Ned Lamont:
Education Proposal

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There are numerous and growing indications that America is losing its edge, and falling behind, in ways that should alarm us all.

We face a competitiveness crisis as workers in other countries compete against ours on wages and skills. The quality of our workforce is Connecticut's competitive edge and America's edge. But now Europe is turning out twice the number of scientists and engineers as the U.S; and Asia is outpacing us by a factor of three. Our graduate enrollment in math and science is down 20% from its peak in 1985. Our twelfth graders fall near the bottom in the international competition in math and science. By many, many measures, we're losing the talent race.

Our upwardly mobile society is now being cleaved by deep and growing income inequality, which in turn is rooted in educational inequality.

We must rethink the entire educational pipeline from birth through college. This education program does that by:

- Ensuring children enter kindergarten prepared to learn;
- Developing full service community schools;
- Making significant new investments in math and science education;
- Align curriculum to make sure students enter college ready to learn; and
- Making college affordable for more students.

There is a strong economic argument for doing what needs to be done. As the Committee for Economic Development said so well,

> *"As the United States faces unprecedented competitiveness challenges and a serious fiscal crisis, any comprehensive strategy to sustain economic strength must include a world-class education system.[1]"*

We emphasize a curious mind and creative thought, a liberal arts basis which has served the creativity and energy of our entrepreneurial capitalist system very well. Teachers can not do it alone -- parents and coaches and mentors and ministers are all educators as well and work must allow balance for parenting and community education.

As we seek greater accountability through an over emphasis on standardized testing and teaching to the test, let's also inspire the imagination of the next generation of entrepreneurs who will develop the patents and grow the companies which will keep America an economic engine in the 21st century.

Washington has dithered long enough. It is in our nation's greatest tradition, and consistent with our generation's responsibilities, that we act and act now.

[1] The Economic Promise of Investing in High-Quality Preschool, The Research and Policy Committee of the Committee for Economic Development, 2006, page 1.

EDUCATION – INVESTMENT IN AMERICA'S FUTURE

"Laws for the liberal education of youth are so extremely wise and useful that to a humane and generous mind; no expense for this purpose would be thought extravagant." ~John Adams

My experience in small business has contributed to my vision of an Entrepreneurial Society that fosters the individualism and creative energy that is at the core of making America work. One of the lessons I learned as a small businessman was that successful entrepreneurs must invest in human resources. It is fiscally responsible for my business to invest in quality employees that give us an edge in a competitive marketplace.

So too is it fiscally responsible for an Entrepreneurial Society to invest in education.

But currently, America is falling behind its competitors. It is well documented that from the fourth grade through the end of high school, American students steadily lose ground to their competitors globally, especially in math and science.

Yet the No Child Left Behind legislation has imposed rigidity and "teaching to the test" on the American system, along with massive unfunded mandates, without any clear benefit in terms of outcomes. At the same time, the Bush administration has raised the barriers to higher education, raising interest rates on student loans, letting Pell Grants languish at historically low levels, and politicizing NIH and NSF funding.

Education, from early childhood (pre-kindergarten) through graduate school, is absolutely core to sustaining and expanding the "Entrepreneurial Society." Because we need the skills of every person to contribute to our competitive position, every kid counts. We need to develop the cognitive skills of youngsters even before they enter kindergarten, through early childhood education. And we need a national recommitment to leadership in science and engineering, as we had after Sputnik, when American launched a great investment in our basic research capabilities and vastly expanded support for students in science and engineering.

I am proposing an aggressive national education agenda, with significant goals and sufficient funding to achieve them. For a fraction of the cost of the Iraqi war, Congress could invest in educational programs that would enhance our country's ability to face the future with confidence.

A. Provide support to local school districts, on a sliding scale basis, to ensure that every child in America enters kindergarten prepared to learn. Fund the full cost of implementing well-tested approaches to early childhood education for those kids not presently being served.

B. Through grants to selected recipient educational institutions, encourage the development of full-service "community schools," which leverage the educational program of each school with additional services provided by the school or its community partners to students during extended hours before, during and after school and on weekends.

C. Invest in math and science education in a systemic and thorough way.

D. Facilitate the alignment of curricula through seamless P-16 (pre-kindergarten through college graduation) systems of education in the states.

