**Proposed Center for Research on Lifelong STEM Learning: Comments**

This proposal has many strengths and a few weaknesses:

- Amongst the major strengths are that this proposal is well developed, has already garnered extensive and broad based support from across the campus, both programatically and financially. It also addresses an area of research and programmatic focus that is timely and of concern to multiple constituencies and funding agencies.
- The mission is reasonably well defined, and largely aligned with the OSU strategic plan and the plans of most of the participating colleges.
- The level of faculty and administrative engagement is excellent, demonstrated by the initial organizational efforts, workshops, surveys, and support pledged by various administrative entities at OSU.
- The proposed research agenda is sound in general concept, albeit terse in specific detail.
- The initial organizational structure is modest and well defined, and resource commitments have been acquired to support the initial 5 years of operation of the Center. In the absence of greater than initially committed institutional support, the sustainability of organizational structure and financial plan is dependent upon receipt of significant extramural funding (grant, contract and gift).
- The proposed Center is well aligned with and supportive of the OSU Research Agenda.

There are also some weaknesses in the proposal:

- The mission of the Center is broad and generic, and further specificity in the plan, implementation, benchmarks and especially the criteria for assessing and continuing the Center would greatly strengthen the proposal. Greater specificity in the benchmarks especially for the 2-year goals and especially for the Assessment Plan would engender greater understanding of and confidence for the likely success of the Center.
- The financial plan with respect to contracts and gifts is very vague and difficult to evaluate for likelihood of success.
- The proposal notes significant ‘pushback’ against similar proposed statewide collaborative initiatives and collaborative opportunities, but does not describe how this proposal is different or how such resistance will be overcome for the proposed Center.
- Some aspects of the specifics of the ROH sharing plan are not clear. While different Colleges distribute their ROH differently amongst units, will the ROH returned to the Center be derived from the College or Departmental portions of the ROH? It would be helpful to at least have some initial guidelines for distributing the ROH between Colleges and Units upon which to base the individual negotiations, as would be the development of a policy or process in the case of Deans could not agree upon a formula to share ROH for a proposal.

**Clarity of mission:** Seems very clear.

**Alignment of strategic plan with OSU strategic plan and the plans of colleges whose faculty are participating:** The center will bring together and encourage more work in understanding the uptake of STEM in society. As such, it promotes the 3 signature areas of the university because each of them requires critical thinking in STEM areas for advancement. Look like 7 colleges are engaged, plus a lot of other units. The letters from the directors of the colleges and units are very supportive, so I assume that the plan is consistent with their strategic goals.

**Level of faculty engagement:** This is the one area I’m not clear on. A large amount of grant money is supposedly currently here. However, when I look over the list of faculty, I see a lot of names that are not basic tenure-track research/teaching/outreach faculty. In my own college, Forestry, the names listed are the Outreach Dean, an outreach professor, and faculty research assistant, none of whom are in the mainstream of the college. This Is not to say they aren’t doing the work here, but I don’t see strong faculty engagement in my college. Looking through the rest of the list, it seems largely populated by ‘faculty’ in the extension areas and running various efforts on campus. Maybe this is not an issue because these people are also faculty, but it does indicate to me that the effort is not centered on permanent basic teaching/research/outreach faculty.

**Soundness of the proposed research agenda:** Appears well thought out and a mature effort. The fact that they already have a Provost’s Initiative position for the director attests to that, and they have a committee that has been working hard on the planning.

**Sustainability of organizational structure and financial plan:** As far as I can tell, sounds good. Of course it is risky, but
that is all right.
Alignment with the OSU Research Agenda: The proposal is consistent with each of the principles:

- **Relevance**: We create high impact solutions to the pressing needs of local and global communities in order to ensure a healthy and sustainable world. – Center is aimed at figuring out how to make sure people are receptive to understanding the pros and cons of different options. People need to understand what’s being offered before we can implement solutions.
- **Integration**: Our transdisciplinary [1] research addresses needs with transformative approaches, both basic and applied, both short-term and long-term. – Center integrates information from many disciplines to try to get at the important issues of STEM uptake.
- **Collaboration**: We collaborate locally, nationally and internationally with communities, industries, academia, and the public and private sector. – Center is based on collaboration: needs information at many levels from communities, industry, academics, etc. to understand what is needed and to come up with solutions.
- **Leadership**: We lead the research community and educate and mentor the next generation of leaders. – Center is trying to figure out how we can do this better – how we can get the next generation interested and educated, and engaged in life-long learning.
- **Accessibility**: We openly exchange ideas, approaches, data and results while protecting intellectual property. – Center fosters interaction among researchers from diverse fields who are working with similar questions; currently such interaction is difficult or lacking.

