EXPLORING E-LEARNING
REFORMS
FOR MICHIGAN

The New Education (R)evolution

RELEVANT, RIGOROUS

EDUCATION

FOR

OUR

REVOLUTIONALIZED

MICHIGAN

SCHOOLS

A Report by Tom Watkins
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September 1, 2005
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Dedication

This report is dedicated to the many teachers and students who
shared their hopes and dreams.
May we help turn them into reality!

The students in our schools today
will confront a rapidly changing, disruptive
information and technologically driven world
that will defy predictability….
Will they be ready?

www.cluetrain.org

Michigan's workforce has
confronted a rapidly changing, disruptive
information and technologically driven
world that defies predictability….
Are they ready?

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Purpose of Study

The purpose of this project is to advance quality e-learning opportunities in the State of Michigan and to assist Michigan Virtual High School in expanding its offerings to schools throughout Michigan with a particular emphasis on assisting underperforming schools or schools not meeting Adequate Yearly Progress (AYP) under the federal *No Child Left Behind* law (NCLB).

The three deliverables for the study include:

1. A report that identifies and analyzes various online instructional solutions that can be used to address chronic teaching and learning challenges prevalent in urban K-12 education settings.
2. Implementation strategies that will assist Michigan Virtual High School in promoting online tools, services and courses in the Detroit Public Schools to increase the number of high school students meeting adequate yearly progress as defined by the Federal *No Child Left Behind* (NCLB) legislation.
3. Recommendations for Michigan Virtual University that expand e-learning options for students and educators.

The following written report constitutes just one way the author met the expectations of this contract. Ongoing meetings, phone and e-mail contacts between the author and MVU took place throughout the duration of this contract. Further meetings were organized by the author with representatives of MVU and numerous superintendents and other education leaders to discuss services provided by MVU and the value of e-learning.

Disclaimer

It should be noted that the author of this report, in his former capacity as State Superintendent of Public Instruction for the State of Michigan, 2001-2005, served for a time on the Michigan Virtual University Board of Directors.

The report was funded under a contract from Michigan Virtual University to Wayne State University. The content of this report does not necessarily reflect the position or policy of Michigan Virtual University or Wayne State University.

Special Thanks To:

- **Gina Burkhart**, President and CEO of Learning Point Associates (LPA) www.learningpt.org, North Central Regional Education Laboratory (NCREL) www.ncrel.org, and North Central Regional Technology Education Consortium (www.ncrtec.org), for producing research based information on e-learning and other education policy issues focused on advancing teaching and learning. LPA/NCREL is a one-stop shop for information useful in making education policy decisions.

- **Dr. James J. Duderstadt**, President Emeritus of the University of Michigan and currently Professor of Science and Engineering and Director, the Millennium Project, University of Michigan (mi/proj.dc.umich.edu) was the visionary spark behind the creation of the Michigan Virtual Automotive College, the precursor to e-learning in Michigan and to the creation of the Michigan Virtual University. Leadership and ideas matter and over the years Michigan institutions of higher learning have provided the research, knowledge, imagination, creativity and leadership to help move our state and the world forward. In the 21st century knowledge economy, Michigan is going to be more dependent on leadership, ideas, creativity, innovation and courage as the fuel needed to spur growth and economic survival. Thinkers and leaders at our institutions of higher learning, like Dr. Duderstadt, will be lighting the way.

- **Susan Patrick**, Director of the U.S. Department of Education's Office of Educational Technology, for her visionary leadership in developing the 2004 National Educational Technology Plan; especially for listening to the voice of students and being a strong advocate and believer in the power of e-learning to advance quality teaching and learning. Effective September 6, 2005, Ms. Patrick will become Chief Executive Officer for the North American Council for Online Learning (NACOL) www.nacol.org.

- **Brenda Welburn**, Executive Director of the National Association of State Boards of Education (www.nasbe.org), for leadership in producing the timely, "Any Time, Any Place, Any Path, Any Pace – Taking the Lead on e-learning Policy Report" published in 2001. The report is futuristic and provides policy recommendations for embedding e-learning into schools. It is a "must read" for every state education policy maker.

Acknowledgements

As in any life endeavor, this report is possible because of countless individuals who gave generously of their time and expertise. Michigan is fortunate to have many educational leaders and e-learning advocates and experts. Please accept my apologies if anyone has inadvertently been overlooked. Special thanks are extended to these educational leaders and e-learning pioneers:

- Dr. Irvin Reid, President, Wayne State University
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- Ryan Donlan, Superintendent, Bay Arenac Community High School
- Chris Wigent, Superintendent, Calhoun Intermediate School District and Chair , Michigan Association of School Administrators and Michigan Association of Intermediate School Administrators Technology Committee
- Elizabeth Bauer, State Board of Education Member and Chair of the Embracing the Information Age Task Force
- Ric Wiltse, Executive Director, Michigan Association for Computer Users in Learning
- Dr. Karen Bantel, President, CyberMichigan
- Dr. Mary Waker, Director, Education Technology Center, College of Education, Wayne State University

Focus Group – A Reality Check

A focus group consisting of teachers, superintendents, technology specialists, e-learning pioneers, higher education and private sector representatives was convened on August 15, 2005 to garner feedback prior to finalizing the report.

Thomson Gale generously hosted the focus group session. Special thanks go to members of Thomson Gale's leadership team especially Gordon Macomber, Chief Executive Officer; Ben Mondloch, Executive Vice President – K-12 Curriculum; Dave Schroeter, Vice President – K-12 and Lisa Spicko, Vice President – K-12 Curriculum. Ron Stefanski, Thomson Gale's Director of Sales Effectiveness and Talent Management facilitated the Focus Group.

As is to be expected, the group provided a sharp critique of the report making numerous suggestions that help clarify and focus the final product. All participants felt it would be beneficial to bring a group of educators and e-learning pioneers together from time-to- time to share success stories, frustrations and problems to be addressed to fully integrate and embed this technology into high quality teaching and learning in our schools. They also unanimously reinforced the need to create a web-based method to communicate and share with their peers across Michigan, the United States as well as globally.

While the conclusions and recommendations in the report are the author's, the report was sharpened by the focus group's feedback; and their input was greatly appreciated.

Executive Summary: Exploring E-Learning Reforms for Michigan

Public education must adapt to a changing world by liberating educators and students from the traditional, industrial model. This model structures learning to a six hour day delivered within the confines of the classroom or school building.

Today's students increasingly expect a learning experience that is relevant, authentic and real. They require skills and knowledge that will enable success in a new world that is global, agile, and entrepreneurial. Will they be ready? The answer is "Yes" - but only if Michigan's education, business, not for profit, legislative and executive leadership engage their collective imaginations and energy to delivering quality learning that meets the needs of EVERY Michigan student.

Technology can assist in customizing each student's learning experience. E-learning allows educators to move from the historic "sage on the stage" delivery model to a more progressive any time, any place facilitator of learning model. E-learning is bringing learning to people. Literally, the Internet has expanded access to knowledge exponentially. It is imperative that our systems of public education play the lead role in preparing our citizenry for success in the global economy.

Michigan cannot lead in the 21st century without casting off the anchors of attitude, archaic laws and public policies and beliefs that bind us to 20th century education models.

Following is a summation of the recommendations developed after meeting with hundreds of stakeholders that included superintendents, technical experts, teachers, business leaders, students, administrators, teachers and myriad others interested in optimizing learning opportunities for Michigan's students.

Many of the recommendations are bolder than others. Some are more do-able than others. Some require changes in vision, imagination, and attitude; others require changes in law and bold leadership. All ideas are offered as a catalyst for productive conversation that leads to bold **action** and **change** for Michigan's teachers and students.

Summary of Major Recommendations

High School Reform
1. Michigan should continue its legacy of educational e-learning great leadership by mandating that every Michigan high school student take at least one e-learning course as a graduation requirement.
2. As one step in bridging the "technological divide," prior to planning a new school building or a significant expansion, a technology impact statement should be written. The statement should include a thorough assessment of how technology may optimize (reduce) the need for bricks and mortar.

3. Establish a pilot project that allows full funding for a student whose educational plan created with teachers, parents and administrators includes an independent study with travel, community service, etc. executed via e-learning.
4. Integrate e-learning to address Michigan's at risk student population. It is recommended that a district with a 10% or more dropout rate be granted an incentive to develop alternative programs to meet the needs of drop out students. E-learning tools may form the core of the program that allows students to recapture credits in a manner that accommodates the psycho-social challenges often faced by students who drop out.
5. If a high school fails to meet Adequate Yearly Progress (AYP) under the No Child Left Behind Act, they must, as part of their school improvement plan, conduct an analysis to examine the uses of e-learning and consider converting partially or entirely to a virtual school using e-learning as a centerpiece for school reform.
6. It is recommended that MVHS develop a pilot e-learning exchange course between a Michigan high school and a high school in Asia where students can become global citizens and learn **with** and **from** each other.

Professional Preparation
7. The Michigan Department of Education should mandate teacher preparation programs to require a minimum of two courses using e-learning technology for 50% or more of the coursework and that going forward all teachers demonstrate competence in developing and delivering online courses as a graduation requirement. In a phase in implementation, it is also recommended that the Legislature require teachers to pass an "integrating technology skills" assessment for licensure.

Supplemental Services
8. To assist districts in complying with the *No Child Left Behind* law, the Michigan Department of Education and the intermediate school districts should encourage and assist MVHS in the development of e-learning options.

Review the Law
9. Michigan policy makers can assure that Michigan becomes an e-learning leader. It is recommended that policymakers review state laws, regulations and policies to assure that they facilitate the necessary flexibility to harness the power of e-learning.

