

Pre-proposal to Michigan Foundations

“Building a Society of Learning in Michigan”

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Project Summary:

We have entered a new age in which knowledge itself—that is, educated people and their skills and creativity—has become the key to economic prosperity, national security, and social well-being. Moreover, education, knowledge, and skills have become primary determinants of one’s personal prosperity and quality of life. As a consequence, it has become the responsibility of democratic societies to provide their citizens with the education and training they need, throughout their lives, whenever, wherever, and however they desire it, at high quality and at an affordable cost. A compelling vision for our future is that of a *society of learning*¹ in which life-long educational opportunities become not only available to, but pervasive in, the lives of all of our citizens.

It is the aim of this project to develop a planning process aimed at crafting a vision for such a future at the regional level; developing a plan to move toward this vision; building the necessary leadership networks linking the public and private sectors to execute the plan; and identifying and articulating the key public policies and necessary public and private investments to achieve this objective. Although this planning effort would initially be focused on the State of Michigan as a pilot study, the process would be developed in such a way that it could be propagated to other states and regional areas.

We believe this project relates directly to several priorities of the state: 1) developing quality educational opportunities for all of its citizens; 2) providing the educated workforce necessary for the state’s prosperity; and 3) building the linkages among communities, knowledge and learning institutions, business, industry, and labor, and state government necessary for Michigan’s future in a global, knowledge-driven economy.

Background:

Ask any governor about state priorities these days and you are likely to hear concerns expressed about education and workforce training. The *skills race* of the 21st Century knowledge economy has become comparable to the *space race* of the 1960s in capturing the attention of the nation. The signs of the knowledge economy are numerous. The pay gap between high school and college graduates continues to widen, doubling from a 50% premium in 1980 to 111% today. Not so well known is an even larger earnings gap between baccalaureate degree holders and those with graduate degrees.

The reason is simple. Today we are evolving rapidly—decade by decade, year by year—into a post-industrial, knowledge-based society, a shift in culture and technology as profound as the transformation that took place a century ago as an agrarian America evolved into an industrial nation.² Industrial production is steadily shifting from

material- and labor-intensive products and processes to knowledge-intensive products and services. A radically new system for creating wealth has evolved that depends upon the creation and application of new knowledge.

In a very real sense, we are entering a new age, an *age of knowledge*, in which the key strategic resource necessary for prosperity has become knowledge itself, that is, educated people and their ideas.³ Unlike natural resources such as iron and oil that have driven earlier economic transformations, knowledge is inexhaustible. The more it is used, the more it multiplies and expands. But knowledge is not available to all. It can be absorbed and applied only by the educated mind. Hence as our society becomes ever more knowledge-intensive, it becomes ever more dependent upon those social institutions such as schools, colleges, and other educational organizations that create knowledge, educate people, and provide them with knowledge and learning resources throughout their lives.

The space race galvanized public concern and concentrated national attention on educating “the best and brightest,” the elite of our society. The skills race of the 21st Century will value instead the skills and knowledge of our entire workforce as a key to economic prosperity, national security, and social well-being. We can well make the case that it has become the responsibility of democratic societies to provide *all* of their citizens with the education and training they need throughout their lives, whenever, wherever, and however they desire it, at high quality and at a cost they can afford. Yet there is growing concern about whether our existing educational infrastructure has the capacity to serve these changing and growing social needs—indeed, even whether our current educational institutions will be able to survive in the face of the extraordinary changes occurring in our world.

It is increasingly clear that we are simply not providing our citizens with the learning opportunities needed for a 21st Century knowledge economy. Recent TIMMS⁴ scores suggest that despite school reform efforts of the past two decades, the United States continues to lag behind other nations in the mathematics and science skills of our students. Despite the growing correlation between the level of one’s education and earning capacity, only 21% of those in our population over the age of 25 have graduated from college. Enrollments in graduate programs have held constant or declined (particularly in technical fields such as engineering and computer science) over the past two decades.⁵ Furthermore, the increasingly technology-intensive nature of education threatens to create a “digital divide”, further stratifying our society based on access to technology, just as it has economically and with respect to educational opportunity.

