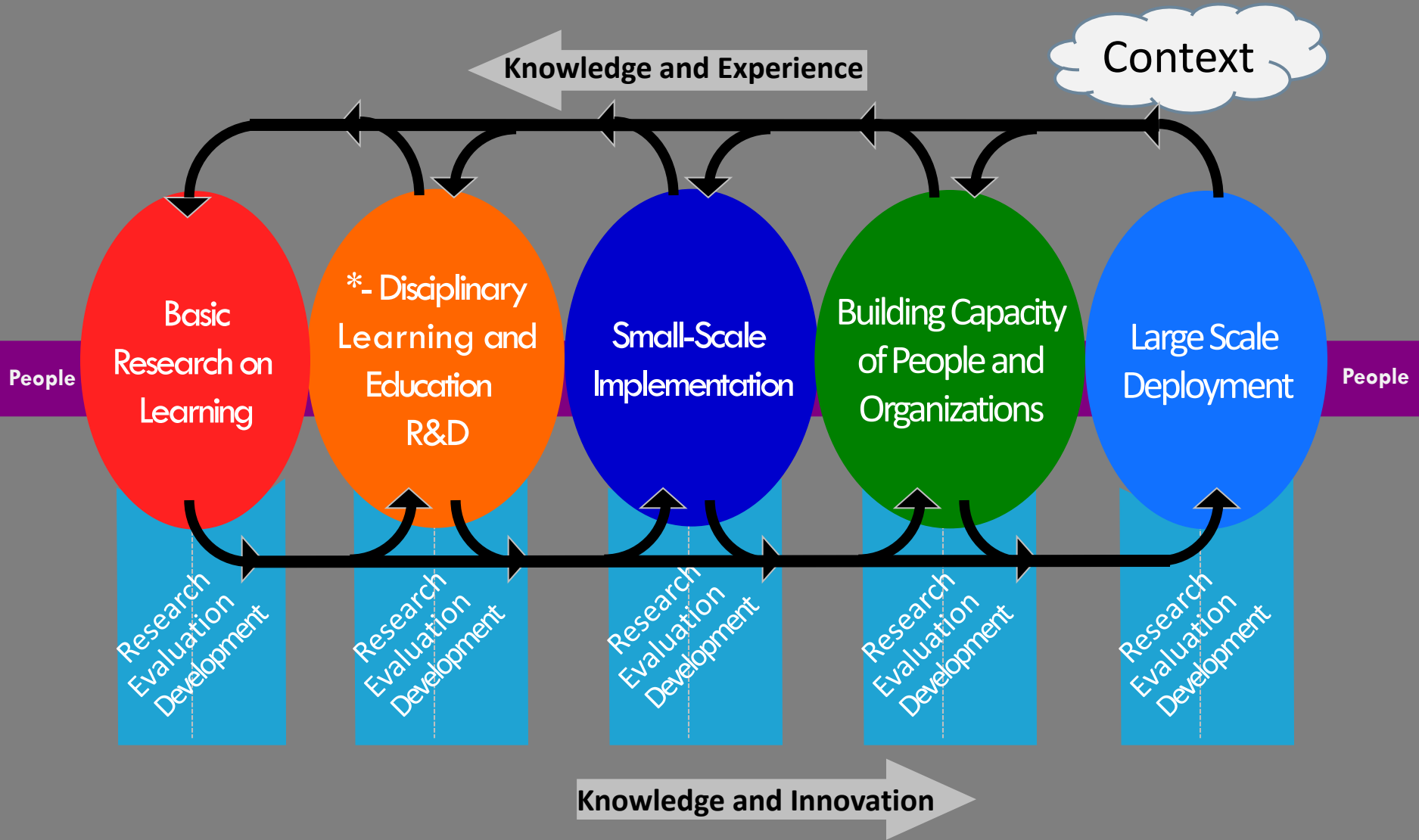
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NSDL PI meeting

“I see little hope for any further substantial improvements in mathematics education until we turn mathematics education into an experimental science, until we abandon our reliance on philosophical discussion based on dubious assumptions and instead follow a carefully constructed pattern of observation and speculation, the pattern so successfully employed by the physical and natural scientists....”

Edward Begle, Director of the School
Mathematics Study Group, 1969

Connecting Learning and Education for a Knowledge Society



"Connecting Learning and Education for a Knowledge Society," Internal Task Force on Innovation in Learning and Education, National Science Foundation, draft, January 30, 2010.



Anytime, Anywhere, Anybody Technology



Networked computing as a tool for learning

- Cyberlearning is one of the guiding themes for EHR, starting in 2007, and explicit in budget language thereafter.
- FY2011 request calls for \$40 million for an identified program (Cyberlearning Transforming Education)



Networked computing as a tool for learning

CTE solicitation: “Through the *Cyberlearning: Transforming Education* program, NSF seeks to integrate advances in technology with advances in what is known about how people learn to

- better understand how people learn with technology and how technology can be used productively to help people learn, through individual use and/or through collaborations mediated by technology;
- better use technology for collecting, analyzing, sharing, and managing data to shed light on learning, promoting learning, and designing learning environments; and
- design new technologies for these purposes, and advance understanding of how to use those technologies and integrate them into learning environments so that their potential is fulfilled.



Networked computing as a tool for learning

DRK-12 new solicitation invites proposals “fostering the creation of a new generation of resources, models, and tools that take full advantage of the capabilities of information and communications technologies to enhance the education of K-12 learners.”

Transforming STEM Learning: “The TSL program invites interdisciplinary teams of STEM content specialists, experts in relevant technologies, STEM formal and informal education specialists, researchers with expertise in the learning sciences, and specialists in education research and evaluation methods to submit proposals for research projects that

- Study efficacy of existing prototypes for innovations like virtual schools, special STEM schools, and educational programs that combine opportunities of formal and informal learning resources in their communities; or
- Design and conduct exploratory development of new potentially transformative models for STEM learning environments.



From Digital Library to Distributed Learning

- From “if we build it they will come” to putting tools and materials in the path of the user
- Supporting the development of communities of practice
- Measuring the impact of the tools and materials on teacher practice and student learning
- Moving technical approaches forward



Next Steps

- Bring your leadership and experience to all the relevant NSF programs in this rapidly developing environment.
- What have you learned?
- How should we shape cyberlearning in the next decade?