Changing Our Thinking
10. Creativity, innovation and change must be rewarded. It is recommended that federal, state and philanthropic funds be pooled to create a $5 million fund for universities and intermediate school districts to work with Michigan teachers to develop rigorous, relevant, quality interactive e-learning curriculum.

Assessment/Online Testing
11. The Michigan Department of Education and Michigan Virtual University should collaboratively seek funding to review the prepared online MEAP testing and move toward full implementation as soon as possible.

State Level Policies for Technology Deployment and E-learning
12. The Michigan Department of Education, MVU, intermediate school districts and other partners should convene a representative group of educators, e-learning experts to seek input for updating the Guidelines for Virtual Schooling. The group should also gather "best practices" that may be readily adopted by local school districts.

Educating Michigan Citizens
13. Engage the Governor and Legislative Leadership to lead by example by delivering a key education message via e-learning technology.
14. The State Board of Education should seek grants to make their Board Room a model technological learning center.
15. The State Board of Education, Michigan Virtual University and local school districts should set up temporary virtual, e-learning classrooms in public venues such as malls, town hall buildings, museums, libraries, etc. across the state to showcase and demonstrate the power of e-learning.
16. The State Board of Education and MVU should take the lead role working in collaboration with others to establish e-learning awards that highlight quality e-learning instructors, programs and schools that are improving academic achievement for all students via e-learning.
17. Michigan Virtual High School re-launch itself in a public campaign.
18. Key Michigan education leaders and stakeholder groups organize an international e-learning conference using the European Union's May 2005 Brussels conference as a model. Its goal is to create a cadre of change agents inside and outside of schools who clearly understand the need for change.

Evaluation and Accreditation
19. On-going independent evaluation and reporting of results is imperative to assure quality, credible delivery of e-learning tools.

Assessment of e-learning Resources
20. It is recommended that Michigan establish a statewide process for periodic review of online instructional solutions.
21. There must be initial and sustained professional development for teachers as well as a well developed network for sharing best practices, challenges and solutions and student experiences. It is recommended that plans for teacher monitoring and evaluation be expedited and institutionalized immediately.
22. Michigan Virtual High School must conduct a through credentials check of **all** e-learning teachers.

23. It is recommended that Michigan Virtual High School continue to implement professional development that will assist teachers in meeting the "highly qualified" requirements mandated by the *No Child Left Behind* law.
24. As the Michigan Department of Education updates its Statewide Technology Plan, that it mirror the United States Department of Education's action of soliciting student input via an online survey process, that recommendations from the United States Department of Education's Technology Plan be included, and that the Technology Plan be accompanied by a budget document including likely funding sources.

Challenges to E-learning
25. The tuition cost for Michigan Virtual High School was cited as a barrier by urban districts with lower per pupil foundation allowances. To expand e-learning in high schools that are not meeting AYP targets it is recommended that the Legislature consider "no fee" or sliding scale tuition access to Michigan Virtual High School online courses. Districts could be directed to use Title I federal funds for this purpose.

Establish a Pilot Program to Establish WI-FI Environments
26. Establish a pilot program at a suburban and an urban district in Oakland County that equips every middle and high school student with a mobile personal computing device. Funding potential may be available from grants from the private and philanthropic sectors or from public-private partnerships.

Establishing Technology in the Classroom
27. If the Governor and Legislature increased teacher certification fees from $125 to $150 and teacher permit fees from $5 to $10 approximately $700,000 in annual fees would be generated. The monies could be dedicated to professional development for embedding e-learning in improving student academic achievement.
28. The State Board of Education should appoint a Technology Professional Development Advisory Panel to advise the Superintendent of Public Instruction on the investment of the new funds.

Providing Resources for E-learning
29. To assure that every high school student has access to e-learning, it is recommended that half of one student's per pupil state funding allocation be allocated to develop e-learning access. That allocation would increase to 100% of one student's per pupil funding after the first year. If a high school chooses not to use the resources for developing e-learning opportunities, the money would be returned to the Michigan Department of Education for deployment to districts interested in expanding e-learning.

Foreward

E-learning – Imagining New Possibilities

Ours is a borderless world where ideas flow across the globe. Michigan, along with the rest of the world, is experiencing transformational, technologically-driven, disruptive change. The opportunity exists to harness that change for Michigan's students, teachers, families and communities. The question is "WILL WE?"

- **IMAGINE** the possibilities – with enthusiasm and urgency!

> "The world is changing much faster than our education system. We need to take it up a notch."
> *Governor Janet Napolitiano, State of Arizona; Statement made with the release of "Getting Smarter, Becoming Fairer: A Progressive Education Agenda for a Strong Nation."*
> *August 24, 2005*

Without vision, innovation and change, public schools will perish. A strong supporter of public education must also be a strong advocate for change. Public schools in America represent the true Statue of Liberty. They take all students from all backgrounds and give them hope, skills, knowledge and opportunity for a bright future. To serve all students well, schools must adapt to new realities.

> "The best ideas are common property."
> *Seneca SBC, 65 A.D. Epistles*
> *(www.longtimeago.com)*

Public education must adapt to the changing world by seeking ways to liberate educators and learners from the industrial model of the past. This industrial model chains students to a six hour school day that is structured within the confines of a classroom or school building. Lessons are delivered by a teacher who is physically present.

Learning has become multi-dimensional with music, visuals and sound, play and activity that are available any time and any place. The expectation of today's students is that learning will be more relevant, authentic and real. What would a 21st century environment look like with imagination, innovation and creativity that incorporates 21st century technology?

- **IMAGINE** a time when all parents and students have access to the best learning institutions in the world.
- **IMAGINE** a time when state policy makers set rigorous standards for academic skills and knowledge and provides accountability through an independent accreditation organization where parents and students have access to information from around the globe.
- **IMAGINE** a senior year in high school where students volunteer in nursing homes; design new cars; seek a cure to AIDS; travel in Asia, Europe, Latin America; and develop a portfolio of knowledge outside the walls of the high school.
- **IMAGINE** gaining knowledge in a network of learners connected country to country, school-to-school and student-to-student.

- **IMAGINE** actually living in a flattened world rather than just talking about it.
- **IMAGINE** high schools where the work is rigorous and relevant and students develop meaningful relationships with adults.
- **IMAGINE** Michigan transforming itself from the automotive capitol of the world to the knowledge capitol of the world.
- **IMAGINE** if the catalyst for the change that catapulted Michigan into a 21st century leadership role began in your neighborhood public school.

> "The next big killer application for the Internet is going to be education. Education over the Internet is going to be so big it is going to make e-mail usage look like a rounding error."
> *John Chambers, President and CEO, Cisco Systems*

Michigan's children are entering a new world that is global, agile, disruptive, entrepreneurial-driven and knowledge based. Will they be ready? They will not be unless our schools change. With our collective imaginations and visionary, bold leadership we have the power to raise the bar, setting high expectations for all Michigan students. With technology, learning may be customized to meet the needs of each student. An old saying suggests that you cannot steal second base without taking your foot off first base. Michigan cannot lead in the 21st century without casting off the anchors of attitude, law, public policy and beliefs that bind us to the 20th century industrial education model.

E-learning allows educators to move from the historic and medieval learning mode of the "sage on stage," imparter of knowledge to any time, any place learning.

E-learning is on demand bringing learning to people rather than simply bringing people to learning. In a world where knowledge expands exponentially, it is critical to our state and nation's success that our systems of public education not just adapt to change but lead that change. **A school constrained by time and space is operating in the past and will be surpassed by global competitors.** Learning 24-7 is no longer a dream – but a reality.

We need to ask if our laws, policies, procedures and practices support the knowledge age economy. Do they encourage and reward the digital revolution, boost technological innovation, enhance students' and worker's skills and promote agile entrepreneurship and lifelong learning? Or, is our system of education organized and structured to survive or thrive in the 21st century economy?

Dr. James J. Duderstadt, president emeritus and currently professor of science and engineering and director of the Millennium Project at the University of Michigan, drives home how rapidly our world has changed and, perhaps inadvertently, how our schools have not kept pace with these changes when he said:

"Our rapid evolution into a knowledge-based, global society has been driven in part by the emergence of powerful new information technologies such as digital computers and communications networks.

- Modern digital technologies have vastly increased our capacity to know and to do things and to communicate and collaborate with others.

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- They allow us to transmit information quickly and widely, linking distant places and diverse areas of endeavor in productive new ways.
- This technology allows us to form and sustain communities for work, play, and learning in ways unimaginable just a decade ago.
- It has broadened access to knowledge, learning, and scholarship to millions throughout the world.

Information technology changes the relationship between people and knowledge. And it is reshaping in profound ways knowledge-based institutions such as our colleges and universities. Does the rapid evolution into a knowledge-based global society driven by information technologies sound like your neighborhood public school? If not, how can we expect our children and our state to be prepared to compete in the future?"[1]

Thomas L. Friedman, the *New York Times* op-ed writer and author of the book, The World is Flat, in an August 3rd op-ed gave us a preview of where the world is moving when he wrote, "The world is moving to an Internet-based platform for commerce, education, innovation and entertainment. Wealth and productivity will go to those countries or companies that get more of their innovators, educators, students, workers and suppliers connected to this platform via computers, phones and PDAs."[2]

"Real Change – requires Real Change."
Newt Gingich, Former Speaker
U.S. House of Representatives
(www.newt.org)

Today we exist in a borderless world where ideas (and work) are free to flow from person-to-person and country-to-country. Our quest must be to make the new reality work for us – and not against us. Michigan, along with the rest of the world, is caught up in a sea of transformational, disruptive, technologically driven change. If we do not lead the change, it will cause confusion, conflict and result in economic casualties. Let's be clear, the negative unemployment numbers, high school dropout rate and plant closings are more than statistics; they impact someone's father, mother, local communities and our state. The opportunity exists to harness the change for our students, families and communities. The question is: will we?

