

Remembering the Human and Preserving the Humane in Science Education

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I.

I regret to bring you the disappointing news that previous reports of the successful montillation of traxoline have been withdrawn and restated by the researchers. It seems, however, that traxoline has been convincingly sencerized and now reaches the end of the track much faster than the other ball.

The starting point for this discussion is a comment David Burns quoted on Friday, as we were beginning this year's Institute, about the extraordinary and prolific New York University scholar, Dorothy Nelkin, who died earlier this year. She was, a colleague had said, *pre-disciplinary*.

This, like some of the major concepts we've discussed at the Institute – things like student-centered learning, educating students as whole people, linking both the content and the processes of learning to students' lives and civic responsibilities – is remarkable only from the perspective of most of us: scientists, scholars, researchers, educators.

As people who are at least disciplinary, and sometimes cross- or inter-disciplinary (perhaps occasionally cis- or trans-disciplinary, and rarely ortho-, para-, meta-, or post-disciplinary), but never non-disciplinary, it is hard even to imagine exactly what *pre-disciplinary means*, even though it is a term which, when applied to someone with the luminence and range of Dorothy Nelkin, it feels (and is) a compliment.

Which is a problem, because: *pre-disciplinary* is also the subject condition of undergraduates who are beginning their exploration of knowledge and trying to figure out where to engage.

Who are they? What does it mean that they are *pre-disciplinary*?

We have this week called them *assets*. We have included them as *partners* and considered them *resources*.

At the same time, we miss them. We worry that they love us less than we love them. What does it mean that fewer students now choose science courses, science majors, science careers? How do we make sense of the observations Jay Labov shared with us about the attrition rate among our science majors?

Is it that science no longer matters? That science is no longer trusted? That science no longer makes sense? Is science too hard, too rigorous, too absolute, too tentative, too something else? That “thinking like a scientist” has fallen into disrepute? Is the familiar drill of hypothesis, method, results, proof too complicated, too prolonged, too predictable, too boring? Are there too few scientists on MTV and VH1? Has science become more nerdy than cool? Is it no longer sexy?

Could it be that science education, carried off differently, would engage today’s students – who are, after all, different? And who learn, remember, and apply knowledge differently as well? Is it the periodic table that needs help, or the educational experience? Isn’t that the premise that somehow underlies and generates SENCER?

II.

We might start exploring those questions by discovering what it means today to be in the subject position of a student.

We are people whose concepts of learning and development have traditionally been categorically compartmentalized. This happens here, and that happens there; here and there usually meet only here and there.

But students – especially undergraduates – are less likely to have thought about learning itself; thinking about learning, like thinking about thinking, is something that awaits (but sometimes eludes) them. Meta-cognition will come soon enough.

They learn whatever, wherever. Their learning environment is, well, big; it spans continents and oceans, welcomes digital and media territories, warps movies and shopping malls into the shapes and forms of knowledge. The shimmering cursor that paces their lives tracks information that is uncontrollable, fertile, seductive.

Classrooms can concentrate or constrain. College is one way to know many ways to know. It can focus or fragment learning.

Broad generalizations being damned, there are nonetheless patterns among today’s undergraduates that are worth our notice and attention.

If they are *pre-disciplinary*, they are also:

- **Post-student:** Students are not just students anymore, and some are hardly students at all. “Student” is not necessarily their primary identity, the student community is not necessarily their primary community, “student status” does not necessarily define their relationship with faculty, administrators, or the college itself, and student development, as historically defined, may not be relevant.

But our educational structures and systems have not learned the implications of that change – just as they have been slow to adapt to the technicolor presentation and advanced sound system of a multimedia, digital learning environment that gives students near total power over their own learning agenda. The cultural transformation called the “democratization of information” is in fact a political sea change: a power shift that calls upon both schools and universities to redefine their assets and restructure their relationships with students.

- **Post-college:** Colleges and universities are no longer in control of learning – not even of science education – and “college” has become simply the aggregation of things that people called students experience during the time they are matriculated at an institution of higher education.

Students define their own learning environments.

- **Post-curricular:** Their unfettered access to information, participation in multiple learning environments, complex lives, and re-engineering of what it means to be a student have, collectively, jumped them over the assumptions, processes, and structures of our traditional curricula and classrooms. Just as their access to the almost-unlimited resources of the Internet requires that we shift our educational focus toward assessment and qualification of sources of information, so their informal claim to power in the educational process must inspire shifts in our priorities as well.

