

Policy/Funding Community Working Group Notes

Tuesday November 11, 2008

Moderators: Kurt Steinhaus & Michael Yudin

Scribe: Julia Barnathan

Attendees:

- Randy Phelps (NSF)
 - o Coordinates major instrumentation of research at NSF (94 million dollar a year)
 - o Broader impacts will be useful for iLabs
- Jamai Blivin
 - o STEM education director on some NSF grants, now working for NM State University
- Tom Welch
 - o Chief State Officers - CCSSO
 - o Virtual magnet schools
 - Virtual learning magnet
 - Try not to use the word “school”
 - Space, science, and mathematics
 - Looking to cooperate with other programs
- Linda Pittinger
 - o Works with Tom Welch
 - o Not to create new things, but look at great resources that exist in agencies and private sectors to bring these together
 - o Increase access and opportunity
 - o Instrumental in Kentucky Virtual Schools
 - Started North American Online Learning groups
 - o Consultant with CCSSO
- Cathy Veal
 - o IMSA
 - o Works with institute research, marketing & research, strategic partnerships, innovation prototypes
 - o State agency to develop talent and leadership in STEM
 - o Also as catalyst to elevate teaching in STEM in Illinois
 - o Mission to ignite and nurture scientific minds
 - o Also don't refer to selves as “school” – academy, learning arboretum
- Julie Angle
 - o Einstein Fellow at NSF
 - o Has been working at public education
- Michael Yudin
 - o Senior counsel to Senator Bingaman
 - o Draft legislation and promote agenda with children and families, etc.
 - o Senator is active in STEM education
 - Initiated America Competes program
- Kurt Steinhaus

- National Lab
- Funded by organization that promised to turn lots of money back into education
- Worked for 5 years in government policy in NM

POLICY DISCUSSION

How can policy be used to advance the use and dissemination of iLab technology?

- Federal level, state policy level, and local policy
 - All different and all should be aligned
- 93 cents on dollar on education in US is not federal – it's state and local sources
 - Fed plays low level in funding, but high level in policy NCLB
- Authorization levels as compared with appropriation levels in NCLB cumulatively, is underfunded by 85 billion dollars (since 2002)
 - Policy and funding are completely integrated
 - Congress creates authorization levels of how much funding is needed, but it's also up to them to grant funding
 - NCLB is so woefully underfunded giving the mandates, yet Title 1 is about 15 billion dollars
 - States don't have to do NCLB if they don't want the money
 - Vermont almost said no thank you, but didn't
 - But schools rely so much on these resources
- How much does image play into this?
 - If school doesn't work with federal program, doesn't look well on that program (Julie)
 - No states have not chosen to participate in Title I (Michael)
- In 2012, we'll have NAEP assessment in technology (Linda)
 - Current law requires technology assessments now in NCLB – through technology state grants (Michael)
 - Have integrated technology into other content state assessments
 - NAEP assessment could relate well to iLabs
 - Linda: Knows how much federal policy changes behavior, and thinks that there could be opportunities for iLab to be used in these areas
 - In Kentucky, education technology was built in to NCLB, but left ambiguous and open to the local level
 - In thinking that this would allow the best to happen – but this did not play out
 - Has a respect for local control, but there needs to be a better balance – a safety net and assurance
- Kurt: Researched which policies have the most impact on the classroom
 - One end is incentives, and the other end (least effective) is “the big stick”
 - Spectrum of ways to be effective
 - Leans more toward incentive approach

- Michael: Different interpretation
 - NCLB which provided a whole lot of stick, vastly changed conversations on how to educate students – in ways that we didn't talk about before this
- Julie: Funding is going toward the kids who are lower, and the higher achieving students aren't receiving as much funding
 - Less money is going toward the kids who could really excel, given the opportunities
 - Creating different problems, while trying to pay attention to a different group of kids

Should policies about increasing iLab technology be at the state, federal, local level?