"No institution will go through fundamental change unless it believes it is in deep trouble and needs to do something different to survive."
Lou Gerstner, former CEO of IBM

In an increasingly global and competitive world economy, work will continue to flow to venues with an educated workforce and low labor costs. We are living in a world where the undereducated and uneducated will be left behind. The global economy rewards brainpower.

Our biggest fear should not be the outsourcing of jobs to China. Our greatest fear should be the fact that China's educational system has already outpaced that of Germany, France, the United Kingdom and the United States in the number of scientists, mathematicians and technology and knowledge workers produced. The hope of the U.S.

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[1] International nonprofit organization dedicated to advance higher education by promoting the intelligent uses of information technology; Dr. James J. Duderstadt's keynote speech, Educause, Denver, CO, October 20, 2004; www.milproj.dc.umich.edu, www.educause.edu.

[2] Thomas L. Friedman, *the New York Times* Op-Ed, "Calling All Luddites," August 3, 2005, p. A23.

to compete with China is sitting in our classrooms today. Memorization, assembly line learning must give way to imagination, innovation and creativity. This is where the future of Michigan and America lie.

"What if the impossible isn't?"
*Wayne Hodgins, Global Strategist,
Autodeck, Inc*

Certainly, the challenge of change would be easier with new resources. Clearly, students will benefit from strategically targeted increases in funding. However, solely funding and perpetuating the current system will not yield the results our children need and deserve.

The availability of significant, new resources is not Michigan's reality. Michigan's K-12 system of public education is funded with almost $13 billion today. How should these resources be invested to ensure that Michigan students receive the best education possible? This will require giving up "we have always done it this way" mentality and redirecting resources to new initiatives that will produce the skills and knowledge required to not merely survive, but to thrive in the 21st century knowledge economy. This will not be easy – yet, it will be necessary and will require imagination and leadership. In this century, the state and nation that gets its system of education right will be most prosperous.

It is our collective goal to make sure Michigan is that state and America is that nation.

- **IMAGINE** the possibilities – with a great sense of urgency!

The policy recommendations and conclusions will require deliberation and action by the Governor, State Legislature, State Board of Education, the Michigan Department of Education and an informed public to bring about the radical changes needed to prepare our children for a future where change will take place at warp speed.

While the recommendations are Michigan specific, they have bearing and relevance for other states struggling to bring their schools into the 21st century and embed e-learning into the fabric of their curriculums.

Introduction

e-learning (electronic learning): Term covering a wide set of applications and processes, such as web-based learning, computer based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via Internet, intranet/extranet (LAN/WAN), audio and videotapes, satellite broadcast, interactive TV, CD-ROM, and more.[3]

> "e-learning—It is a smarter, faster, more student–centric model of learning."
> *Margaret Spelling,*

E-learning will ultimately change the very essence of learning and what it means to "attend school." It has the potential to overcome the challenges of time, distance and economics. With technology advances, learning will become more integrated with various aspects of our lives in unprecedented ways. E-learning has been heralded by many as the next wave in school reform.

Michigan's e-learning goal must be to operationalize the mantra of "any time, any place, any path, any pace." That is, to provide a range of learning opportunities that meet the needs of students who are gifted, homebound, home-schooled, disabled, detained, at risk of dropping out or have already dropped out. Inherent in that goal is the use of technology along with rigorous content and quality instruction to advance academic achievement and knowledge acquisition for all students. Michigan has been at the forefront of e-learning as a strategy to boost productivity and to enhance quality learning. In the future, more K-12 education as well as community college and workplace professional development will be delivered via the medium of e-learning. Michigan Virtual University, with large sums of seed capital provided by the Michigan Economic Development Corporation under the leadership of Governor Engler, played an important leadership and change agent role and with its new focus on e-learning for public schools holds great potential for the future.

> "E-learning will not replace the traditional classroom – but it has the potential to radically transform it."
> *Marion Ginopolis,*
> *Director, The Gates Leading the Future Project and e-learning pioneer*
> *(www.leadmichigan.org)*

The National Association of State Boards of Education (NASBE) stated in its 2001 report on e-learning: "evidence to date convincingly demonstrates that, when used appropriately, electronically delivered education, 'e-learning,' can improve what students learn and can deliver high-quality learning opportunities for children."[4]

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[3] http://www.learningcircuits.org/glossary.html
[4] The Future of Education; Any Time, Any Place, Any Path, Any Pace – Taking the Lead on e-Learning Policy, NASBE Study Group on e-Learning, 2001.

Certainly, e-learning is not *the* answer for all that plagues under-performing, high priority schools. It is important to understand that e-learning alone will not transform our students or teachers. The most ardent supporters of technology and e-learning do not believe it is a panacea. E-learning alone will not fix a school that is not delivering the quality education students need and deserve to thrive in the 21st century knowledge economy.

Integration, Adaptation and Disruption

When integrated in a meaningful way, e-learning has the potential to be a powerful tool that enhances teaching and learning. Former Oak Park superintendent Dr. Alex Bailey credits e-learning with assisting 48 out of 50 students struggling to graduate on time with their classmates. These students were able to graduate on time thanks to Michigan Virtual High School's e-learning credit recovery program. In a letter dated April 22, 2005, Dr. Bailey said that students credit the ability to access the learning environment at any time of the day or night and instructor feedback and assistance for their success. He also said that the consensus of his team was that e-learning and distance learning have great potential for urban education.

> "E-learning has the potential to embed learning into our routine, daily activities and radically change public education."
> *Tom Schuman, President, TKS Consulting and e-learning Pioneer (tschuman@yahoo.com)*

Technology is a way of life for many students. It is so interwoven into student's lives that the technology is transparent – it has become student's "normal." Policy makers and educators must strive to meet student's needs and expectations with a strategy that advances and supports high quality teaching and the integration of technology learning for all students.

E-learning is referred to as "disruptive technology" by Harvard business professor Clayton Christensen.[5] Professor Christensen describes disruptive technologies as alternatives to sustaining technologies credited with improving a dominant, established product's performance. Disruptive technology looks at problems in new and creative ways. Similarly, e-learning challenges the normal way of doing things, creates new alliances and interjects new ways of addressing old problems.

> "The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn."
> *Alvin Toffler, futurist and author*

The demand for high-quality teachers will be greater than ever. Perhaps their role will change from imparters of knowledge to facilitators of knowledge. Dr. Yong Zhao and Dr. Paul Conroy of Michigan State University[6] see teachers as designers of their own teaching environment, with a variety of technological tools to facilitate knowledge construction.

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[5] The Innovator's Dilemma, Clayton Christensen.
[6] "What's In, What's Out – An Analysis of State Educational Plans." Yong Zhao and Paul Conroy, Teachers College Record, January 27, 2001.

Adaptation and disruption may be anticipated in education for the foreseeable future. E-learning may be viewed as disruptive technology much as the steam engine was "disruptive" to sea transportation. The NASBE e-learning study group points out that the shipping industry never reaped the benefits of steam power until it reached a stage of reconstructive transformation. Ships were redesigned, stripped of their sails and built with steel. Reluctant sailors required complete re-training before the shipping industry could reap the tremendous benefits of the new technology.

The technology world is changing so rapidly. Individuals and institutions must keep pace with that change or risk viewing the world in a constant blur. Thomas Friedman alludes to the speed of change in his book, <u>The World is Flat, A Brief History of the Twenty First Century</u>. He says, "We are entering a phase where we are going to see the digitization, virtualization and automation of almost everything. The gains in productivity will be staggering for those countries, companies and individuals who can absorb the new technological tools." He goes on to point out that "Whenever civilization has gone through one of these disruptive, dislocating technological revolutions – like Gutenberg's introduction of the printing press – the whole world has changed in profound ways."[7]

With 'the' creation of a global, web-enabled playing field that allows for multiple forms of collaboration – the sharing of knowledge and work – in real time, without regard to geography, distance or in the near future, even language has changed the world in profound ways."[8] Educators must find ways to harness this new technology in a powerful way that adds real value to transforming teaching and learning.

> "Human history becomes more and more a race between education and catastrophe."
> *H. G. Wells*

Clyde Prestowitz, author of <u>Three Billion New Capitalists: The Great Shift of Wealth and Power to the East</u>, shares this personal story that drives home the power of e-learning: "… I phone my daughter to let her know I was back and to get caught up on the grandchildren. She lives on the island of Maui and home-schools her two children. Mentioning that I had been in Singapore, I wondered how the kids were doing with the Singapore math curriculum I knew she was using. 'Oh,' she responded, 'it's great. In fact, they have a new twist now. The kids go online with Singapore and have headphones so they can talk to the teacher while following the lesson on their computer. They think it is like Star Wars. They love it and they're doing very well.' … and back in the 1970's I thought global pit meant a subsidiary in Brussels. Now it means studying abroad by staying in your own living room."[9]

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[7] Thomas L. Friedman. <u>The World is Flat, A Brief History of the Twenty First Century</u>. Farrar, Straus and Giroux, New York, 2005, p. 46.

[8] Thomas L. Friedman. <u>The World is Flat, A Brief History of the Twenty First Century</u>. Farrar, Straus and Giroux, New York, 2005. p. 176.

[9] Clyde Prestowitz, <u>Three Billion New Capitalists: The Great Shift of Wealth and Power to the East</u>, Basic Books, New York, 2005, p, 7.