Pre-disciplinary, post-curricular students are independent, individually determined, self-propelled learners who accept multiple inputs. What we see in the classroom may not be all that we do, or can, get.

- **Post-digital:** today’s undergraduates do not remember a world without electronic, digital information systems, devices, networks, and services. Computers are gameboards, shopping malls, telephones, letters, catalogues, and attractive nuisances. No longer special and amazing, they have become ubiquitous commodities.

Increasingly the device merges with its owner to become simply another sense organ. Cell phones became both miniature and adaptable, went through a short phase of being fashion accessories, and came out the other side as body parts, complete with eyes and ears, extensions of the owner.

- **Post-multicultural:** *whatever.* Being post-multicultural doesn't necessarily mean being sensitive, inclusive, or careful about language; it means being *over it*. It means (once again to quote David Burns) that *form follows failure*. It means students today – especially in complex campus and urban environments – learn to manage, to work with people who are different, and to accept (even celebrate) gradations of difference that most of our formal programming cannot really imagine.

From multi-racial to metrosexual, students find ways to make things work. Is there still prejudice? Of course. Is there still harm done in its name? Absolutely. Will multicultural sensitivity programs fix that? Unlikely. But can students of different races, cultures, sexual orientations, and life experience work together? Whatever.

- **Pre-categorical:** This is, perhaps, what also makes them pre-disciplinary – that they do not yet make the separations that for the rest of us have become tools to make life manageable. They are more undifferentiated than determined, more wild than domestic. Our culture's pattern of extending adolescence into the mid-20's (you can now keep your 23 year old son or daughter on your health insurance plan as a dependent as long as he or she is enrolled in college) probably potentiates this tendency. Decisions about majors are difficult and delayed. And learning is certainly not something that happens only in the classroom, or only in college.

It has not yet occurred to them to separate life, learning, relationships, health; a digital, traveling, fast-paced world creates more porosity in those boundaries. Things leak more fluidly from one area to another. Compartments are relative.

There was little leak when I went to college: home and the home page.

And what of us? What are the characteristics of our subject position vis a vis students, these pre-disciplinary, pre-categorical, post-student, post-college, post-digital, post-multicultural learners?

We are **amazed**.

I did not choose that word lightly, especially after Barbara Tewksbury's welcome specificity about *understanding* and *learning*.

Being specific is always important, though. The English 18th century lexicographer, Samuel Johnson, insisted on high accuracy even in the Present Tense (to borrow Henry Fielding's phrase). His wife discovered him in the closet with the chambermaid. "Why, Samuel Johnson!" she cried; "I am surprised!" "No, madam," Dr. Johnson replied; "I am surprised; you are astonished."

Imagine her surprise. Jane Tompkins, formerly a professor of English at Duke, writes movingly in her book, *A Life in School: What the Teacher Learned*, about her experience with one young woman who was a poor student in Portuguese. Having only the knowledge of the sullen, uninvolved woman that her classroom performance offered, Professor Tompkins was startled to run into the student outside, in a completely different context, and discover her to be an exuberant, warm, talented woman. There was far more to her than her attitude – and lack of success – in Portuguese.

Imagine my surprise. When I was working at the University of Virginia I knew challenged...and challenging...student named Kevin who seemed chronically uninterested. His sparse affect and distant demeanor led me to think his life was exceedingly constrained, reduced, small. Until: until I had to reconcile my narrow view of this young man with his show-stopping performance as the troubled adolescent boy in a University production of *Equus* – a role that demanded prolonged on-stage nudity, flights of emotion, and the creation of questions about the connections among brilliance, creativity, and psychopathology.

Jane Tompkins was surprised; I was astonished.

Jose Mestre knows this; I think he is no longer surprised. Students are more than passive occupants of the seats in our classrooms.

III.

It is not just that Jose realizes that we are, each of us, dramatically exciting beings whose presence here reveals only the slightest glimpse of our inherent and developed fabulousness. (That is all true, of course.) But he knows that we are – and can learn as – whole people.

Jose and his colleague, Eugenia Etkina, write in their backgrounder, *Implications of Learning Research for Teaching Science to Non-Science Majors*:

Within the cognitive perspective learning a complex process is perceived as constructing knowledge, meaning, and sense-making by the learner.

Hence, the shift has been from a view that learning is the acquisition of desired knowledge and behaviors to a view that learning is the construction of knowledge by the individual, construction that is mediated by the context of the learning, the social environment, and the prior knowledge (add: and life experience) of the learner.