E. Increase the maximum Pell grant to $5800 in FY 2007, as Democrats in the House of Representatives have proposed, to restore the purchasing power of the Pell grant to its level when President Bush took office in FY 2001.

EXPANDED ANALYSIS

A. In the long run, provide support to local school districts, on a sliding scale basis, to ensure that every child in America enters kindergarten prepared to learn. In the short run, in the most poverty-stricken cities in towns in every state, where children have not learned basic skills, Congress should fund the full cost of implementing well-tested approaches to early childhood education for those kids not presently being served. The projected annual cost would be $6.545 billion.

There is an economic development argument to be made in support of early childhood education. In order to be effective in a globally competitive environment, America requires an educated workforce that is highly trained, competent, capable of learning new skills and able to adapt to challenging work environments. And our capabilities as adults depend on both nature and nurture – genetics and the environment – operating together to shape the developing brain and the resulting capacities that emerge.

Recent scientific research reveals that critical early development and learning depends on a variety of factors ranging across various aspects of life: access to adequate nutrition, adequate health care, a safe home and neighborhood, and cognitive stimulation. The last may often be supplied in families with parents who are well-educated; the mother's educational level is strongly associated with kids entering kindergarten with basic skills – of print familiarity (knowing that English is read from left to right and top to bottom, or where a story ends), reading proficiency (recognition of upper and lower case letters of the alphabet), and mathematics proficiency (able to read numerals and counting beyond 10). But if the family environment does not develop those skills, early childhood education is now seen as providing the enriched environment critical to producing the basic skills needed in order to be prepared for kindergarten.

Children who are behind in their development at age three, enter kindergarten behind their peers at age five, can't read at grade-level at age eight or nine, and the gap widens year after year until they drop out before completing high school. Many of them will subsequently experience welfare dependency and enter our criminal justice system. Youth who do not achieve mastery in high school lack the skills and capabilities necessary for today's workforce or for admission to post-secondary education.

According to a recent RAND study, "The logic of early intervention is to compensate for the various factors that place children at risk of poor outcomes. . . If learning begets learning, then interventions at younger ages have the potential to generate cumulative benefits by altering a child's developmental trajectory." *(Early Childhood Interventions, RAND 2005, p. 14)*

Economists have shown there is a high rate of economic return, in both the short and long term, as a result of making this early investment. A growing body of scientific research reveals a 20-year return on investment from high quality, effective early education with *targeted* populations (*at risk families*) of no less than 800% and as much as 1700% for every dollar invested. This is largely accounted for by reduced incarceration and welfare costs in young adulthood. On an annualized basis, Federal Reserve Bank economists show an inflation adjusted annual internal rate of return on early education investment (ROI) of 16% over the same 20-year period. (Minneapolis Federal Reserve Bank, *Early Childhood Development: Economic Development with a High Public Return*, December 2003, p. 9) These analyses take into account both cost savings to society and the value of increased wages and taxes paid by the target population. In addition, recent RAND analyses project a return on investment for *universal* early education for all children of about 200%. (*The Cost and Benefit of Universal Preschool in California*, RAND 2005.)

It is probably prohibitively expensive to immediately support *universal* early childhood education – and, as noted, the ROI for universal ECE, while positive, is lower than for more narrowly-focused ECE. But the return on investment is far greater when support is provided to children in settings with the highest risk factors. And the cost of *targeted* ECE – to subsidize the cost of providing early education to children in towns and cities where risk factors are greatest – appears to be feasible in the short run, especially recognizing that a share of children in those towns are already being served.

There is no definitive methodology to project the number of students who require support in towns with high risk factors, the number of towns that would be targeted, or the average cost of providing ECE services in different settings. In March 2006, however, the Connecticut State Department of Education submitted a report to the state General Assembly on "School Readiness Need and Costs to Serve all 3- and 4-Year Old Children in the 19 Priority School Districts," which concluded that serving 8,731 additional children in those districts – which are districts with the highest risk factors affecting the most children – would require an operating cost of $66 million, or about $7,600 per student. (Another estimate prepared by the United Way of Connecticut in February, 2006, using as an educational model the Perry Preschool program in Ypsilanti, Michigan, projected a cost of $7,770 per student.) Making the very general assumption that the share of targeted children (as a percentage of all 3- and 4-year olds) in the United States is similar to that in Connecticut, then approximately 850,000 kids across the country who are not now being served would require support. At the cost of $7,700 per student, the cost would be $6.545 billion.