Educators must embrace new tools that will advance productivity, spur creativity and innovation that will prepare students for the 21st century knowledge economy. E-learning will be one of these tools.

Public schools, educators and students face unprecedented pressure to demonstrate academic success. Under the federal *No Child Left Behind* (NCLB) law and Michigan's accreditation system, Education YES! (Yardstick for Excellent Schools), disaggregated school achievement data is readily available via websites. The increased demands for all students to perform at proficient levels are supported by education policy makers, state governors and legislators, as well as business leaders.

Clearly, better tools are needed if students are to be educated to higher levels prepared to compete in the global economy.

> "The biggest ticking time bomb in the U.S. is our sorry K-12 education system."
> *Craig Barrett,*
> *CEO, Intel, March 1, 2005*

Lt. Governor Cherry's Commission on Higher Education and Economic Growth emphasized the need to educate all students to world-class standards in its December 2004 report.[10] The report stated that Michigan must adapt to global competitors. To do that, it must ensure that residents are among the best educated in the world and prepared for a lifetime of learning.

"This past century's concept of literacy grew out of our intense belief in text, a focus enhanced by the power of one particular technology – the typewriter…with the Web, we suddenly have a medium that honors multiple forms of intelligence – abstract, textual, visual, musical, social and kinesthetic."[11] With the explosion of knowledge and access to the World Wide Web, being able to memorize information has given way to the ability to find information, analyze it and build upon it.

Most Michigan educators are cognizant of the ever changing, fast paced competitive world in which their students must compete. They are attempting to adapt, redirect and reprioritize their existing resources to meet competing demands. They are creatively searching for new private and public funding to invest more in technology. School officials claim tight school budgets and competing demands such as antiquated infrastructures, outdated textbooks, need for professional development, under-funded mandate of *No Child Left Behind*, inequities between schools, loss of students, schools of choice and charter schools prevent efforts to boldly embrace technological advances such as e-learning.

Educators are now facing the same challenges that the business community

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[10] Lt. Governor Cherry's Commission on Higher Education and Economic Growth, December 2004 report.
[11] John Seely Brown, Growing Up in Digital Change, p. 17, March/April 2000 (www.aahe.org/change/ digital.pdf.)

has faced. These include loss of market share, increased competition and increased global demands for productivity and quality with diminished resources.

Technology played a huge role in revitalizing business. Technology, and e-learning specifically, coupled with professional development and support, offer the same opportunity for revitalizing public education.

> "It is not the strongest of the species that survives, nor the most intelligent – but the one most responsive to change."
> *Charles Darwin*

The Expansive Future

Many Michigan educators are using e-learning to expand curriculum offerings especially in rural, isolated school districts, to provide advanced placement courses or as a means for credit recovery. Michigan e-learning is maturing along with efforts in other pioneer states including Florida, Kentucky, West Virginia and Massachusetts. In spite of Michigan's continued structural budget challenges, it is anticipated that its e-learning programs will continue to grow. The redirection of Michigan Virtual University (MVU) to focus exclusively on Michigan Virtual High School (MVHS) offers great promise.

Michigan Virtual University states on its website, "The primary motivation for creating MVU was to support the state's economic development by providing convenient and cost effective education and training to Michigan's current and future workforce. For nearly six years, MVU was the proponent of e-learning in both the commercial and education fields. Today, the vision is for MVU to become a learner-centered, solution-based organization that will create a long lasting relationship with the K-12 community."[12]

The Michigan Virtual High School does not grant course credit or award diplomas independently, but works in partnership with local and intermediate school districts which award credit or diplomas.

While MVU has decided to focus exclusively on K-12 education, Michigan should not lose sight of how e-learning can be a technological and economic growth field for the future. It may be used to train and re-train the adult workforce to spur economic growth and lifelong learning.

Given the clear and inextricable link between a quality education and the future of Michigan's economy, this refining of MVU's vision and the re-direction of resources bodes well for our schools, teachers and students. As Michigan moves forward with e-learning initiatives, it is imperative, especially with the fiscal pressures facing Michigan and its schools, that policy makers such as the Michigan Department of Education, local school districts, intermediate districts and Michigan Virtual University work in close collaboration.

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[12] www.mivu.org

Successful implementation of e-learning still has its challenges. Simply telling teachers and students to "go at it" has not and will not produce full integration into the curriculum and lesson plans. As Michigan moves into the future, e-learning must be positioned as an integral component of the education process rather than as an optional "add-on."

Take Down the Walls

> "Mr. Gorbechev, tear down this wall!"
> *Ronald Reagan,*
> *Fortieth President of the United States*
> *(www.lean2theright.gov)*

Not every Michigan home has access to the Internet; however, virtually every public school does.[13] As more and more "Internet or Millennium babies," those born in the 1990's and after, approach school age, schools must be ready to meet increased technology demands. E-mail, instant messaging, Google, iPods and text messaging are their norm. Schools must continue to adapt, modify and make great change or they risk losing students born in the cyber space era. The Digital Disconnect: The Widening Gap Between Internet Savvy Students and Their Schools[14] spells this notion out clearly. The adage – change is mandatory: progress is optional – affirms that thought. Kids today are more likely to know their friend's email address than their phone number.

E-learning has the ability to take down the walls of the classroom and the walls of the world. For that dream to become reality for all students and teachers, technology must be ubiquitous and fully integrated into every facet of the school and community environment. According to the United States Department of Education, at least 15 states provide some form of virtual schooling to supplement regular classes or to provide for students with special needs. Hundreds of thousands of students are taking advantage of e-learning this school year. Almost 25 percent of all K-12 public schools offer e-learning or virtual instruction. It is expected that within the next decade, every state and most schools will follow suit.[15]

Leadership

> "Learning is not compulsory…
> Neither is survival."
> *W. Edward Demming*

Michigan has taken a leadership role in e-learning. According to Michigan Virtual University, Michigan Virtual High School has seen growth in the number of schools and districts served. In April of 2005, MVU/MVHS developed the most comprehensive report of its operations to date

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[13] United States Department of Education, National Center for Educational Statistics, Internet Access in U.S. Public Schools and Classrooms: 1994 – 2002.

[14] Douglas Levin and Susan Arafeh, The Pew Internet and American Life Project, 2002.

[15] Toward a New Golden Age in American Education, National Education Technology Plan, United States Department of Education, 2004, p.34.

entitled "Report to the Michigan Department of Education on the Development and Growth of the Michigan Virtual High School 1999 – 2005." Highlights of the report include:

- MVHS is the nation's second largest virtual high school
- MVHS has served more than 20,000 students with online semester length courses including 7,000 in 2003 -2004
- MVHS has served more than 125,000 with online MEAP, ACT, SAT, PSAT and AP exam reviews
- An comprehensive list of every public, private and middle school served by MVHS

To view the report in its entirety, visit www.MIVHS.org. Figure 1 summarizes Michigan Virtual High School Courses and Online Enrollments.

Figure 1   MVHS Courses and Online Enrollments: 1999 – 2005[16]

Year	99-00	00-01	01-02	02-03	03-04	04-05 (b)	total
Schools (a)	18	101	194	281	385	345	711 (c)
Districts	18	95	179	221	242	263	453 (c)
Enrollment	100	676	2303	5299	6805	5277	20460
Courses	6	17	27	128	142	141	167 (c)
Test Prep Users	0	7657	9513	21337	37513	49541	125561
Online Instructors	0	81	87	87	100	21	376

(a) public schools, nonpublic schools, home schools, public school academies inside and outside of Michigan
(b) does not include summer school enrollment
(c) unduplicated counts

"The world is always ready to receive talent with open arms." *Craig Barrett, CEO, Intel (fortune – from fortune cookie opened at his favorite Chinese restaurant. Chef Chu's, in Palo Alto, CA,)*

Michigan policy makers have to date been leaders in adapting to this new technology and teaching methodology. However, other states and nations are quickly catching up and, in fact, are poised to overtake us. In this fast-paced global economy merely staying even with the status quo means we are falling behind.

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[16]Report to the Michigan Department of Education, Development and Growth of the Michigan Virtual High Schools, April 13, 2005, p.2, www.mivu.org.

As Michigan moves into the 21st century, it must compete with the world – not just adjacent states or trade partners. It is imperative that policy makers and educators address the fact that in the hyper-competitive, innovative information age the old way of providing public education must be altered sooner rather than later. Michigan's students must be the recipients of an agile system of education and public policies that effect substantive, productive change. Efforts must be maintained to ensure Michigan students have access to quality, vibrant e-learning opportunities.

The world's economic realities are creating greater pressures on our schools to educate all of our students to world-class standards. This clarion call is embedded in:

- Federal policy in the *No Child Left Behind* law;
- Michigan's vision led by the Governor, State Board of Education and the Legislature to educate more of our students to world class standards;
- Students today are coming of age in a new world where past economic success and dominance is not a reliable predictor of the future.

"Teens and Technology – Youth are leading the transition to a fully wired and mobile nation." *Pew/Internet and American Life Project July 27, 2005 www.PewInternet.org*

We can expect children who have grown up using the technology of e-mail, Google, text messaging, instant messaging, iPods, pod casts, blogs, vlogs, cell phones and the Internet to demand multiple technological choices from their schools. Embracing and embedding technology and e-learning into our schools is one way for Michigan schools to lead change. **Michigan will miss a huge opportunity if it does not fully use e-learning to assist in the total transformation of our high schools.** Adults in schools often see their role as a protector of the status quo and the system. It is the role of youth to challenge the status quo and the system.