Classic SENCER, no? And it suggests, reflects, and reinforces a very different view of *education*.

The word “educate” arises from the Latin root *educō*, which means *to lead from* (e, from, and *-ducō*, to lead). Education is a process that brings forth something new from – and in, and of – the learner. *Educō*.

This is true of science education, as of any other kind of education. In real education, there is teaching and learning, a symbiotic transformation that allows the roles of teacher and learner to be continuously reassigned.

And in real education, the learner participates – mysteriously but inevitably – as a whole person. Students not only collaborate in the process of learning: they in fact *embody* it. They bring something new (a classroom experience, an experiment in a wet lab, a short conversation with a professor, a comment overheard on the bus, the section of the assignment they read last night) into themselves – interpret and reform it, reflect or refract its content, and make some meaning of it, to be incorporated or discarded.

John Dewey described education as this reconstruction and reorganization of experience in order to make meaning.

And did we not do this during Barbara’s plenary on Sunday, and in many of our concurrent sessions? I think too of the remarkable boat trip, and the Monday morning session on elections, mathematics, computer science, and communications.

All the “material” of courses, leadership training, or community service, and everything else that makes up students’ “college experience,” is filtered through the body, mind, emotions, and spirit of each student.

That has happened to you, to me, to all of us this week. We are not exactly the same people we were when we came to San Jose last Thursday or Friday.

William Perry, the cognitive theorist who introduced us to the idea of “positions” of intellectual development, described ways in which students infuse their life experience (a highly variable curriculum, of course) into their learning through the *standpoints* from which they understand ideas, facts, and events. That material

becomes in every case a volatile, tentative, temporarily unstable element of a person who is made slightly new by each such encounter.

It is in many ways an uncertain, unequal – even unbalanced – osmosis that occurs; how the creation, absorption, adaptation, or application of knowledge changes each student varies, and the determinants of the outcome are not solely factors resident in the content itself. Rather, many are characteristics of the learner, all of them colored by the forces of culture, family, and society. Some of them are woven deeply into the genetic fabric of each unique human person.

This is not a statement about, nor an endorsement of, intellectual relativism; rather, it is an observation about learning itself, and how – and where – it happens.

Too long we have thought that it happened only in the mind. But every literature professor worth her salt has long known that students cannot truly know – own, be engaged with – a poem unless they *say it aloud*. Read the poem on the page, and it's puzzling, inspiring, interesting, perhaps lyrical; say the poem with your own breath, out loud, and it is yours.

Bring the poem into yourself; hold it there, pull it back out, noisy and stuttering or smooth, into the world. The material – the poem – is reborn; so, in fact, is the student.

My 12th grade physics teacher, Mr. Junius Williams, got me to understand ballistics a lot better when I could touch what it meant: I threw a ball. Or, rather, many balls, feeling friction, gravity, acceleration, estimating distance. What changed? Me, and, of course, the balls. All of us ended up in a different position, having gotten there through some interaction of force, momentum, friction, gravity, acceleration and deceleration.

The planets look different through the telescope you build for yourself. So, it turns out, do the peaches on your neighbor's tree. Thus it was that when I thought the low-hanging fruit next door was Jupiter my father said, "look up." When I redirected the telescope on things celestial and found not Jupiter but Saturn, rings and all, something refocused in me as well. Look up; take it in, bring it out.

It is this rebirth – this constant process of personal, intellectual, and human renewal – that is the most profound argument for liberal education. But liberal education is never theoretical; on the contrary, it is deeply personal, indeed as much physical and psychological as cerebral, and it happens in flesh and blood in the lives of real people.

IV.

Let me tell you a story...a true one, in every detail: my discovery of learning.

“Maybe it would help, Keeling, if you say the poem.”

I was a senior undergraduate in the Honors program in English at the University of Virginia. The chair of the Department, E.D. Hirsch, Jr. (later the source of a series of books on cultural literacy), was my thesis advisor. This relationship was undoubtedly lopsided, and far more beneficial to me than to Mr. Hirsch, whose suffered witless undergraduates with astonishing aplomb.

My thesis was stalled. My subject was the intellectual development of the English romantic poet William Blake, he of “The Tyger” and “The Marriage of Heaven and Hell,” the creator of illuminated manuscripts, a celebrant of the French revolution. He was a complicated figure at best, and the poetry, deceptively simple on the page, held treasures of meaning and invited great riffs of interpretation.