B. Through grants to selected recipient educational institutions, encourage the development of full-service "community schools," which leverage the educational program of each school with additional services provided by the school or its community partners to students during extended hours before, during and after school and on weekends. Such services might include early childhood education, Head Start, academic enrichment activities, mentoring, promotion of parental involvement and family literacy, career counseling, mental health, and primary health and dental care. Initial grants would target schools in high-poverty areas. *As contemplated in a proposed bill introduced by Representative Steny Hoyer, the initial annual funding for grants would be $200 million.*

Community schools have been open and functioning in New York City since the early 1990s, supported in part by the school system and in part through private philanthropy. Each school is an integral part of the neighborhood, a "focal point in the community to which children and their parents could turn for a vast range of supports and services." It provides all the health, welfare and youth development activities of a social service agency, at the same time as it seeks to achieve the highest educational goals and standards. The promotion of children's learning and development underlies every activity. The building is open up to 15 hours a day, weekdays and weekends, and through the summer, to provide these activities.

The Children's Aid Society, which has provided major leadership for the implementation of this concept, notes that no two community school partnerships are the same. Each neighborhood has distinct needs, so each collaboration among the community partners requires different combinations of services. The primary goal of each school is the education of children – to which all of the activities should contribute.

The greatest need for the creation of such schools is in areas of cities characterized by persistent poverty, in which educational inequity has not been overcome, and where there is a widening achievement gap. So grants should be distributed based on criteria which reflect those needs.

The Children's Aid Society has documented the reasons why community schools work:

- "Community schools make the most of our children's non-school time by providing high-quality, supervised after-school experiences that extend learning opportunities and enable them to develop their talents, form positive friendships and connect with their communities."
- "Community schools provide young people with enriched educational opportunities, while also developing and strengthening their physical, emotional, social and moral competencies through a variety of supports and services."
- "Community schools offer parents an active role and voice in their children's education and a place where parents can improve their own lives."
- "Community schools bring many of the most essential services together under one roof, offering an effective, coordinated response to the needs of children and families."

A grant program such as that proposed by Congressman Steny Hoyer offers the opportunity to demonstrate the validity of the community school concept in high-poverty areas. Over time, evaluation of the benefits of community schools could well generate a commitment to provide more widespread support. I support a program initially funded at $200 million annually.

C. Invest in math and science education to the extent analogous to the support provided in the decade after Sputnik. The 2005 report by a blue-ribbon committee of the National Academy of Sciences, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, provides recommendations for

1. increasing America's talent pool by vastly improving K-12 mathematics and science education,
2. developing, recruiting and retaining the best and brightest minds,
3. strengthening the nation's commitment to long-term basic research, and
4. providing incentives for innovation.

The first two categories of the above recommendations focus on education.

In 1957, the launch of Sputnik made it clear that the United States was in a scientific competition with the Soviet Union that we were in danger of losing. The country responded with a massive, successful effort in education to improve our competitive position. Again, in this decade, the achievements of other countries have made it clear that the United States is in danger of losing the competitive race with other countries in the global "knowledge economy," especially in the so-called STEM (Science, Technology, Engineering and Mathematics) fields. Although the number of engineering students is rising rapidly in China, India, and South Korea, the number of engineering degrees awarded in the United States is down 20% from the peak year of 1985. Although U.S. fourth graders score well against international competition, they fall near the bottom by 12th grade in mathematics and science. "If trends in U.S. research and education continue," as the National Summit on Competitiveness put it last December, the likely consequence is that "our nation will squander its economic leadership, and the result will be a lower standard of living for the American people."

That is why I am calling for a significant investment by the federal government to increase America's talent pool by vastly improving K-12 mathematics and science education, following the recommendations of the 2005 report by a blue-ribbon committee of the National Academy of Sciences, *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*. It is not sufficient to increase funding for research. It is critically important to improve science and math education at the elementary and secondary level, where many math and science teachers are more likely than not to teach outside of their own fields of study. (A U.S. high school student has about a 40% chance of studying chemistry with a teacher who has a chemistry major, and about a 33% chance of studying physics with a teacher who has a physics major.)