- Michael: Congress passed significant legislation (America Competes) to model best practices that labs were doing, universities, in improving k-12 math and science education
 - Legislation requires office of science and DOE to appoint math and science education leaders to coordinate these programs at the dept. of energy – Congress created a means to oversee all these activities
 - Congress also created a number of grant programs and incentives (no mandate) through DOE – specialty schools in Math and Science, grants in the amount of 6 million dollars
 - Experiential-based learning – getting labs into schools and schools into the labs, internship opportunities for students, professional development opportunities, partnerships with institutions of higher education
 - **These are each federal policies that are vehicles to advance iLabs at a local level**
 - America Competes could include iLabs as strategic imperative? (Kurt)
 - Michael: Not exactly. PALS is NSF is grant program to established labs
 - Would be surprised if this involves ONLY lab equipment – could be a place where iLabs fits in
 - Business and industry embraced this, as well as education community
 - Educ's approach to it was not completely enthusiastic, because they did not want to compete with funding in Title I and IDEA
- Linda: Need to look at current funding streams at national level, and see what could be redirected
 - Not limiting to on ground experience
 - This could threaten recipients of existing funding streams
 - Is there opportunity to show that this delivery system could add better outcomes? Don't want to make this seem like current educators need to lose anything, but can gain by using this technology

- Local and state level people know where the money is for funding
 - They could step up and advocate for how funding can take place
- Five states are full-funding states, such as NM – build iLab into funding and it goes through to all education system (Kurt)
- We have many ways through America Competes to support iLabs
 - Members of education community who are not open to being funded by America Competes
 - Resistant to this funding because it takes away opportunity to be eligible for Title I and IDEA
- Jamai: This feeds into the question – where is the funding for virtual learning?
 - Funding is still remaining for the traditional classroom, which isn't affecting graduation rates, etc.
 - How do we get policy to start looking at virtual learning?
 - Only way to reach a lot of underserved students
- Michael: NCLB says that by 2014, students are supposed to be 100% proficient
 - 2/3 of NM schools is failing to meet AYP year after year, for example
 - Measures for AYP were set small at beginning, and larger later
 - Consequences to missing AYP are to help the schools improve
 - Federal policy, but decisions being made locally in restructured schools
- Randy: Cyberinfrastructure is much broader than iLabs, it seems. One thing that worries him, that iLab is being used as the end-all for cyberinfrastructure.
 - Need central site to find these things (Kemi)
 - Many universities who have ilab technology, but don't have a centralized way of sharing them
 - A lot of remote controlled telescopes that outnumber iLabs
 - iLabs are small percentage of what is out there
 - NSF is a bottom-up organization
 - Ideas come from the community
 - Kemi: What we're trying to create is an ebay – not impose constraints on what is being created, but an easy way to share it
 - Trying to make the access easier and more centralized interface
 - Lowering barriers to access
 - Knowing what's available
 - Like ebay, this would be agnostic – equal-opportunity
 - Facilitating exchange and access
 - Jamai: Teachers do not have the time to search for this all over the place
 - Must be a place where teachers can go, that's little input time to learn it and use it again and again
 - Michael: Even if there is a place where teachers can go to access online lab work, how do they know how to use it?
 - Professional development is an important piece
 - Need good system
 - Kurt: What about rural school districts? Need to make this supportive for teachers who are unfamiliar with content.
- Randy: Places in NSF to find cyberinfrastructure activities
 - Curriculum and Laboratories Improvement program

- Provide instrumentation and framework, and curriculum that goes with it
- Not an overarching structure for cyberinfrastructure
- Cathy: Given the turnover, targeting newer teachers such as Golden Apple will be more fruitful
 - They are more digitally savvy
 - Linda: Agree
 - Teachers also need networks to collaborate with other teachers
 - **Supports that go around the iLabs is extremely important from policy
 - *Preservice preparation (Michael)
 - How do we integrate technology into preservice teachers?
 - If put new teachers in environment where they could do these kind of things, we could keep more of them in education (Linda)

Kurt: The biggest mistakes states made in 1980s, was appropriating large amounts of money to buy computers and they were just left in the closet. **Are there lessons learned from those mistakes that can be applied to iLab question we're thinking about?**