I was originally attracted not so much by what I understood as what I sensed, and heard, and felt, in the rhythms of his poems.

*Tyger! Tyger! Burning bright
In the forests of the night,
What immortal hand or eye
Could frame thy fearful symmetry?*

Later, by the way, I saw a Calvin and Hobbes cartoon strip about “The Tyger,” in which Calvin (the boy) expresses to Hobbes (the tiger) his belief that the poem is about a tiger that caught its tail on fire in the woods; it is, Calvin decides, a cautionary tale about flammability in felines. It would have helped me tremendously to have seen that cartoon while I was mid-thesis. But I didn’t.

Mr. Hirsch said, “The trouble with you, Keeling, is that you’re not engaged with the poems.”

I had been waiting for some 20 years to learn what the trouble with me was, and, although it turned out eventually that the answer was far more complicated than Don Hirsch imagined at the time, I was vaguely grateful for that first guess.

But I was deeply offended. I felt exceedingly engaged. I had, after all, read all of Blake’s work, including some of the frankly tedious later poems. He was influenced in various ways by Goethe, Henry Fuseli, and Emanuel Swedenborg, so I had driven myself to learn German and a little Swedish; in an almost-failed effort to wrap my floppy mind around some key transformations in Blake’s rather volatile theology, I had read Swedish mystics, Teutonic revisionists, and, God help me, Wordsworth.

Hours and hours in the stacks of the Alderman Library, a good 30 years before Google.

I objected. I said I was very engaged, thank you.

Mr. Hirsch demurred. "If you were engaged," he said, a little tartly, "you wouldn't be stalled."

"How do I get engaged, then?" I asked.

"Stop being stalled," he said.

And how do I unstage myself?" I inquired.

"Get engaged," he said.

Our conversation at cross purposes continued only briefly before he mentioned Wordsworth, who, like Blake, had been inspired by the events of what came to be known as Bastille Day. Blake, of course, alluded to the history-making days of 1789 quite cleverly in his poetry; Wordsworth, seldom clever, banged his reader across the head with thousands of words on the subject, including a few hundred in the poem, "The French Revolution."

Nine of which Professor Hirsch then quoted to me, throwing his hands in the air and bellowing. "Keeling, feel it! Remember what Wordsworth wrote! 'Bliss was it in that dawn to be alive'."

At which point he tipped too far in his chair and fell straight backwards onto the floor, where he landed smartly with his legs and feet pumping in the air, still talking.

"Maybe it would help if you say the poem," he concluded.

And I did. In the woods of The Dell, an area used late in the evening for what might be called informal peer-based student development activities, I said, and yelled, and called out the poem. It didn't take long; it took, as Adrienne Rich writes, all my breath.

But in the Dell I came to know my own Tyger, and, by the time I went home, I could answer for myself at least the pressing question of the fifth stanza:

*When the stars threw down their spears
And water'd Heaven with their tears:
Did he smile his work to see?*

Did he who made the Lamb make thee?

Perhaps Mr. Hirsch would have been surprised – no, amazed – to be truthful, astonished – to see me out there yelling at the trees.

Learning is ever thus – integrated, human, real. And when it is, it is adaptive and engaged.

V.

Jane Tompkins turns those observations and the conclusions of modern cognitive research into a plea for a different understanding of students:

What I am asking for is a more holistic approach to learning, a disciplinary training for people who teach in college that takes into account the fact that we are educators of whole human beings, a form of higher education that would take responsibility for the emergence of an integrated person.

In this view, learning is a complexly personal process. *Learning* is a comprehensive, holistic, transformative activity that integrates *academic learning* and *student development*, processes that have often been considered separate, and even independent of each other. In SENCER language, learning integrates academic learning with a particular group of development processes that build commitments to civic engagements and responsibilities. And that could only happen when non-traditional pedagogies are used.

Learning is not exclusively academic instruction, the acquisition of disciplinary content, or classroom learning – though a rich definition of learning certainly incorporates and includes all of those things. Learning and development are not fundamentally different things; one does not, and could not, occur without the other.

That is what it means that students are pre-disciplinary and pre-categorical. And it is what gives the idea of SENCER its power.

VI.

Remember Barbara's differentiation of brown *bread* from *brown* bread? Let us make some distinctions about students, learning, and the work of education...and, in the process, begin to answer a critical and core question: *what does it mean to SENCER-ize something?*

Think of this as a series of translations from one language, or culture, to another. Pardon for a moment the "us"/"them" nature of this discourse. It is, of course, an exaggeration to make a point.

