

Secretary Lamar Alexander from Ed Lyell April 9, 1991

**ED LYELL**  
**2187 Sunridge Circle**  
**Broomfield, Colorado 80020**  
**(303) 466-6707**

(old address)

Honorable Secretary Lamar Alexander  
U.S. Department of Education

April 11, 1991

Dear Secretary Alexander,

Three weeks ago, on your third day in office, you spoke to the Chief State School Officers and members of State Boards of Education in Washington D.C. In my advice to you I suggested that you organize a major shift of resources from the Defense Industry and its recent success in developing "smart bombs", to the Education and Social Service needs of America, what I would call "Smart Schools". You asked me to send you more information on that idea. Thank you for this opportunity.

**PROBLEM:**

America's public education system is a failure, with improvements being demonstrated only on the margin, and with little positive affect upon the 40 % who drop out of high school, or the graduates who are illiterate, unprepared for rigorous college and thus driving down the performance level of all higher education. Employers are spending more of their resources correcting the errors of the school system and providing for the on-going learning of employees.

Teachers and children do not fail, but the system does. In my discussions with W. Edwards Deming, he has shown that education is like other industries. We first blame the worker and the raw material for the failure, but it is the system, with the drop-outs, and semi-literate graduates as symptoms of a systemic failure.

**SOLUTION:**

After spending 25 years professionally trying to dramatically restructure education (higher and lower) and seeing only "redecorating not restructuring" I now believe that we are on the verge of success. Five major movements must be managed well to synergistically create a new American Learning Community.

1. Technology transfer from other industries to education,
2. Creation of a tele-communication linked Learning Community.
3. Change in the way in which schools are funded.
4. Development of Student Performance based Outcome Standards
5. Linkage of Social services, family and other helping agencies to the student and learner.

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The primary catalyst and necessary driver of this "real re-structuring" can be the "military industrial complex."

This became a long letter in order to explain my recommendations for action. Let me list the action items I recommend to you here, and follow them with the narrative which seeks to justify my recommendations.

**ACTION NEEDED:**

You should create a "National Learning Community " office reporting to you directly which would:

1. Seek out the ways in which the Military commands and their contractors can transfer their experience and talent to help us dramatically restructure society into a life-long learning community through the transfer of technology which they

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know so well. I have already spoken with military leaders and defense contractors who are excited by this possibility and have specific ideas on how to help. Some include:

- a. Build a prototype school district with a computer on every desk, and in every home (perhaps hand held), which interconnects the learner with teachers, parents, other people in the community who will also help educate youth and adults full time, as part of their daily role in life. The technology is a catalyst to breaking out of the traditional classroom, and pedagogy. (I know a school district in Colorado ready to volunteer for this).
- b. Use "virtual reality" to create new worlds of "hand's on learning". Idea from U.S. West executive
- c. Use the techniques of the U.S. Air Force in structured learning systems to re-design the curriculum in K-12. Idea from air force colonel in change of technology transfer to industry.
- d. Dept. of Energy labs have thousands of talented engineers and scientists of all types who are today searching for new agendas, new problems to be solved. An executive of Sandia labs told me they would eagerly respond to Request for Proposals (RFP's) to help redesign the American learning system.
- e. Build a national information system organized to record the needs and acquisition of skills and competencies of every learner in America. The movement of children and adults from one geographic location to another with each new school ignorant and seemingly uncaring of the individual is one major reason why so many children fail, and why adult education is so expensive, redundant, and faulty. An IBM executive already has products to help in this area.

2. Immediately bring the Department of Education into the mainstream of creating a National Research and Education Network (NREN).

Only the Department of Education is absent in membership in the Federal Network Communications Board. The National Science Foundation is trying to keep education, including K-12, in the minds of this group as they design NREN, but education is extremely notable for its ignorance and non-participation. I have been involved with the Office of Technology Assessment in developing the recommendations to Congress in how to involve K-12, but it has been a solo effort with no organizational clout.