- Linda: So much focus initially on accountability of those dollars, and easier to put in accountability processes for putting money out there to buy computers, etc. that all the discussion about what would happen with learning got lost and put off
 - Kentucky did good work, but there were lessons with this
 - E-Rate
 - Aligned approach from federal-state-local level, clear what the funding was there for
- Accountability and evaluation of iLab area should not be how many labs and how many students, but what are the academic achievements – what are the student outcomes that iLabs is achieving?
- Ed tech state grant program
 - Looked at how this impacted student learning
 - Funding was lowered each year because it was not proving to be effective – virtually no support left in US Congress for this program by the end
 - Working together to be more effective in academic outcomes
 - Integrate technology in curriculum, but to inform academic outcomes, not just for the sake of integrating it
 - **This is where policy is interested
 - Overwhelming positive response in change to focus on research-based practices to improve academic outcomes
- Kemi: Interesting shift in ed tech buying-stuff times is that those times were black hole where a great deal of money was contributed and not a lot to show for it
 - Must be tied to results
 - Hoping to build into the platform – **assessment to each lab so that teacher immediately knows if students have gained by using it**
 - Can collect this across all users, or just to each classroom, etc.
 - Prove that lab is effective with aggregated pre/post assessments

How do we incentivize, through policy, for providers of devices to be interested in putting them up? What will it take for people to contribute their resources in bringing this community together to provide access?

- NSF requires broader impacts component to merit review – often interpreted as exposure to general public, students, or teachers to science
 - o Wouldn't it be great if we could provide anyone who provided labs to network, an annual report page that they could give to their funding agency to show how students have done using their iLabs?
- What about having policy rider on any provider?
 - o Worries Randy because there are many ways to interpret broader impact – this mostly relates to working with underserved/underrepresented students
 - Should be appropriate for individual proposal, but not everyone
 - Mandate worries him at some level
- Randy: Might people just want to work with minorities in their actual lab rather than just posting their labs online?
 - o Broader impact wording has been thought about very carefully, and shouldn't just apply to online use such as in iLabs
 - o Kemi: Doesn't think mandate is the right approach, but mechanisms so that we can build awareness around what is possible and lower barriers to this type of participation is important
 - There is always a tradeoff between how much capacity you have to involve students and teachers in a working research environment which isn't set up for large-scale access
 - Can't solve big education crisis 6 children at a time by having them do in person work in research labs, etc.
 - o Randy – major instrumentation research programs also highly value awareness
 - This is being highlighted already
 - o Michael: From federal education perspective, we don't care about these things
 - **It's all about student outcomes and achievement****
 - **MISALIGNMENT going on across STEM programs and agencies, different goals and looking for different things**
 - o Julie: These can both be merged together – schools who will participate in iLabs can be underserved populations
- Kurt: Harsh reality of national labs is that level of accountability is by factor of 10 higher than it was just a few years ago
 - o National User Facilities are available to report monthly to national labs about how the facility was used
 - iLab technology would help them be more accountable to department of energy
 - Usually operate more at higher education level than k-12, so would need some support in the translation
- Jamai: Change from spending dollars to accountability and assessment in policy arena

- Michael: STUDENT ACHIEVEMENT, via accountability and assessment
 - o How many students use the tool is not as important as how it impacts student learning, evaluation is critical
 - o Degree to which congress requires this level of accountability continues to grow
 - Now have 8 billion programs across 13 different federal agencies, and we have to fund the ones that work - impacting student achievement
 - Tom: “Measured by....”
 - Michael: That’s the issue
- Linda: NCSL – (national conference of state legislators) state legislators need to be a part of this conversation, can change the definition about what this means
- Only thing we have right now that is common across states is NAEP (Tom)
 - o His first reaction to question was – what is it that iLabs is best suited to do, and policy would need to be composed to reflect that
 - Has to be more than use
 - Use can make a difference in some places
 - We need to think about what the policy should really accomplish
 - What are the unique characteristics that iLabs can bring to the table that other tools can’t achieve?
 - Jamai: In NM, there could be hundreds of miles of schools without labs and unqualified students – these students will never have lab experiences
 - Tom: But they will get science credits, and will graduate
 - o Need to come back and say what can iLabs contribute that is a valued commodity that cannot be gained any other way, and what are the policies that can be used to support those contributions?
 - o How do we establish policies that will promote learning in critical areas, not just course-taking, not just credit-acquisition?
 - o Are there other things that iLab experiences can contribute to a student that could be valued other ways?
- Cathy Veal: If nature of what iLabs offers is designed to result in learning that is measured by something other than NAEP, can we get government to broaden their assessment?
 - o *Showing growth on major national instruments will convince the government that this technology is useful
- Michael: On the hill, people ask – what is a valid and reliable assessment of learning outcomes?
 - o Hard to come up with those means?
 - o Cathy – can we measure student *learning* and not just achievement