Overall, very well crafted proposal, addressing a major concern, on a topic highly relevant to the OSU mission. Such a center could have an enormous impact, both on campus and off.

**Specifics:**
- **Clarity of mission**: Good. The goals of the center are well laid out, and the focus of the center is clear. Not all goals are translated directly into metrics for success.
- **Alignment of strategic plan with OSU strategic plan and the plans of colleges whose faculty are participating**: Excellent. STEM research and knowledge are crucial to all of OSU’s signature areas, and enhancing STEM instruction both within and outside OSU is completely consistent with OSU’s position as an engaged land grant institution.
- **Level of faculty engagement**: Good. Strong interest has been shown, across the university, and particularly in key departments and units. Difficult to judge depth of engagement at this early point.
- **Soundness of the proposed research agenda**: Good. A strong case is made for the proposed approach. Relatively less evidence that the approach proposed will lead to impact outside of the immediate metrics proposed (funding, traditional measures of productivity and collaboration).
- **Sustainability of organizational structure and financial plan**: Good. Clearly thought out process for funding, with mixed sources of funding over the initial period.

Unfortunately I will not be able to attend the meeting on the 19th. You are welcome to share these comments with the members of the Research Council and with the center proposal leads. The answers to these questions are important to my further assessment for this proposal.

1. Since STEM education research has been a focus at NSF for many years, are we a little behind in making this pitch? A Google search on “STEM education research center” yielded at least 20 similar centers in the first 40 hits. What makes this center stand out in comparison to its expected competitive peers that are clearly already ahead of us? What makes us think that we will be able to rapidly catch up and pass these other established centers in this same focus area?
2. With the word “lifelong” in the title, I would expect a significant amount of effort and focus to go into public education, outside of the traditional education system (K-12 and higher ed). Most of the focus appears to be on K-12, STEM curricula, STEM teacher education and training, and university students. How will you address the focus on the “lifelong” part to establish this center as truly different and worthy of funding by NSF and other agencies? What special attributes do the leadership of the center bring to this part of the center’s activities that makes this center different from other centers that have popped up across the
3. What are the metrics that will be used to judge the effectiveness of this center? Proposal says that these will be developed over the first few years of operation. Preference would be that the proposal contain at least an initial set of metrics and targets for success, rather than waiting until the center is already running. Otherwise, how will the effectiveness of the center be judged during the first few formative years?

4. The research agenda proposed is not very specific or focused. It includes four general areas and at least 30 separate questions. This seems to be a very broad and potentially overly ambitious set of questions to answer in sufficient detail to establish the research “brand” and “identity” that will enable the center to successfully compete on a national scale. How will the focus and identity of the center be delineated and managed? What will bring significant recognition, and the associated funding to the center to support continued success?

Strengths
The proposed Center has for mission to coordinate and promote interdisciplinary research within the OSU community that will lead to a better understanding of the “processes that underlie how individuals become lifelong STEM learners”. Its goals are clear, its mission is aligned with OSU’s strategic plan and its success should benefit the OSU community at large. In addition, the proposal has had the input of a large and diverse number of faculty members who have contributed to mapping the Center’s objectives. Finally, initial costs and potential funding sources are identified.

Weaknesses:
Although the mission and main research questions are stated, there is no clear outline regarding how they will be addressed. In page 6 we can read: “Most, if not all of these questions currently are being studied at OSU to some degree. However, currently these four fundamental questions are being addressed separately by disparate investigators scattered throughout the university.” For review purposes, as well as for the design of the proposed center, it would be beneficial to have some of these studies and their associated researchers identified. There is no clear discussion regarding how the timeline for the search and hiring of a Director will affect the early evolution and funding of the proposed Center.

Both Indirect funds of grants, derived directly from the Research Office, as well as Return Overhead from Colleges are requested as sources of long term financial support. This seems strange to me.