Our efforts to meet the educational needs of the 21st Century are constrained, in part, by institutions, systems, policies, and politics which were determined by a 20th century industrial society. Today and in the future we need to develop a new learning infrastructure—indeed, a learning ecology⁶—appropriate for an age of knowledge, with the following characteristics:

1. Just as with other social institutions, our schools, colleges, and other educational institutions must become more focused on those we serve. We must transform them from teacher-centered to learner-centered institutions, becoming more responsive to what students need to learn rather than simply what faculties wish to teach.

2. Society will demand that we become far more affordable, providing educational opportunities within the resources of all citizens. Whether this occurs through greater public subsidy or dramatic restructuring of the costs of education, it seems increasingly clear that our society—not to mention the world—will no longer tolerate the high-cost, low-productivity paradigm that characterizes much of education in America today.
3. In an age of knowledge, the need for advanced education and skills will require both a personal willingness to continue to learn throughout life and a commitment on the part of our institutions to provide opportunities for lifelong learning. The concept of student, employee, and alumnus will merge.
4. Our highly partitioned system of education will blend increasingly into a seamless web, in which primary and secondary education; undergraduate, graduate, and professional education; on-the-job training and continuing education; and lifelong enrichment become a continuum.
5. Already we see new forms of pedagogy: asynchronous (anytime, anyplace) learning that utilizes emerging information technology to break the constraints of time and space, making learning opportunities more compatible with lifestyles and career needs; and interactive and collaborative learning appropriate for the digital age, the plug-and-play generation. In a society of learning, people would be continually surrounded by, immersed in, and absorbed in learning experiences, i.e. ubiquitous learning, everywhere, every time, for everyone.
6. The great diversity characterizing higher education in America will continue, as it must to serve an increasingly diverse population with diverse needs and goals. But it has also become increasingly apparent that we must strive to achieve diversity within a new political context that will require new policies and practices.

It is clear that the access to advanced learning opportunities is not only becoming a more pervasive need, but it could well become a defining domestic policy issue for a knowledge-driven society. Our schools and colleges, workplace training programs, and community activities must define their relationship with these emerging possibilities in order to create a compelling vision for their future as we begin the new millennium

The Proposed Project

This project intends to: 1) draw together a group of leaders with backgrounds in education (K-12, higher education, adult training), economics, social work, technology, and public policy to develop a vision of a society of learning for the State of Michigan; 2) design a plan to achieve that vision; 3) build the necessary leadership networks to execute the plan; and 4) identify the key public policy issues and necessary public-private investment. More specifically, the project will involve four phases:

The Vision of a Society of Learning

The first task is to develop a vision of a society of learning in which educational opportunities are provided for all of our citizens throughout their lives, appropriate both for their own personal goals as well as for full participation in a global, knowledge-intensive society.

Developing a Plan to Achieve the Vision

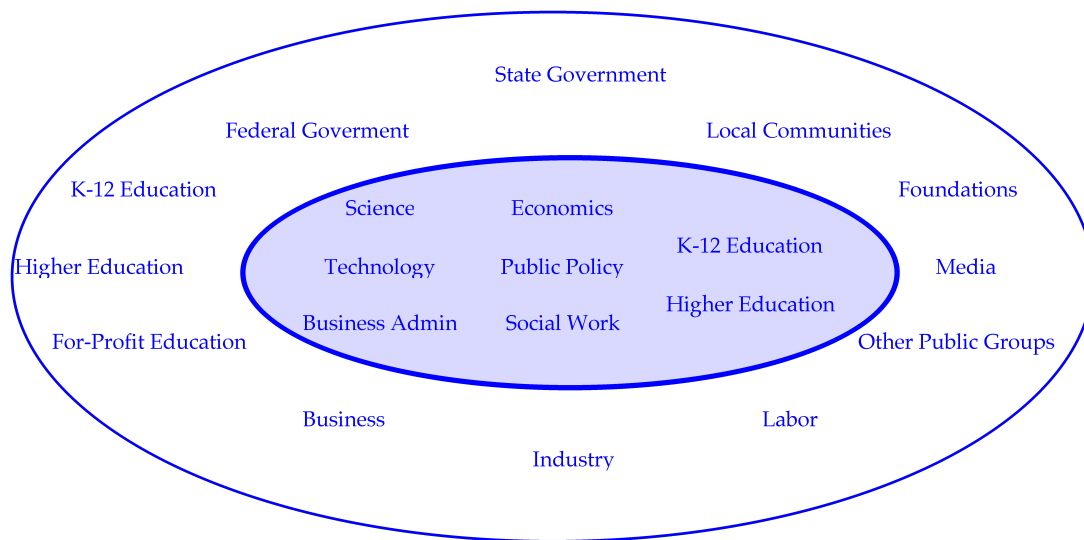
Here the intent is to set aside the usual constraints imposed by existing educational structures (e.g., schools and colleges, policies and politics) and instead begin with a clean slate to determine the lifelong educational needs of citizens in a global knowledge-driven society and how one might meet these needs. For example, how would one design learning experiences, resources, and institutions that exhibit the various characteristics suggested for learning institutions in the 21st Century: learner-centered, affordable, interactive and collaborative, asynchronous and ubiquitous, intelligent and adaptive, lifelong and evolutionary, and diverse.