3. Organize a strategic thinking team of educators and business people who will purposely think beyond the existing structural boundaries and design a learning community for the next century. Thinkers like W. Edwards Deming, Kenneth Boulding, Larry Senesh, Dick Lamm, Robert Gholson, Jack Bowsher, Al Shanker, Marc Tucker, who have ideas on this should be empowered to seek out others and take the promising marginal improvement efforts we now see in isolated schools and build a mosaic of how a new learning system would work. The people I list are just those I personally know and have worked with, but you and David Kerns know many more who should be part of this "Brain Trust" organized through your office.

Such a group should also be examining world learning systems to discover multi-cultural and multi-country models which would help us redesign our system. America's strength should be its cultural diversity. Too many people see our "mongrel" status as a negative, and it is if we treat it as such. Rather we are uniquely positioned to learn from the numerous sub-cultures in America as to what styles of learning, communicating and creating work best in different sub-cultures. Since we have almost every world culture as an American sub-culture we could use our success with "minorities" within the U.S. as a competitive advantage in the escalating global marketplace.

Rationale for the recommended actions.

#### 1. TECHNOLOGY TRANSFER FROM INDUSTRY TO EDUCATION:

We must organize a massive technology transfer to the education sector. Computer based learning has inherent value in helping people of all ages to learn most subjects and technology is a catalyst to create what I would term an

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example of Naisbett's "High Tech-High Touch" learning community. Learning is an individualized experience and should occur as such whether one or two on a computer, or where teachers work with one to five students at a time, not one to 30 or 40. Collaborative skills seldom get developed in standard classrooms.

Although there are some excellent examples of technology use by teacher development or by Apple or IBM company programs, the present usage is marginal in all ways. The need is far greater than the present structure will fund, or implement. Technology is used as an add-on to the present school day, where-as it must be the catalyst for real change, as in all other industries. The barriers to its use must be overcome. Such a transformation will not occur from just within the industry. We need the military-industrial and other firms to massive help us. We also need to have the billions of dollars allocated to build weapon systems to also build and distribute the technology to reach every child, every family.

Unless we develop an agenda based on shifting the talent of the defense industries, not just the budgeted dollars we will have very little shift in real resources.

I predict that a lot of political time and capital will be spent in moving a few percentage points of the federal budget from one category to the other. Along the way many people will be hurt, local community's unemployment raised, some firms will vanish, and many lawyers, lobbyists, and "legislative liaisons", will make money. Those are the "wages" of war when battling over the federal largesse.

If all goes as in past cycles, thousands of engineers, project managers, technicians will be forced out of the military industrial companies, and a few will end up working in domestic programs like education, usually for about 1/2 their past compensation.

On the other side, many existing domestic program workers, social workers, teachers, health specialists, will get some pay raises, some additional supply and expense money, and a small number of new programs will be created on the margin of the existing programs. These "turf" wars are a poor way of shifting societal priorities and focusing on the acknowledged presently greater domestic needs of education, health and child care, and drug abuse programs.

We should organize a national level effort to have the domestic program people specify the more dramatic reform needs within their area and contract to have the existing industrial firms meet these needs. Not all of the domestic agency needs can be met this way, but I argue most are not only possible, but better met from this shift in how domestic programs do business.

The Education industry is one structured with counter-veiling forces among its stakeholders designed to provide each group with the ability to stop the other, and none with the ability to move the industry in the direction, or at the pace necessary to insure our "domestic tranquility" or our global competitiveness through human capital improvement.

Critics can rightfully charge that NO other industry in America has "managed" to increase its cost per student graduate, cost per worker, percentage of local, state, and federal budget dollars consumed while reducing the quality of its output in every category, by every measurement system.

Defenders can honestly point out that much of the increased cost and difficulty is because education must now take all children, work with the children of illiterates, deal with crime and drugs in the schools and communities, become surrogate parent to a majority of its students. The education industry must now "value add" to its original learning product all of the other services necessary to counter the lack of family and community support which existed prior to the two working parent, single working parent, no parent, no child support paid, family. Much as we pay more per pound for popcorn in a micro-wavable package for its convenience, we should expect to pay more for "one-stop" child care and development.

