

Research Agenda

Group Members --

Jack Hehn – Dir Ed AIP – umbrella org for 10 societies. 25 years at U North Texas – physics research, and center for Higher Education. Interest more in funding, but good experience with road-mapping, etc with other

Who at the federal level would be interested in it, fund it, regulate it, etc.

Jim Ford – Asst Dir for CELT. Background varied. Taught engineering 25 years, 9 years in FD. Interested in research agenda group

Matthew Hora – RA at WCER. Cultural Anthropology. Program evaluator for a doc training program under CIRTL. Here at the intersection of a number of disciplines – sees a lot of work being done in disciplines such that there is a possibility of evaluation of education programs in a comprehensive way. Systemic perspective.

Kathy Perkins – UC Boulder. Work in PER – Assoc. Dir of Science Education Initiative. Sees that initiative as ripe for research. Wants to talk about how to do that.

Maura – Asst prof of engineering, VTech. Doing a lot of interdisc collab.

Andrea Beach – WMU, Faculty development

Yufen Lin – Physics Education – Physics graduate education. Looking for possible research projects. Few people she works with now are interested.

Erin Doktor – Astronomy & Physics background. PhD work in Teacher Ed, also working in Faculty Development. Going into a post-doc on STEM and faculty development. Interested in collaboration

Carol Colbeck – Interested in continuing to be a scholar/administrator and wants to think about how communities can collaborate around STEM.

1. SHOULD we further develop an inter/cross/trans disciplinary research agenda on STEM instructional change?

2. In what ways can/should we further the research agenda on STEM Instructional change?

Maura -- This group has a lot of power that we may not recognize that we all can tap into and point to when going for grant dollars.

Scope of the Issue to be addressed:

Matt- related to funding – been on a number of venues of STEM Ed reform – very little common language to describe different projects/foci people are working on. Can be really problematic when sending proposals for review by disc.

There are some problems with interdisciplinary work in terms of mis-applying or badly applying constructs from different disciplines .

Kathy – scale and scope – identifying what types of interdisciplinary connections would be productive – org change, fac dev, science ed, but also across science disciplines, scales of institutions, formal and informal

Carol -- Issues of communication that may dealt with in a number of ways – how do we frame problems, talk to each other, use constructs, etc. Nature of connections

Jim -- Idea of culture comes around to – within engineering, cross-disc research outside the dept when engineers work with other STEM fields in basic research. But, cross disc ed research is looked at differently. Ed research not held in high regard – and not listened to much. Even Engine d research not wholly accepted.

Yufen – very similar in Physics. Even PER not considered “real” physics research.

Matthew – corroborated that with interviews with faculty. Faculty who become change agents more broadly outside their disciplines then care about the change lit.

Carol – idea of legitimacy as a concern, but also issue for org change. Given the context within which we are working, where is the legitimacy for STEM folks to get involved in ed research. Communication issue – tied to Funding – variety of RFPs that are coming out of NSF – need to be cognizant of language.

Groups are working in isolation and need to work across

Why does it matter? Why do we WANT to know about this? Maybe the way we answer that big question could help us identify questions that could answer that.

Kathy – taking everything we have learned since we have been here, what new questions can we ask that are possible and needed to move forward to understand and create change?

Studying departmental change efforts

Coupling to some of the other groups – what resources are needed for faculty to carry out their own instructional change?

How to assess broad faculty instructional change efforts. Protocols for interviewing faculty

Erin – what are some common methodologies that can be used in research in interdisciplinary ways across disciplines

IF we change faculty, will student scores increase?

Motivation of instructor – can we apply assessment to faculty instruction? Formative assessment

Learning communities

Carol – preponderance of literature on prescribed side of the typology, and our assessment tools are putting blinders on our ability to see possibilities.

We really don't know a lot about what we think we know about. Teacher beliefs/practices

Matt – review of methods used to measure organizational change processes and outcomes.

Not only methodology and tools – and where we are lacking them

Travel of ideas by having communication across disciplines, appropriating metaphors. But language as a barrier. Looking at interdisciplinary change how can we use language as a facilitator of change

Kathy – in terms of **providing guidance to higher ed administrators** – doing research on what outcomes come out of policy changes. Studying policy levers and agents

Promotion and tenure policies

Faculty beliefs about STEM education change

How does the way a change is framed affect how the change unfolds

The evaluation literature can inform what we do

What is the relative effectiveness of the balance of prescriptive and emergent outcomes?

How much time does change take? Individual, group, larger entity.

Looking at the role of technology in fostering change?

Role of anecdote in the lives of faculty/academics. Very powerful (?) but looked at as not being legitimate. How do we capture the strength and importance of anecdote/network knowledge on change. Story-telling and other methods of communicating ideas. Expert analysis on faculty change.

Potentially powerful statement that there are a number of people who have done a lot of work and see value in collaboration.

Matt – **expand the lit review** – org theory – examples of analyses of change initiatives, management science, community college training literature, K-12 literature on partnering for change.

Kathy – **create a community space** for people who study change (wiki?) to collect tools, studies, resources, etc.

Yufen – working on translation work from this conference

Erin –

Who are the rogue (crackpot) officers that will fund our innovative research?

What questions will our individual institutions find important enough to pay for?

How can we harness our institutional creativity grants for pilot work (across institutions)