Online/E-learning Terms

As in other aspects of the education world, there are myriad acronyms, terms and phrases that are meaningless and foreign to newcomers. The American Society for Training and Development (ASTD) website, http://www.learningcircuits.org/glossary.html, offers a comprehensive glossary of e-learning terms. New words, acronyms and phrases are being created daily. The ASTD, with the assistance of e-learning experts, updates the glossary periodically.

The North Central Regional Education Laboratory (NCREL) provides a review of e-learning vocabulary and concepts via a web-based link that connects to additional e-learning resources. It is available at http://www.ncrel.org/tech/.

The Michigan Department of Education's website, www.michigan.gov/mde, offers a useful glossary as well as information regarding technology initiatives in the spring 2005 issue of its publication, *Leading Change.*

The Expectation and Demand for Change

Today's Students - The Digital Natives[17] - The Millennials[18]

> *"Today's education system faces irrelevance unless we bridge the gap between how students live and how they learn."*
> *Learning for the 21st Century*
> *A Report and Mile Guide*
> *for 21st Century Skills*
> *www.21stcenturyskills.org*

> *"Pretty much all the honest truth telling there is in the world is done by children."*
> *Oliver Wendell Holmes*

The greatest change agents for fully integrating technology into schools are technology savvy students. It has been reported that this generation of students spends more time on the Internet than watching television. The Internet is clearly their medium of choice for entertainment, information and communication. As young people and their parents expect and demand more from their local schools, it will help bring about needed change.

The United States Department of Education valued the voices of youth and incorporated their thoughts into the 2004 National Education Technology Plan: Toward a New Golden Age in American Education. NetDay, a national nonprofit organization dedicated to promoting and integrating academically beneficial use of technology, has had over 200,000 K-12 students complete an online survey by visiting http://www.netday.org.[19]

Children are telling us:

- Students are very technology-savvy, feel strongly about the positive value of technology and rely upon technology as an essential and preferred component of every aspect of their lives.

- Students are not just using technology differently today, but are approaching their lives and their daily activities differently because of technology.

- As students get older, their uses of technology become more sophisticated, but, comparatively, the younger students are on a fast track to becoming greater technology users and advocates.

- The access point for technology use, particularly for older students, is home focused, not school focused.

- Today's students are ultra-communicators.[20]

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[17] The Emerging Life of the Digital Native, Mark Prensky, 2004,www,markprensky.com/writing/default.asp.
[18] Millenials Rising, Neil Howe and William Straus, Vintage Books, New York, 2000, www.MilennialRising.com/.
[19] NetDay, "Voices and Views from Today's Tech-Savvy Students." www.netday.org/downloads/national_Findings_Highlights.pdf.
[20] United States Department of Education, Office of Education Technology, Toward a New Golden Age in American Education: How the Internet, the Law and Today's Students Are Revolutionizing Expectations, Washington, D.C., 2004. p.19.

By following the lead and listening to technology-savvy millennial students – the digital natives – schools will have no choice but to meet enhanced student needs.

| These websites provide information about the millennial generation: |
|---|
| • www.itc.virginia.edu/virginiai.edu/fall02/home.html
• www.generationsatwork.com/articles/millennials.htm
• www.educause.edu/ir/library/psf/erm0342.pdf
• www.millennialpolitics.com
• www.millennialrising.com |

In 2001, computer and Internet use was more widespread among school age children and adolescents than among adults.[21] In fact, one of the fastest growing segments of the population using the Internet is children aged 3, 4 and 5 according to the United States Department of Education. **These children who have played, learned and grown up on the World Wide Web will not tolerate a one-size fits all, building space, and time bound system of education.**

Today's Internet savvy four year olds will be the education revolutionaries of tomorrow. Overall, 91% of children in that age bracket have used the computer and 59% have used the Internet.[22]

For those for whom meeting student's needs is not enough motivation, federal and state level policies offer additional incentives for expedient adaptation of technology and e-learning.

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[21] DeBell, M and Chapman, C (2003), computer and Internet Use by Children and Adolescents in the United States, 2001 (NCES 2004-014). U.S. Department of Education, Washington, D.C.: National Centers of Education Statistics.

[22] Rates of Computer and Internet Use by Children in Nursery School and Students in Kindergarten Through Twelfth Grade: 2003 (NCES 2005 – 111). United States Department of Education, Washington, D.C.: National Center for Education Statistics, June 2005.
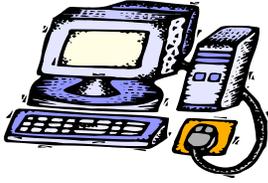
Federal – United States Department of Education

> "E-Learning breaks down the '2X4X6' paradigm of today's public education system comprised of two covers of a textbook, four walls of a classroom and six hour school days."
> *Jamey Fitzpatrick*
> *Interim President*
> *Michigan Virtual University*
> *(www.mivhs.org)*

The United States Department of Education recently released a National Technology Plan[23] with seven action steps and recommendations.

The fourth action step supports e-learning and virtual schools. The report notes significant growth in e-learning over the past five years. Traditional schools are turning to e-learning to expand choices for students and professional development for teachers. Recommendations for states, districts and schools include:

- Provide every student access to e-learning.

- Enable every teacher to participate in e-learning training.

- Encourage the use of e-learning options to meet NCLB requirements for highly qualified teachers, supplemental services and parental choice.

- Explore creative ways to fund e-learning opportunities.

- Develop quality measures and accreditation standards for e-learning that mirror those required for course credit.

A shared goal of both Congress and President George W. Bush[24] is to assist every student in crossing the digital divide by ensuring technological literacy by the completion of eighth grade regardless of a student's ethnicity, race, gender, family income, geographic location or disability.

At the second annual Center for Internet Technology in Education (CiTE) Virtual High School 2001 Symposium, keynoter John Bailey, former director of the Office of Educational Technology for the United States Department of Education, suggested that in order for progress to be made on technology in education or e-learning, five beliefs about how education and technology are approached must be changed.[25]

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[23] United States Department of Education, Office of Educational Technology, Toward a New Golden Aged in American Education: How the Internet, the Law and Today's Students are Revolutionizing Expectations, 2004.

[24] Title II, Part D, Enhancing Education Through Technology, *No Child Left Behind* Act, 2001.

[25] http://www.ncrel.org/tech/elearn/milieu.htm

> "My four year old daughter learns on the Internet every day. The world wide web can never be a substitute for good parenting, but it is a great tool to help our kids learn and, in the long run, has the potential to help transform Michigan's entire economy."
> *Craig DeRoche, Speaker, Michigan House of Representatives September 23, 2005*

These include:
- The need to move beyond the notion that education is about school buildings, school days and classrooms. Education can now be delivered to students wherever they are.
- School needs to become education centers and access points.
- Every educational opportunity is a technology opportunity.
- Online assessment with e-learning technology is one of the next generation "killer applications."
- Together industry and government need to be relentless in measuring and assessing the impact of technology on education and academic achievement.

Four years later, these words still ring true. Federal funding for education technology has increased in the past. However, the proposed Executive Budget for fiscal year 2006 reduces the level of funding. In April 2005, Congress approved a budget resolution concurring with the President that did not restore the proposed cuts to the Enhancing Technology through Technology (EETT) program. However, as this report goes to press, it appears that Congress will restore nearly $425 million of the cuts originally proposed by the President.

Education technology leaders and their supporters in classrooms across the country have done an effective job documenting and educating Congress on how education technology is being used to help raise the academic achievement gap and enhance learning for all students. While maintaining this federal technology funding is vital, it is not enough to truly advance our schools, teachers and students boldly into the 21st century.

> "When I took office, only high energy physicists had ever heard of what is called the worldwide web…now even my cat has its own webpage."
> *Former President Bill Clinton (www.leantotheleft.gov)*

Washington, D.C., like Michigan, is experiencing pressure to reduce spending. Michigan, along with 11 other states, relies exclusively on the EETT funds to operate its technology programs. There are no state funds allocated to support education technology. This reduction, coupled with Michigan's budget deficit, has serious implications for students. Additional investment in education technology is needed to meet the demands of *No Child Left Behind* and the knowledge/information world Michigan's children will inherit.

Rhetoric from Washington, D.C. and Lansing will not be enough to advance technology in our schools. It will take new resources as well as creativity from local educators to re-direct existing dollars into technology.

State – Michigan Department of Education, State Board of Education

At the turn of the century, the Michigan Board of Education realized that the global economy was being spurred by huge advances. Science, technology, increased productivity and globalization challenged Michigan educators to embrace change or be engulfed by it. Looking ahead, the State Board of Education called on business and labor, nonprofit agencies and faith based organizations, educators, legislators, parents and students to meet the challenge of strengthening and improving Michigan schools.

In the summer of 2001, State Board of Education president Kathleen Straus appointed five task forces chaired by State Board of Education members to provide policy direction in five important areas:

- Ensuring Early Childhood Education

- Ensuring Excellent Educators

- Integrating Communities and Schools

- Elevating Educational Leadership

- Embracing the Information Age

The task forces focus on the Board's strategic goal: Attain substantial and meaningful improvement in academic achievement for all students/children with primary emphasis on high priority schools and students.

The Embracing the Information Age task force was originally chaired by Michael David Warren, now a circuit court judge in Oakland County. Liz Bauer has assumed the role of chair. Task force members engaged a wide array of stakeholders that included legislators, the governor, educators, business and labor leaders, parents, state government as well as many others impacting education policy. Recommendations are based on broad access and the creative use of technology:

- Educator Preparation and Development – All educators and administrators will be prepared to use Information Age tools and learning techniques and processes.

- Standards and Assessment – State and local academic standards, benchmarks and assessments will reflect the knowledge and skills necessary for success in the Information Age.