> We need to recruit, educate, and retain excellent K-12 teachers who fundamentally understand biology, chemistry, physics and mathematics. The critical lack of technically trained people in the United States can be traced directly to poor K-12 mathematics and science instruction. Few factors are more important than this if the United States is to compete successfully in the 21st century. (*Gathering Storm,* p. 5-3)

Although some legislators have introduced bills to implement many of this report's recommendations concerning funding for research and incentives for innovation, there has been precious little focus on greatly expanding the pipeline to produce the human capital which will engage in that advanced research.

In this area, it is NOT sufficient to fund just a few "model" or "pilot" programs that will develop practices and curriculum that will "demonstrate" a prototype or example of how educational quality may be improved. The crisis we now face is looming too quickly for us to afford the luxury of a "trickle down" mechanism for educational enhancement. We need to make an immediate commitment of funding to address the full magnitude of the problem.

So I am committed to following the full-fledged program recommended by the National Academy of Sciences:

1. **Annually recruit 10,000 science and mathematics teachers by awarding 4-year scholarships.** Annual scholarships of up to $20,000 each for qualified educational expenses would be given on the basis of merit to allow the brightest students to earn bachelors' degrees in STEM fields with concurrent certification as K-12 math and science teachers. Each scholarship would carry a 5-year postgraduate commitment to teach in a public school. Grants of $1 million per year for five years would also be made to 100 universities to establish the necessary undergraduate programs. The annual investment for scholarships at steady state would be about $900 million, and the annual cost of grants to universities would be about $100 million.

2. **Strengthen the skills of the 250,000 current science and math teachers, to inspire students every day.** Excellent professional development models exist, but they reach too few. Over five years, a four-part program would implement high-quality mechanisms to sharpen content knowledge and pedagogy skills:

    a. **Summer institutes.** Matching grants would be provided to state and regional summer institutes to develop and provide 1- to 2-week sessions for 50,000 classroom teachers each year, for an expected investment of $1,200 per participant per week. The annual cost would be $120 million in a steady-state year.

    b. **Science and mathematics masters' programs.** To reach 50,000 teachers in 5 years, competitive institutional grants of $1 million each year to 500 universities to develop part-time 2-year master's degrees programs (3 full-time summers plus alternate weekends during the academic year) for current science and math teachers, who could then provide leadership in their own districts. The investment would be about $330 million annually in a steady-state year.

    c. **Train an additional 30,000 teachers per year to prepare existing teachers to teach Advanced Placement or International Baccalaureate courses in advanced mathematics and science.** The focus would be on professional development and incentives for teachers from schools where there are few or no AP courses. The total cost over five years is estimated to be $1.3 billion, beginning at $100 million in the first year.

    d. **Prepare K-12 curricular materials modeled on world-class standards**. Either collect and distribute teaching materials that have been proved effective, or develop new ones. These materials would be available free on-line, as a voluntary national curriculum that would be in alignment from kindergarten to high school graduation. This could be done for $20 million per year, or $100 million over five years.

3. **Enlarge the pipeline by increasing the number of students who take AP and International Baccalaureate science and mathematics courses.** The goal is to have 1,500,000 students take at least one AP or IB science or math exam by 2010, with 700,000 passing the exams. Stipends (for a rebate of 50% of the exam fee) and mini-scholarships ($100 for each student who passes) would encourage students to enroll in these courses without regard to family income. Taking the courses provides a foundation for students to be internationally competitive; passing them gives a boost to complete their college work quickly. The five-year cost is estimated to be $575 million, starting at $60 million per year.

4. **Support 25,000 new undergraduate majors in STEM areas with 4-year competitive undergraduate scholarships.** Eventually, there would be 100,000 active students in the program each year, receiving scholarships of up to $20,000 per student to pay tuition and fees. The program would phase in over four years beginning at $375 million per year, with a steady state cost of $1.5 billion annually.

5. **Provide support to 5,000 new graduate students in STEM areas every year,** analogous to the National Defense Education Act fellowships of the 1960s. These grants would be awarded on the basis of competition, and could be taken to whatever school admitted the student – not just to those institutions where faculty research grants could pay for support. Tuition reimbursement would be up to $10,500 annually, and each recipient would receive an additional annual stipend of $30,000. The program would be phased in over 3 years, with a first year total of $225 million, and a steady state cost of $675 million annually.