How could you use iLabs to make student outcomes more successful?

- Cathy: Scientific inquiry is biggest goal – can't use ACT or NAEP scores because it doesn't measure scientific inquiry
- iLabs is the type of tool that can help measure this **
 - o Growth from novice to expert
- Kemi: IMSA has done a lot of work around scientific inquiry and take it quite seriously
 - o Done a lot of work in how you develop these skills in students
 - o *Science is something that you do, not something that you know
 - o Hard to assess on multiple choice format
 - o Wouldn't want primary use of iLabs to be this way, but if taking online assessment could very easily tap into actual lab to measure your abilities to conduct scientific inquiry
 - How to control for variables, measure error, etc.
 - o No labs in college AP test – big disconnect if labs are supposedly valued in the curriculum
 - Lack of awareness on college board's part
 - Inherent bias against use of online technologies for doing labs
 - *Big policy issue
- Michael: OECD assessments came out last year, and this wasn't lost in the halls of congress
 - o American 15-year olds scored 28th out of 29 nations in critical thinking skills
 - Greater focus on these types of issues in the next administration is likely
 - Think about how you can affectively advocate for a greater sensibility and awareness
- Kurt: Cathy – does IMSA have policies that could scale to the rest of the state/country?
 - o Yes, but there's more work to do

FUNDING DISCUSSION

- Michael: "It's a new day" – change in administration
 - o Next president wants to invest in education, science, and technology
 - o In a very low economic state now as a nation
 - o Sen. Bingaman doesn't believe there is enough investment in education in this country
- Kurt: Since states are the primary funders of education, governors are extremely important in this role
 - o ****Need to contact state-level officials to be involved in iLabs**
 - o Arizona Governor
 - o National Governor's Association
- Randy: What kind of dollars are we talking about?

- Kemi: What is the right strategy for scaling it up?
 - Not ready to scale it nation-wide, or statewide with a handful of labs
 - A lot of additional groundwork that has to be laid
 - If goal were to have IMSA in IL take lead through mandate from governor or State Board of Education to provide access to rich set of resources – what would it look like? What research would we need to do? How would we need to design this to understand teacher use and teacher access? How do we let students share data with each other? This is where we're at.
 - We need some entity like Office of Cyberinfrastructure, combined with NSF Research & Learning – here is a vision for where we'd like to see things go – what is the research agenda that we need to pursue? How do we get ourselves ready to disseminate on a larger scale?
 - IMSA runs state virtual high school – is this an exemplar mechanism? Is it a national resource?
 - Should we do what google does and buy a huge warehouse to house machines to run the labs?
 - Do we divide it among lots of organizations?
 - How do we pay for this (Michael)?
 - Kemi: Still cheaper than buying test tubes for all students
 - There is a business model for this, we just have to prove that it works – to cover our costs
 - Google has figured this out by putting machines near hydroelectric plants and where property values are low
 - Could also be private sector
- Jamai: Are other countries that have iLabs doing more than the US?
 - India is another country that is extremely relevant country that takes education seriously
 - Other countries are also trying to close gaps in education, and are invested in this technology because of the demand
- Kurt: Do we know how much per student we pay in science?
 - Julie: Knows some teacher friends who get \$100 for all of her classes
 - Michael: High school investment for science education is abysmally low, much lower than elementary education and post-secondary education
 - Budget is so low for teachers

Michael's closing comments

- So many competing needs and programs and advocacy groups with such limited resources
- Important to come to consensus on how to achieve our goals
- Advocacy is difficult, and imperative to succeed, whether at local/state/federal level