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The issue then, is how best to transform this "backward" industry into a modern core for a learning community. While many will say just send us the money, I disagree. More money for more of the same is "like spreading fertilizer over a fallow field". And yet, that is what is occurring in most states with almost all of the new dollars.

Educators are poor learners in terms of really changing the methods of production, or shifting their production oriented industry to a consumer driven one. We should be diagnosing each child for his/her present skills and competencies and then designing an individualized total learning environment customized to keep that wonderful learning person learning at full speed from birth to death. For some children that will mean nutrition, social support, psychological help for child and family, whole family learning, work integration with learning, and ultimately integration of learning throughout our careers.

Educators are not organized, nor well prepared to make this happen. The turf is well defended among all of the "service providers". The funding sources drives the organization chart. New governance structures will be necessary. I don't have an answer at this time to all of these problems, but I do suggest one specific approach which could be undertaken now, as a proper role of the federal government.

Education has been a poor implementer of technology. The average computer placed in a school setting is used as an add-on to an existing classroom setting. Students get to touch and play with it, much like they used to be exposed to a snake, and get to feed it once a week.

The military industrial complex, so feared by most educators, has had tremendous success in using technology to train adults. Every weapon system, every new communication system for battle control is state of the art, high tech. Every youth in the military, many considered "un-trainable" by educators has been trained in these communication and weapon systems. Clearly the military has been more successful with educating minorities than most school systems. There is not room here to elaborate on all of the educational learning style and curriculum differences but we should seek to transfer this learning technology to public schools, colleges, and adult literacy programs.

I recommend that you lead President Bush and the Congress get together and ask the domestic agencies like education to develop Requests for Proposals (RFP's) identifying the needs they have to create a true learning society in America including the true Reforming, Refinancing, and Restructuring of education. Let the military industrial firms bid on how they would create a statewide uniform access educational system without the burden of interstate telephone charges, long distance, etc.

Let the Martin Marrieta's, Ball Aerospace, Hughes Aircraft, etc. design and build state of the art learning tools to be placed in every school, office and home. Let ATT, MCI, etc. bid and design a inter-connected voice, video, computer linked telecommunications system for connecting every citizen with learning opportunities wherever they live and work.

Don't attack and then displace the military/industrial engineer and worker, rather lets change the nature of the products and services they produce. They would not willingly give up a \$60,000 a year job for a \$25,000 a year teaching job. And we neither would, or should just increase the teaching salary two fold. More of the same just gets us more of the same and we know that is not working.

## 2. TELE-COMMUNICATIONS FOR A LEARNING COMMUNITY.

We must also interlink in tele-communications all students, teachers, school buildings, offices, homes, and other facilities. Learning communities of geographic and non-geographic boundaries must be created in and between the school buildings and work place. Jack McAllister's committee out of the Labor Secretary's office is very interested in this area. Senior citizens must be used along with youth teaching youth. As Kenneth E. Boulding has taught me, in the past the education system was designed to help people acquire information. Today, the knowledge and information revolution

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means that knowledge is the "orderly loss of information". We must have universal access to information, and then create a learned society that knows how to ask the right question, frame the situation, use the abundance of information.

This is occurring, but only for those who have the private resources of family or corporate position. The Telecommunications Commission I co-chair in Colorado based its report to our legislature on the premise that access to information is a fundamental need and right. Whereas that access was provided for over a hundred years by public schools, and public libraries, it now must be met by electronic access for everyone.

This will involve not only technology access, but a total elimination or change in the telephone and cable rate structure of America. It also means the end of the standard classroom with a talking head sending primarily one way information at 125 words per minute in a generic manner to individuals who will no longer just sit still and absorb like a lower level sponge. Today's learner wants and expects to be active, and we have the tools to create that type of active learning situation.

### 3. PRESENT SYSTEM IS BANKRUPT OF MONEY FOR MORE OF THE SAME.

Third, as a nation, state, and individual we are broke. Money will not show up to add more teachers as more children reach traditional school age. Money does not exist to hire and train the thousands of teachers required to maintain the present education structure (nor can the teacher training programs alone train the individuals we need for the future). The public will not vote more money for more of the same; they know it is not working. Almost 80 percent of the voters have no children of their own in school, and frequently do not relate or respect the children of color they see of school age. They will not vote to sacrifice their health and other needs for "those children" or "that" school system.