6. **Provide tax credits to corporations which help their employees pursue continuing education to keep up to date in science and math fields.** The cost would be up to $500 million each year.

As re-estimated in February 2006, the projected cost for FY 2007 to implement these educational recommendations is $1.476 billion, phased in over five years to a level of $4.651 billion in FY 2011.

The National Academy of Sciences' report has also called for major direct investments in basic research and research infrastructure, as well as the use of tax credits for research and development to stimulate innovation – a phased-in annual total of $12.273 billion in FY 2011. I am not unsupportive of these recommendations. But my highest priority is to develop the bright young minds in sufficient numbers to provide the human infrastructure necessary to conduct that research. Developing the educational pipeline is the key to the future.

D. Facilitate the alignment of curricula through seamless P-16 (pre-kindergarten through college graduation) systems of education in the states.

More than half of America's college students must take at least one remedial course in English or math in order to meet minimum standards of academic work in college. This lamentable situation is not just the product of secondary school failure: too many students arrive in 9th grade behind in reading and math skills, and few from this category ever catch up. And there is some argument that part of the problem can be traced to kids arriving in kindergarten without certain basic skills.

At every level of transition, a case can be made that the "receiving" institutions must make clearer and more explicit to the "sending" institutions just exactly what skills and knowledge are a prerequisite to success at the higher level. Perhaps high school graduation requirements should be enhanced to meet college entrance requirements. At the very least, secondary schools should work together with colleges to establish a shared understanding of what content should be taught, and what standards of achievement should be met, so that students acquire the skills and knowledge necessary for college success. One potential avenue is to establish vertically aligned science and math courses – pre-algebra in middle school, followed by algebra in the freshman year, then geometry, trigonometry, and pre-calculus – using sequenced curricular materials over the several years. Similarly, skills expected to be developed in early childhood education and/or kindergarten should be aligned with the elementary school curriculum.

Curricular alignment should be supplemented by communications that motivate student achievement, by reminding parents and students that "education pays": a college diploma dramatically increases lifetime income, while there is an economic penalty associated with dropping out of school.

Although seamless curricular alignment is not a direct federal responsibility, Congress and the administration can and should encourage the states to create P-16 systems through grants and goal-setting. The cost of necessary grants should be minimal.

E. Increase the maximum Pell grant to $5800 in FY 2007, as Democrats in the House of Representatives have proposed, to restore the purchasing power of the Pell grant to its level when President Bush took office in FY 2001.

Higher education is a public good, benefiting the entire nation, and participation by all who can qualify academically – not just those whose families can afford to pay – is critical to producing the numbers of college graduates necessary to meet the workforce needs of the competitive global economy. The Bureau of Labor Statistics estimates that by 2020, American employers will need 14 million more workers with some college education than we are now on track to produce. Yet the New England Board of Higher Education estimated in 2003 that 400,000 low- and moderate-income high school graduates annually do not pursue a full-time, four-year degree because of an inability to pay.

Pell grants were designed to make college affordable for all by providing need-based financial aid to equalize post-secondary opportunities for low-income students. When Congress in FY 76 made all undergraduates eligible to receive a grant, the need-based scholarship program – named for its chief sponsor, Senator Claiborne Pell – provided a maximum grant of $1,400 for each low-income student, covering 72% of the average cost of attending a public four-year university. By FY01, the maximum grant of $3,750 covered only 42% of the cost of attendance, and candidate George W. Bush committed to increasing the maximum grant to $5,100. He did not do so, however, and since then the total cost of college has climbed 34%, but the Pell grant maximum has increased by only 8%, and it has been frozen at $4,050 since FY03. For FY 07, the Pell grant maximum award would have to more than double to recover the losses in the purchasing power of Pell since its inception. The proposal by the Democratic caucus in the House of Representatives at least recovers the purchasing power since George W. Bush took office in 2001.

The artificial cap currently imposed by restricted funding amounts should also be removed, so that both the size of the grant and the number of grants are not limited by the appropriation. And the maximum grant should increase at the same rate as the average annual cost increases at four-year, public universities.

Although it is difficult to estimate the total cost of this recommendation, since increasing the maximum grant would also increase lower grants paid to higher-income students, the initial annual cost may be in excess of $7 billion more than the currently projected appropriation of $13.1 billion.