It looks to us like:	It looks to them like:
Higher education is a pipeline . You get this degree so you can get the next degree so you can... Many students are inattentive; they seem unmotivated and uncommitted We lose them from the pipeline ; there is a terrible loss of students from science courses and science majors Science is a series of disciplines with methods that excel as a way of knowing They are unwilling to make long-term investments They may be engaged by science for its rigor and content, especially if science is used to illuminate capacious unsolved public and social problems They are powerful; they are assets; they have enormous potential to create and apply knowledge They should be intentional learners	Higher education is a pathway . There are distractions, curves, fast and slow parts. We should, most of us, chill. They are bored and multitasking; they are being intentional learners. Other learning environments and goals are more interesting and have fewer barriers. There are many ways of knowing and science is not the only answer The world is uncertain, especially after 9/11 Capacious problems can be unengaging, too...depends on whose problems they are and whether there is any possibility of action for meaningful change They feel ignored, irrelevant; it is not clear that we need them for anything They are intentional learners; we just don't like all of their intentions.

Don't mis-hear me. I do not espouse some revisionist romanticism about students and their purposes, motives, and engagements. We are educational realists here. There are students who perform better or worse, who scrape by and excel, who make us proud and make us scream.

But the kid in the fourth row of Biology 101 may actually have ideas.

At the core of the concept of SENCER is a fundamentally different relationship with the student – one that rests its theory and praxis on a non-dichotomous ordering of the roles of teacher and learner, and one that requires a political and structural, as well as curricular, analysis.

Such a view of students holds that they are assets, not liabilities; that they are colleagues, if you will, more than targets; that they are not simply nests of pathology, but originators of ideas and solutions. That they have power, and that their power can produce positive effects and support the achievement of important learning outcomes.

Isn't this what we wanted? Self-directed, intentional learners? Uh, not in my classroom, chief! Maybe we wanted self-directed and intentional but compliant and attentive learners.

But the impulse to support intentional learners draws its sustenance from the concept of student power filtered through the college experience. Are current systems and structures in higher education responding to the needs of today's students in ways that will support their intentionality in learning? Are we training and preparing and supporting advisors and educational designers who can be competent and effective resources for them in that process?

VII.

As many of you have discussed in homerooms, concurrent sessions, and team meetings all week, changing pedagogical practice – SENCER-izing something, or many things – will require steps not only in the curriculum, but also in the very structures and systems through which learning is (or is not) accomplished in the modern academy – and through which power, engagement, and potential are defined in the relationships among faculty members, between professors and deans, and between faculty and students.

Richard Guarasci, now President of Wagner College on Staten Island, has explored those concepts as they affect what he calls practical liberal education. In his book, *Democratic Education in an Age of Difference: Redefining Citizenship in Higher Education*, he wrote, in 1997:

What is taught, who is read, what questions are asked, what issues are explored—all call for continual scrutiny. But reforming the curriculum to make it more inclusive while leaving the pedagogy—and the very structure of the university—unexamined will not further democratic aims.

Professors and other educators who wish to practice a SENCER pedagogy must inevitably live and work in some tension between an essential disciplinary rigor and their openness in relation to students. Many authors and educators – and many of you -- have acknowledged the institutional barriers that oppose innovative educational methods and designs. A new pedagogy that liberates students' power will depend on freeing universities themselves from some of their most basic educational models.

Making the case for SENCER means making a case for that freedom.

What is it exactly that you make a case for when you make a case for SENCER?

- Progressive, engaged, interactive pedagogies of several kinds that more effectively inspire students to learn
- Linkages between classroom learning and projects that serve civic purposes and goals

- Interdisciplinary (not to say pre-disciplinary!) teaching models – and interdisciplinary structures in the academy
- Flexibility in the design and implementation of introductory science courses for non-majors...or for majors
- Development of new courses, based in the deep consideration of a pressing social issue, that can substitute for standard introductory science courses
- A different learning relationship with students
- Restructuring of academic requirements and curricular relationships to give students greater flexibility in designing their learning goals and outcomes

Would anyone exclude any of those from a definition of SENCER-izing courses, curricula, colleges?

But there is an important common theme in all of them: the use of the course content – including the science – in the service of developmental, as well as academic, goals. *We want to produce new civic engagements and responsibilities.*

That does **not** mean that we want every student and faculty member using a SENCER course model to be involved in service learning. Service learning, in fact, may or may not meet the goals of SENCER.