- Transcending the Four Walls – Schools will transcend their four walls and districts. Distance learning and other learning resources will be integrated into learning communities.

- Virtual Districts – Chronically underperforming schools and districts will form collaborative partnerships creating virtual districts by which all partners

share best practices and resources.

- o In December 2001 the State Board endorsed the Virtual District Policy, key recommendations and appendices proposed by the Task Force.

- o In March 2002, the Policy Framework and Standards for Virtual Districts were adopted by the State Board.

- o In May 2002, the State Board approved standards for the preparation of teachers that included an Information Age technology endorsement for teacher certification.

"The transforming power of the Information Age holds great promise for improving the academic achievement of Michigan's students."
Elizabeth Bauer, Chair
Embracing the Information Age Task Force,
Michigan State Board of Education
Ebauer7400@AOL.com

The Michigan Department of Education's Technology Plan was updated in 2004 and is available at www.michigan.gov/mde. It demonstrates a partnership of key parties throughout the state who have made progress in realizing the vision and goal set forth by the Embracing the Information Age Task Force. The department is currently working to present a revised report to the State Board of Education in December 2005.

The plan spells out that technology offers the potential to empower historically disadvantaged groups, such as students with disabilities, by providing greater access to communication and learning tools. Technology is called the "road to the world" and is forcing educators to rethink the definitions of "classroom," "school" and "student." It is giving learners of all ages an opportunity to create a future of their own.[26] The plan includes a summary of the value added by technology over traditional teaching approaches.

Figure 2 - The Transformation of Education[27]

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[26] Michigan's State Technology Plan 1998, updated in 2004, Michigan Department of Education, p7.

[27] Michigan's State Technology Plan 1998, updated in 2004, Michigan Department of Education, p. 8.

Traditional Approach	Technology Allows More Of
Teacher centered learning	Student centered learning
One size fits all instruction	Customization to meet individual needs
One pace applies to all students	Flexible pacing based on student needs
Classrooms and school buildings	Distributed learning from anyplace
Learning during school hours	Learning at anytime
Facts and recitation	Critical thinking and real world context
Individual student performance	Collaboration and dialogue among students and between teachers and student
Textbooks	Up to date primary information resources
Parent teacher meetings each semester	Parent teacher communication daily

Michigan Virtual University – Michigan Virtual High Schools

In an April 2005 report, The Development and Growth of the Michigan Virtual

High School, 1999-2005, to the Michigan Department of Education Michigan Virtual University reports that the Michigan Virtual High School has served more than 20,000 students with an online semester length course. Additionally, over 125,000 students have accessed online MEAP, SAT, PSAT, ACT and Advanced Placement (AP) review test tools. As a result, MVHS ranks as the second largest virtual high school in the nation.

> "It's time to embrace the changes that technology brings to education."
> *Governor Jennifer M. Granholm*
> *State of Michigan*
> *www.michigan.gov*

What is not captured in the statistics is that the MVU Board of Directors adopted a new strategic plan in March 2005. The plan changes MVU's focus to work exclusively on K-12 students and educators. This new focus, coupled with the energy and leadership of Jamey Fitzpatrick, interim president, is good for Michigan's teachers and students. MVU is dedicated to working with the Michigan Department of Education, local and intermediate school districts and statewide associations to meet myriad challenges. These include implementing the *No Child Left Behind* law, The Cherry Commission's recommendations, the National Education Technology Plan as well as other important education initiatives. [28]

As a dynamic organization, MVHS is continually updating the products and services offered that now include online courses, test preparation, classroom resources, summer school courses and professional development programs. The full array of learning products and services allows MVHS to serve gifted and talented and advanced placement students, students at risk and homebound as well as more traditional students.

In the words of MVU, the Michigan Virtual High School helps educators prepare our children for a lifetime of using technology to achieve success in their work and their lives. MVHS assists schools in building enrollments, improving student performance and stretching tight budgets. MVHS can help educators get back to what matters most – helping children find their special gifts. For detail on MVU/MVHS efforts, see March 2005 report to the Michigan Department of Education at www.mvu.org.

MVHS courses are packaged as follows:

- **Advanced Placement** courses offer college-level instruction to high achieving students, without the expense of adding an in-seat AP class. College-level courses include tutorials, multimedia simulations and online discussions. An AP Exam review is included with all AP courses.

- **Flex 90** are student-paced courses that offer learners a fast, flexible way to pick up an elective or required class and even recover credit. Instructors in these courses set pacing guidelines for completing assignments, though won't assign due dates. Instructors encourage students, monitor their progress and grade coursework and are available to answer students' questions and provide guidance.

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[28] The Development and Growth of Michigan's Virtual High School 1999-2005 report cover letter from Jamey Fitzpatrick to Michigan's education community. www.mvu.org, May 16, 2005.

- **Semester Paced** courses follow the traditional semester schedule. Teachers in these courses set the pace and due-dates for assignments, quizzes and tests. Students have the opportunity to participate in collaborative group projects.

- **Student Direct** offers a low cost option for schools looking to provide their students with a high quality experience combined with ease in scheduling and a self paced approach. The interactive instruction is provided completely by the software that also supplies students with tools such as calculators and dictionaries.

- **Summer School** is designed to fill an important need for our schools by offering a cost-effective alternative for students wishing to extend and enrich their learning or to make up credit. The flexible enrollment option allows schools to enroll students at various times in the summer.

MVHS Course offerings include:

Computer Science
Computer Science (AP only)
HTML, Dynamic HTML and Scripting
Information Technology Basics
Introduction to Technology
Keyboarding
Microsoft Office XP
Web Design Basics HTML

Sciences
Anatomy and Physiology
Astronomy
Biology (available also in AP)
Chemistry (available also in AP)
Environmental Science
Geology
Health Science
Human Space Exploration
Oceanography
Physics (available also in AP)

Social Studies
American Government
American History
Art History (AP only)
Civics
Geography
Psychology (AP only)
US Government and Politics (available also in AP)
US History (available also in AP)
World Civilization
World History

Language Arts
Advanced Composition
American Film Survey
American Literature
Beginning Composition

English 9, 10, 11, 12
English as a Second Language
English Literature and Composition (AP only)
English Language and Composition (AP only)
Introduction to English Literature and Composition
Journalism
Reading Comprehension
World Literature

World Languages
French (available also in AP)
German
Latin
Spanish (also available in AP)
Chinese[*]

Mathematics
Algebra
Business and Consumer Math
Calculus
Calculus AB (also available in AP)
Economics
Geometry
Introduction Algebra
Macroeconomics (available also in AP)
Personal Economic and Finance
Pre calculus
Statistics (available also in AP)
Trigonometry

Workforce and Life Skills
Business and Personal Protocol
Career Planning
Employability Skills
International Business
Study Skills

[*]With the emergence of China, Michigan Virtual University is developing Chinese language courses that are expected to be offered in late 2005 or early 2006.

> "Class dismissed and learning goes on!"
> *Anonymous*

In collaboration with the Michigan Department of Education, Michigan Virtual University created a virtual resource mall called Michigan Learnport. Michigan Learnport is a statewide professional development portal that supports educator's efforts toward continuous learning.

In the fall of 2004, Michigan Virtual University and the Michigan Department of Education jointly awarded six grants to Michigan intermediate school districts and professional organizations to develop professional development content aimed at helping schools meet NCLB requirements. Michigan Learnport promises tremendous potential in professional development to Michigan's educators. Visit the Michigan Virtual University and Michigan Virtual High School websites at www.MIVS.org and www.MIVHS.org for more detailed information.

Growth Potential – Federal and State Studies

Federal

In March 2005 the U.S. Department of Education released its first study of e-learning, Distance Education Courses for Public Elementary and Secondary School Students.[29] There is a cascading effect with the value of e-learning that originated in colleges and universities. Students from more than one third of the nation's school districts now take courses delivered over the Internet or via videoconferences. In higher education, distance education has doubled in the years between 1995 and 2001.

The report says that nearly three quarters of all public school districts plan to offer or expand distance education programs in the near future. The report also says:

- E-learning is most popular in rural areas and in the southeast and central area of the country;
- E-learning helps reduce scheduling conflicts for students so, for example, they can take advanced math and still participate in choir;
- 36% of public schools or 5,500 out of 15,000 districts had students enrolled in e-learning courses during 2002-2003;
- Rural students are using this technology to expand curricula in foreign languages and other areas where they may not have a "highly qualified" teacher as required by the *No Child Left Behind* law;
- 50% of the districts with distance e-learning programs had students enrolled in advance placement or college level courses;
- Two way interactive video is the most utilized medium of course delivery;
- There are two reasons educators cite as concerns: cost and quality.

State

During the fall of 2004, the Michigan Association of School Administrators (MASA) and the Michigan Association of Intermediate School Administrators (MAISA), led by MAISA's technology chair Chris Wigent, superintendent of Calhoun ISD, assisted by Mike Oswalt, assistant superintendent of Regional Technology Services for Calhoun ISD, conducted a Virtual Learning Opportunity Survey. The survey had 221 respondents from all regions of the state. For a copy of the survey results, visit www.gomaisa.org.