Of particular interest would be the redesign of the statewide or regional learning infrastructure that provides technical knowledge and skills (science, math, technology) and the learning skills necessary for a knowledge-driven society. There would also be consideration given to how to design a learning architecture that narrows the digital divide, with a particular concern given to providing educational opportunities to those who have been traditionally disadvantaged as well as to underserved urban and rural communities. Possible elements of the plan include:

- Development of a seamless web of lifelong learning opportunities
- Coordination of existing learning infrastructure (e.g., K-12, colleges, industry)
- Better linking communities and local learning activities with broader systems
- Technology-intensive education (e.g., community-based knowledge networks)
- Public-private sector partnerships and financing

The Formation of Leadership Networks

Key in any such effort is to build a network linking leaders in the public and private sector. Clearly this network would need to be involved in the development of the vision and the plan to gain participation and commitment. Elements of this leadership network would include: K-12 education, higher education, industry, labor, foundations, community leaders, state government, federal government, and media.



The Identification of Necessary Public Policies and Investments

One of the important products of this effort involves the identification of key policy issues, appropriate for the consideration of leaders in the public and private sectors. Examples might include the provision of community-based extracurricular learning opportunities in underserved communities (perhaps based on evolving technologies such as knowledge networks), better coordination of existing educational resources (K-12, higher education, industrial training, community learning centers), and state government responsibility for providing or stimulating the digital infrastructure necessary to build a 21st Century learning environment. Related to this would be an analysis of necessary investments from both the public and private sector.

Products (Deliverables) and Evaluation

This project would deliver several products including a vision of the characteristics of a learning society, a regional (statewide) plan for achieving the vision, the identification and preliminary formation of a leadership network to achieve the plan, and a series of recommendations concerning key policy issues and necessary investments. An external evaluation process would be used to assess the quality and impact of each of these elements.

Proposed Budget

We seek the participation of several Michigan foundations in this multiple-year project. A rough estimate of annual project budget is:

Salary and wages		
Graduate student assistants	115,000	
Staff support	80,000	
Total salaries and wages		195,000

Logistics		
Travel	5,000	
Supplies	25,000	
Meetings costs	25,000	
Total logistics costs		<u>55,000</u>
Total Direct Costs		\$250,000

We would anticipate that these costs would be shared by several Michigan foundations and be matched by cost-sharing commitments by the University of Michigan for faculty time, facilities space, and computer infrastructure and systems support.

Concluding Remarks

Although such planning activities are not unusual at the state level (e.g., ranging from the California Master Plan of the 1950s to the various K-12 planning efforts stimulated by groups such as the Business Roundtable in recent years), this proposed effort would be distinguished by an unusually broad vision of a society of learning characterized by pervasive educational opportunities for all citizens.

Furthermore, this project would align well with several interesting opportunities at the state and federal level. There is growing recognition at the federal level that just as federal priorities and investments shifted from national defense (“guns”) to health care (“pills”) in recent decades, with the end of the Cold War and an aging population, these priorities may be shifting once again, driven by the recognition of the importance of human capital (“brains”) to a knowledge-driven economy.⁷ Leaders of the higher education community have been discussing the possibility of a 21st Century federal-state partnership similar to the Land Grant Acts of the 19th Century, aimed at human resource development.⁸ The National Science Foundation is preparing to launch a series of new national “Science of Learning Centers” designed to explore and exploit recent advances in cognitive and neurosciences for understanding learning and learning institutions. On a more local level, the transition in state government that will occur in the 2002 elections provides an opportunity for a fresh look at how Michigan can best prepare its citizens to compete in an age of knowledge in a global economy.