We must design a new learning community with dramatically restructured delivery systems and then develop a financing system which provides the on-going resources needed. This might involve a special national tax for learning, or taxation of all business for providing them with educated workers, or a return to real progressive taxation on the basis that learning made a difference in future income streams, etc. The present educational finance models are all poor, unjust, or perceived of as untrustworthy.

### 4. NATIONAL OUTCOME STANDARDS ARE FORTHCOMING.

Fourth, the nation is calling for national direction on educational outcome standards. As we define the skills and competencies we expect of graduates, and learners in progress, we enable the system to move from one governed by process to one directed by and judged by outcomes. This Outcome Based Education (OBE) system gives us a quality control at each step already shown to work in every other productive industry. OBE also allows us to stop controlling the hours of the day and week, and allows us to individualize the style of learning to the needs of the learner and the methods of the subject matter.

Bill Spady's work is paramount in this area. OBE also gives us the ability to change the delivery and governance of education to be one of a national potential where "inter-connected-ness" is valuable, and then individualize to the person, not the district or the building for delivery.

I would add to the outcome assessment agenda that we should organize the assessment to be from individuals outside of the school and classroom. Teachers will never be accepted by students as learning facilitators in a collaborative model when that same teacher is the one giving the grades, controlling the judgement of the learners. A separate staffing pattern with a separate organizational career ladder must exist for summative judgement testing of skills and competencies obtained. Whether this is still within a school district, or a state or nation level organization is unclear to me, but it must not be the classroom teacher. The teacher must become a true mentor/coach/facilitator with trust by the

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student that showing ignorance to get help will not hurt the student.

#### 5. LINKAGE OF SOCIAL SERVICE, FAMILY AND OTHER "HELPING AGENCIES" TO THE STUDENT AND LEARNER.

Fifth, we must follow the advice of the National Association of State Boards of Education (especially the urban study group I was on), and all other groups which have advocated that we link social services to the student, the individual and their family. Our domestic agenda was created by a series of incremental decisions based as much on one key Congressman or President as on logic.

The results of decades of such decisions is what I call "the Perversities of Micro-Incentives and Macro-Behavior". You already know that welfare families have incentives to cheat, to abuse each other, to not participate. Healthy behavior is difficult when the turf driven rules of "helping agencies" lead to behavior which hurts children, unprepares them for school, creates problems which school itself can never solve. We need a bold agenda for this reform and it may even involve changes in the U.S. constitution in terms of parental rights versus responsibilities ( I am thinking here of pre-natal drugs problems, etc.). Are you willing to be the bold leader to identify the problems and solutions?

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#### CONCLUSION:

I fervently believe that we are at THE decision point for public education in America. Thomas Jefferson's dream of a fully literate democratic society is just barely a blur today. So few children today can come from the ghetto the way I did, and have a public K-12 and higher education system help them reach their Doctorates, and other learning based goals.

We must dramatically restructure the present isolated fief-doms, and connect them into a systemic learning system with top-down goals, and a neural network of communications with bottom up site management. Some say we should abandon public schools and seek vouchers, wherein we dismantle the house of cards called public education, throw the cards in the air, and hope that they land in a better organized school system then the present. I for one, don't believe that vouchers will create a better system unless we also do the steps I have outlined above. If vouchers are the way to finance such a system, fine, but first lets design the system itself. There is no quality school system, as I and others envision one, to choose from today even if we had full choice.

Thank you for this opportunity to express these ideas to you. The integration and involvement of the military industry sector into the redesign and restructuring of public education is the catalyst for ideas and resources to make the dramatic changes necessary. Without bold thinking the public school system will continue to wither and die. I would welcome the opportunity to meet and discuss any or all of these strategies with you or members of your staff. Enclosed is some information on my personal background and activities in these areas.

Sincerely,

Ed Lyell  
Member Colorado State Board of Education  
Co-chair Colorado State Tele-communications Advisory Commission