Part of the wisdom of the SENCER design is the absence of frank instrumentality – that is, the courses are not ordered just to produce volunteerism or community service. Instead, it is engagement with the important social questions that we need science to help answer that generates a greater interest in, and greater learning gains regarding, the science itself.

- What should, and can, we do to stem the worldwide pandemic of HIV disease?
- What are the broad features of sound environmental policy?
- Is the creation of a databank of DNA profiles a good idea?
- Why are so many people hungry?
- How do elections work? Why may they *not* work?

SENCER is not, the, just a set of different methods; SENCER is not merely modified mechanics to apply to the physics of a classroom. SENCER approaches are ways of teaching and learning that create a space for that crucial question, “Now that you know, what must you do?”

SENCER seeks to develop students into citizens whose concepts of civic engagement are broad and subtle at the same time – who understand that engagement as more complex than volunteering and kindness. SENCER aims to

foster citizens who are, to use the formulation of Joel Westheimer and Joseph Kahne, *personally responsible, participatory, and justice-oriented*.

Such an approach to teaching and learning must include the full scope of a student's life. It cannot be accomplished in the classroom alone – but not out of the classroom alone, either.

VIII.

We aren't finished with this work. In saying that, I do not just mean that we haven't disseminated it to the four corners of the Earth. I mean that we haven't answered some of its most important and fundamental questions.

- **How viable is a strategy of engaging students to learn science by studying capacious social questions?**

Can we demonstrate that, at scale – not just in a few classes with self-selected students – we can *at the same time* teach science and inspire changes in civic attitudes and commitments?

- **How will we know that we have achieved our developmental goals?**

It may (or may not be) clear enough that we have or have not achieved our academic goals; we have measurements (like the SENCER SALG) to enlighten us. But what are the measurements for civic engagement? How will we know that students have become legitimate participants in democracy?

- **What effect will our culture's current anti-intellectualism and loss of faith in science have on our efforts?**

The recent film *The Day After Tomorrow* notwithstanding, students may not be engaged by global warming when there remains an ideological – not scientific – controversy about its existence. The remarkable achievements of science and engineering can fade in the wake of widely publicized failures (space shuttles blow up on re-entry, research studies of the effects of recreational drugs are conducted poorly and widely politicized).

- **Can we adapt to the implications of today's (and tomorrow's) increasing flood of information?**

Can we teach *enough* content, and *enough* capacity to assess and analyze new information? Can we leave students feeling competent to think scientifically and interpret scientific arguments?

- **Is the optimistic humanism of the SENCER approach justified?**

Not very deeply buried in the infrastructure of SENCER and its ideals are some benign social assumptions: *anybody can do anything he/she wants to do*. But does some of the fallout from science courses and majors reflect limitations in the truth of that assumption? Are there, in fact, constraints inherent to study in the sciences that make it difficult for, say, neuroscience to be a completely inclusive discipline? Are there particular talent/skill sets that science requires and addressing capacious civic questions cannot provide?

Conversely:

- **How do the current structures and assumptions of science education discourage inclusiveness?**

What may be the role of SENCER in challenging what Muriel Lederman, of Virginia Tech, has called the “uncritical acceptance, replication, and advocacy of the paradigms of science?” We should, she writes, “...have scientists work with social scientists and scholars of education to make science more welcoming to those from the outside.” Can SENCER contribute to such efforts?

SENCER is a project, and a community, of ideas and ideals. It is now also a community of beginners, achievers, and alumni. It moves now to Harrisburg University of Science and Technology and, in so doing, to a new platform that offers soaring new opportunities. The fact of SENCER sits as evidence of the propriety and truth of its own ideals; the building of the SENCER networks, the succession of Institutes, the launching of an international journal, and the broad engagement of scholars from Georgia, Africa, and Honduras would not have occurred – none of them – without our own collective embrace of *new civic engagements and responsibilities*.

Educational reform is difficult. Changing the traditional structures of classrooms is not easy. Creating renewed relationships with students is challenging. Altering the structures and systems of higher education will not be quickly done. Nobody likes giving up power and control.

But we are now all accountable to define and assess our performance against desired student learning outcomes. We are accountable to students to support their growth, development, and competency as creative learners. And we are accountable to revise our pedagogy, curricula, and institutional structures as necessary to support these goals.