It is becoming increasingly clear that a dominant priority of a knowledge-driven society has become intellectual capital: the education of our citizens, the support of their ideas, their creativity, and their innovation. It is our belief that this will require new concepts, institutions, policies, and investments, perhaps best articulated by the vision of a society of learning. The proposed project aims at taking the first steps toward just such a vision in the State of Michigan.

¹ *Renewing the Covenant: Learning, Discovery and Engagement in a New Age and Different World*, Kellogg Commission on the Future of the State and Land-Grant Universities (2000).

² Peter F. Drucker, “The Age of Social Transformation,” *Atlantic Monthly*, November 1994, 53–80; Peter F. Drucker, *Post-capitalist Society* (New York: Harper Collins, 1993).

³ Erich Bloch, National Science Foundation, testimony to Congress, 1988.

⁴ *The Third International Mathematics and Science Study-Repeat*, National Science Foundation and Department of Education, 2001.

⁵ Douglas S. Massey, "Higher Education and Social Mobility in the United States 1940-1998 (Association of American Universities, Washington, 2000).

⁶ John Seely Brown and Paul Duguid, *The Social Life of Information* (Harvard Business School Press, Cambridge, 2000).

⁷ James J. Duderstadt, "From Guns to Pills to Brains: Shifting Federal Research Priorities for the 21st Century", Wolfe Lecture, University of Washington (March, 2001) (see website at: <http://milproj.umm.umich.edu/>).

⁸ *Renewing the Covenant: Learning, Discovery and Engagement in a New Age and Different World*, Kellogg Commission on the Future of the State and Land-Grant Universities (2000).

Appendix B

Biographical Profile

James J. Duderstadt

Dr. James J. Duderstadt is President *Emeritus* and University Professor of Science and Engineering at the University of Michigan. He also serves as Director of the Millennium Project, a research center in Michigan's Media Union.

Dr. Duderstadt received his baccalaureate degree in electrical engineering with highest honors from Yale University in 1964 and his doctorate in engineering science and physics from the California Institute of Technology in 1967. After a year as an Atomic Energy Commission Postdoctoral Fellow at Caltech, he joined the faculty of the University of Michigan in 1968 as Professor of Nuclear Engineering. Dr. Duderstadt became Dean of the College of Engineering in 1981 and Provost and Vice President for Academic Affairs in 1986. He was appointed as President of the University of Michigan in 1988, and served in this role until July, 1996. He currently holds a university-wide faculty appointment as University Professor of Science and Engineering.

Dr. Duderstadt's teaching and research interests have spanned a wide range of subjects in science, mathematics, and engineering, including work in areas such as nuclear systems, computer simulation, science and education policy, and information technology.

During his career, Dr. Duderstadt has received numerous national awards for his research, teaching, and service activities, including the E. O. Lawrence Award for excellence in nuclear research, the Arthur Holly Compton Prize for outstanding teaching, and the National Medal of Technology for exemplary service to the nation. He has been elected to numerous honorific societies including the National Academy of Engineering, the American Academy of Arts and Science, Phi Beta Kappa, and Tau Beta Pi.

Dr. Duderstadt has served on and/or chaired numerous public and private boards. These include the National Science Board; the Executive Council of the National Academy of Engineering; the Committee on Science, Engineering, and Public Policy of the National Academy of Sciences; the Nuclear Energy Research Advisory Committee of the Department of Energy; the Big Ten Athletic Conference; the University of Michigan Hospitals; the Presidents' Council of State Universities of Michigan, and serves as a director of Unisys and CMS Energy. He was the founding president of the Michigan Virtual Automotive College (now the Michigan Virtual University).

He currently chairs several major national study commissions, including a National Academy of Science task force examining the impact of information technology on the future of the university, a NAS steering committee tracking and analyzing the federal R&D budget, and the Nuclear Energy Research Advisory Committee of the U.S. Department of Energy.