Key observations from the survey include:

- E-learning in some form is occurring across the state;
- 45% of students who participate in e-learning are either advanced placement or

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[29] Distance Education Courses for Public Elementary and Secondary Students.
http://nces.ed.gov/pubsearch/pubsinfo.asp/pubid=2005010

academically advantaged;

- 93% of high school students have some form of virtual learning experience;
- 40% or less of elementary and middle school students have virtual learning experiences;
- 60% of virtual learning direct instruction providers felt e-learning has had a moderate to significant impact on teacher motivation and involvement;
- 60% of respondents, including a mix of those who do and do not provide virtual learning for students, felt that virtual learning for curriculum development has a moderate or significant impact on student motivation, achievement and involvement. Nearly 50% of the same group felt virtual learning has had a moderate to significant impact on teacher motivation and involvement.
- Approximately two-thirds of the virtual learning opportunities for curriculum enhancement at the elementary and middle school levels involved a computer and Internet connections;

> "Drop the 'e' in e-learning. Ultimately, it's about learning and technology is just a tool to help."
> *Michigan student*

- 42% of professional development offered to staff involves two-way interaction either through the Internet or video-conferencing;
- Only 39% of respondents felt that the virtual professional development provided for staff is good, slightly less felt the availability was good;
- Of the content providers listed as "beneficial for direct instruction," 41% chose the Michigan Virtual High School and 17% chose intermediate school districts (ISDs);
- Of the content providers listed as "beneficial for curriculum enhancement," 19% chose ISDs and 13 chose MVHS;
- Of the impediment identified that limit virtual learning opportunities, 24% relate to cost, 16% to technology issues, 11% to being too busy with other demands, and 7% felt it was an isolated learning experience.

Twelve Step Program for Successful E-Learning Implementation

> "The secret of education is respecting the pupil."
> *Ralph Waldo Emerson*

Teachers, technology directors and local and intermediate school district superintendents are generally enthused about the explosion of e-learning. Indeed, there are those who still lack appropriate e-learning knowledge and training. Much time has been spent over the past several months reviewing the literature and talking with e-learning pioneers and educators across Michigan and the nation. Many comments have been garnered that harness the power of e-learning. They have been categorized into twelve thematic areas.

1. **Do your homework:** Identify the innovators, pioneers and change agents in your school. Bring them on board first as catalysts to begin envisioning a future that embeds e-learning into the culture and curriculum.

2. **Be honest and straightforward:** State clearly that e-learning is about enhancing teaching and learning. It is not a hidden agenda to reduce the number of teachers or support personnel.

3. **Leadership Matters:** Include formal and informal building and district level leaders at the beginning. If the adoption of e-learning requires contract modification, include union leaders from the start.

4. **Do not reinvent the wheel – just modify it to meet your student's needs:** Emulate successes and best practices from e-learning pioneers in Michigan and across the globe borrowing from local, state and national examples.

5. **Educate and inform:** Engage staff in gathering data through site visits, conversations, collaborations and pilot projects. Communication voids have the potential to derail even the most valuable teaching tools.

6. **Start small:** Start with your most technology-savvy, motivated staff and students to ensure confidence and mastery from content, pedagogy and technology perspectives before reaching out to implement a school wide e-learning initiative.

7. **Invest in professional development:** Certainly, there are teachers and students who will grasp e-learning with minimal preparation and training. It is always a wise investment to assure appropriate training at the start of any new venture. Invest, educate, prepare and train staff and students. This must be an on-going investment rather than a one-time occurrence.

8. **Plan to expand:** Include a continuous evaluation component into the pilot project. Identify strengths and weaknesses. Obtain feedback from stakeholders that include teachers, students, parents, counselors and administrators. Integrate modifications along the way.

9. **Vendors as partners:** Engage vendors as partners in e-learning. They may assist in producing relevant, rigorous course content, help define who is responsible for activities and deliverables, and encourage continuous improvement via on-going

dialogue, feedback, data collection and evaluation. MVHS's goal is to partner with local schools and not just behave like a vendor selling a product.

10. **Success is not an accident:**   Change is difficult in the best of times. Through planning, engaging stakeholders, sharing information, communication and on-going training, e-learning can be a valuable tool for enhancing teaching and learning.

11. **Be willing to take risks:** Learn from your mistakes!

12. **Transformation is not easy:** Recognize this upfront.

Advantages of E-learning

> "The beauty of ideas is that they can be used over and over again, without ever being depleted."
> *Jeffrey Sachs, Economist and Author of The End of Poverty — Economic Possibilities for Our Time, Director of the Earth Institute at Columbia University and son of the late Michigan legendary attorney, Ted Sachs (www.Earth.Columbia.edu)*

In listening to superintendents, teachers, technology and curriculum directors throughout the course of this study, the following advantages and challenges were identified. Both categories of comments mirror what national and state studies reflect about e-learning. While this listing is anecdotal and not scientifically gathered, it provides insight into the challenges MVHS and policy makers will face as quality e-learning in Michigan is expanded.

- Assist local districts in complying with *No Child Left Behind* provisions for a "highly qualified teacher" in every classroom;
- Access to expanded options for advanced placement courses;
- Access to multiple foreign language courses;
- Option for credit recovery during the school year and summer period;
- Expanded choices to meet supplemental services (tutoring) requirements under *No Child Left Behind* as well as offerings for gifted and talented students;
- Ability to create flexible education programs for homebound, expelled, suspended or incarcerated students at risk of dropping out;
- Ability to individualize learning so students can learn at their own pace;
- Provide for continuous academic feedback to students and parents;
- Develops a foundation for future success because it requires discipline and assuming responsibility for learning;
- All MVHS courses are taught by Michigan certified teachers;
- MVHS provides test preparation tutorials for the MEAP, SAT, PSAT, ACT and AP exams;
- Utilized by public, private and home schoolers;
- Improves technology skills demanded by the 21st century economy;
- All MVHS courses meet Michigan Curriculum Frameworks and national standards;
- Can change learning from a passive to an interactive experience where students learn by doing;
- Online communities and networks are developed where learners may transcend racial, political, socio-economic, race and ethnic boundaries to share ideas and knowledge freely;
- Learners are empowered to manage their own learning and to seek the best ways to absorb new knowledge;
- Helps break down the idea that schools offer a "one size fits all" high school program;
- Helps prepare students for the future where computers permeate virtually every facet of life;
- Taps into the students' natural connection to technology;

- Has potential to enhance the quality of professional development for staff at lower cost;
- Helps accommodate the different learning styles of students by allowing material to be presented in multiple ways;
- Allows for more frequent assessment of student's progress.

Challenges to E-learning

- Lack of quality on-going professional development for teachers;
- Often a huge time gap between professional development and training and when technology is available in the classroom;
- Insufficient planning time;
- Lack of technical support in the school building – a teacher cited that they are expected to fix antiquated technology and teach kids at the same time;
- Technology often does not work as well as promised – another teacher said, "there's too much pressure from NCLB – we don't have time to wait for technology to work";
- Technology is not accessible – a teacher pointed out that no one expects to take students to the "pencil center." Why then is it acceptable to have to wait until time is scheduled in the media center or computer lab to use technology?
- Children in poor communities often don't even have a phone at home let alone Internet access;
- Educators are expected to deliver 21st century education skills with a 20th century budget;
- There is great inequity in school funding among Michigan school districts. One superintendent pointed out that NCLB and Michigan's accreditation system expect equal results from unequal investment. He also said that the zip in technology depends on one's zip code;
- Technology within many schools is antiquated;
- Funding technology while eliminating programs and staff is political suicide for a superintendent who proposes it and a school board that supports it;
- Fear of change;
- Fear of loss of jobs;
- Districts have found that quality teaching online is more time consuming than traditional teaching methods;
- Local districts can purchase off the shelf, self paced, instructional solutions at lower cost;
- Students and staff have a difficult time navigating MVHS online registration process;
- No immediate, compelling reason to change;
- Cost of purchasing online courses from MVHS is too high;
- MVHS is not accredited;
- Fear that MVHS will compete in the future with district's to offer diplomas;
- Fear that continued MVHS staff reductions will reduce the quality of instruction, support and technical assistance;
- Lack of information which fuels concern that MVHS teachers are not Michigan certified and/or appropriately supervised or evaluated;
- There is no independent evaluation of MVHS's operation.

It should be noted that MVU is moving aggressively to meet a number of challenges that have been identified by local school district personnel; such as:

- Provision of a detailed operational report covering the past five years to the Michigan Department of Education;
- Strong advocacy for state and federal funding for educational technology;
- Expectation of being an accredited distance learning organization by year end 2005;
- An independent evaluation funded by North Central Regional Education Laboratory (NCREL) through a contract with Michigan State University was completed and published in July 2005, copies can be obtained by contacting Michigan Virtual University;
- Additional K-12 representation on the MVU Board of Directors to include
  - o a high school principal or statewide professional designee,
  - o a local district superintendent,
  - o an intermediate school district superintendent,
  - o a non-public school representative or statewide professional association designee.

Assessment of E-learning Resources

E-learning is evolving rapidly every day. Given the speed of change in the virtual, e-learning world, providing a clear picture is like providing a snapshot of a tsunami: while providing a picture, it does not provide the whole picture. There is a smorgasbord of vendors, advocacy and support groups entering the market with new products and services daily. Part of the appeal of e-learning options is that they may be customized to each district, school, grade and even student. This section will identify organizations and progress in other states in analyzing e-learning instructional solutions that may be helpful to Michigan policy makers and local school district leaders.

> "Institutionalization of e-learning …in America's schools is not about establishing…a delivery system 'competing with' traditional K-12 schools…It is essentially about educational improvement, school reform, and improving academic performance in America's high schools."
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> *(Blomeyer, R, Clark, T, & Smith, 2005) From: "A Synthesis of New Research On K-12 Online Learning"*
>
> *Forthcoming; November, 2005. NCREL/LPA Center for Technology, (www.ncrel.org/tech/elearn)*

In an effort to achieve or demonstrate excellence and accountability, Michigan Virtual High School is in the process of seeking accreditation from the Commission on International and Trans-Regional Accreditation (CITA), a recognized organization that reviews distance learning programs. Full accreditation is anticipated by the end of the 2005 school year. The North Central Regional Education Laboratory has funded a study of the effectiveness of MVHS's online courses. The study is scheduled was released in July 2005 and may accessed at www.mivu.org.

The **National Education Association** (NEA) offers a valuable "Guide to On-Line High School Courses."[30] It will assist policy makers and educators at all levels in making informed decisions regarding implementation of e-learning in their respective communities. What makes this guide so valuable is that it is a collaborative effort that also involved the Virtual High School, Inc., American Association of School Administrators, CNA Corporation, IBM Corporation, National Association of State Boards of Education, National School Board Association and Verizon Communication.

The National Education Association (NEA), the nation's largest teachers' association, provided leadership to produce an insightful assessment of e-learning. E-learning coupled with highly qualified teachers can add value that will improve academic achievement.

The goals and responsibilities of state policy makers, parents, teachers, students and developers, both private and public, are clearly articulated in the NEA report:

- States must determine guidelines for the creation and use of online courses within their jurisdiction.

- Local school districts must identify their own goals in using online programs and must have tools to assess their appropriateness and effectiveness.

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[30] National Education Association, "Guide to High School Courses", www.nea.org/technology/distanceed/ highschool.

- Teachers must know what constitutes quality in online teaching and to what standards they will be held accountable.

- Parents must understand how online education functions and how to ascertain what is in the best interest of students.

- Students must become informal consumers, aware of how online courses can enhance their education portfolios and what is required for success in these courses.

- Developers and providers of online education must meet identified standards to ensure delivery of high quality, relevant and effective resources in the education marketplace.

The **Southern Regional Education Board** (SREB) was established in 1948 by Southern states (Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia) to advance education and inspire the social and economic viability of the region. SREB has produced a checklist of Essential Principles to ensure that characteristics of good teaching and learning are addressed in the development and use of electronically delivered courses such as e-learning. The principles are focused on assessing the quality of e-learning courses that include curriculum, instruction and student assessment, management, and evaluation of delivered courses.

This checklist is another resource that local districts and schools can use to help analyze online courses. The entire checklist is available by contacting SREB at www.sreb.org.

"Best Practices for Electronically Offered Degree and Certificate Programs"[31] is another tool that will assist districts, schools, teachers and parents in their assessment of online solutions. It was created by the **Western Cooperative for Educational Telecommunication** (www.wiche.edu/), an organization renowned for excellence in higher education distance learning applications.

Higher education institutions have been at the forefront of distance learning applications. This has allowed them to extend their reach to students as well as to increase the depth of program offerings. The "Best Practices" collection was designed as a guide to planning distance education activities. It includes an assessment tool as well. The guide will be updated as the e-learning environment matures.

The **California Learning Resource Network** (www.CLRN.org) is another resource that will assist local districts in sorting through the voluminous, complex e-learning instructional solutions. The state of California created this tool to guide local

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[31] Visit www.wiche.edu/telecom/ and click on "Best Practices for Electronically Offered Degree and Certificate Programs."

districts in their independent review and analysis of online solutions. The purpose of the Learning Resource Network is to provide a one-stop information source to enable California educators to identify supplemental electronic learning resources that meet local instructional needs as well as embody the implementation of California's curriculum framework and standards.

The California Department of Education contracts with a local education agency to coordinate this service. In turn, the lead local education agency contracts with other local education agencies to focus on specific content and technical areas including history and social studies, science, mathematics and English language arts.   While this service is focused at supplemental electronic resources, the mechanisms and processes provide a valuable template for Michigan educators.

> Change requires change agents. "Can you imagine if the Post Office was in charge of email?"
> *Tom Kelly, Vice President, Worldwide Training Systems, Cisco Systems*

The **North American Council of Online Learning** (NACOL), www.NACOL.org, funded by a grant from the Bill and Melinda Gates Foundation, is working with other education groups to develop a list of criteria that may be used to locate and evaluate e-learning programs. This comprehensive effort will develop an independent, objective source of information and act as a clearinghouse for online learning. In the coming years, NACOL, especially under the capable leadership of Susan Patrick, the immediate past director of the Office of Technology, U.S. Department of Education, will be a primary driver and shaper of quality e-learning policy and advocacy to help revolutionize our schools.

To truly analyze the various online instructional solutions requires a team of multidisciplinary curriculum and technical specialists working together over an extended period of time. Due to the explosion of e-learning as a new education delivery model, almost any study risks obsolescence upon completion. One e-learning expert is quoted as saying, "completing the task of analyzing various online instructional solutions is like painting the Mackinac Bridge – once you were done, you would need to begin anew." It is important that we engage the appropriate curriculum, pedagogy, content and technology experts in the continual review of e-learning.

Further, e-learning must not be viewed as "the fix" or be all, end all answer for struggling schools. It should not be misconstrued to be interchangeable with other school reform tools and resources at the disposal of school leaders. An e-learning instructional solution that is appropriate for one child, one class, or one school could be as equally inappropriate for another. The recommendation section includes potential suggestions for developing on-going quality evaluations of e-learning programs and services.

Conclusions

Public education must continue to transform itself; e-learning is another tool to help. Conclusions and recommendations highlighted have been gleaned from interviews with Michigan and national e-learning pioneers, a review of the literature, feedback from a focus group of Michigan educators and, most importantly, by listening to Michigan's educators and students. More than ever, there is an overwhelming need to embed technology into Michigan schools. Michigan needs to exploit the current global exchange taking place and find ways to invest and embrace technology if our students are to excel in the 21st century information age, global economy. Schools, like businesses, need to be more nimble as they adapt to change. In fact, educators must be catalysts for change.

"We are in a transition period where intellectual capital is replacing financial and physical capital as the key to prosperity and social well being. 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."[32]

Technology has leveled the playing field for the world. Michigan schools can now transcend the boundaries of space and time. With technology they may provide any place, any time, quality educational options for all students. The students of Detroit, Bloomfield, Pontiac and Grand Rapids are not competing with students in adjacent districts or states – they are competing with children throughout the world.

As Thomas Friedman states in his book, The World is Flat, "Clearly, it is now possible for more people than ever to collaborate and compete in real time with more people on more different kinds of work from more different corners of the planet and on a more equal footing than at any previous time in the history of the world – using computers, e-mail, networks, teleconferencing, and dynamic new software."[33] The primary focus of this report is MVU/MVHS because they are the dominant player in Michigan. Yet, this is an artificial limitation since the e-learning market is rapidly expanding. New technologies and the global marketplace will eventually render time, space and place irrelevant. Michigan has a great asset to build on with MVU/MVHS.

We live in a hyper-competitive, disruptive, rapidly changing information and technologically driven world that defies predictability. This is our and the world's reality, which requires that we radically reshape our system of public education to respond to it – or be engulfed by it.

The World Wide Web has helped flatten the world. The world is changing and our schools need to help lead this change. Michigan has been a pioneer in the use of the Internet and e-learning to enhance teaching and learning. MVU has adapted to change and has re-focused their efforts to concentrate exclusively on serving K-12 students and educators.

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[32] Erick Bloch, Director of the National Science Foundation, testimony to Congress, 1988.
[33] Thomas Friedman, The World is Flat, p. 8.

It is critical over the next few years that educators do not allow their imagination, creativity and entrepreneurial spirits to be slowed by Michigan's structural budget challenges. **Michigan must advance into the 21st century boldly. It must not allow fiscal challenges change pioneers into settlers.** To regain its economic footing, Michigan must educate its students to world class standards. There are many pathways to success. E-learning opens countless others.

> "At the moment, the old education system is dying and a new system is being born. For those of us living through the change, it is easier to see what we are losing than what is emerging – a system of customized education for each of our children."
> *Arthur Levine, President,*
> *Teacher's College, Columbia University*

Certainly, not everyone will concur with all the recommendations made in this report. Michigan policy leaders should agree that to thrive in the 21st century "world is flat" disruptive knowledge economy, it will require radical change **and leadership**.

As difficult and painful as the required change will be, it will pale in comparison to the true leadership which will be required to make it happen.

As Clyde Prestowitz concludes in his must-read book, Three Billion New Capitalists: The Great Shift of Wealth and Power to the East: "Essentially, a true leader strives to discover facts, connect the dots, follow where they lead, and determine how best to face the problems they present, and then shape events and persuade people to embrace the results".[34]

Some of the recommendations in this report are bold. Some are more plausible than others. Some require changes in the law; others require changes in imagination and vision. Leadership exists at the state and local level to push for the embedding of technology into our schools. The question remaining is: Is there a will to create a shared vision and common agenda that transcends the politics of the moment to truly move Michigan forward?

It is hoped that this report will provoke discussion and debate among policy makers and serve as a catalyst for productive change. Michigan's future success depends on it. We need only to IMAGINE the possibilities…and have the courage to take **bold action** to make them reality for Michigan's students and citizens.

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[34] Clyde Prestowitz, Three Billion New Capitalists: The Great Shift of Wealth and Power to the East," p. 278.

Recommendations

This section contains recommendations to help expand quality e-learning options for students and educators across Michigan. Some of the recommendations are bolder than others. Some are more plausible and do-able than others. Some will require changes in vision, imagination, and attitude; others will require changes in the law and bold leadership. All are offered to serve as a catalyst for productive change for our students and teachers.

Clearly, there is national and state level policy interest in using technology to advance quality teaching and learning. At the national level this interest is reinforced by the United States Department of Education's report, *Toward a New Golden Age in American Education: How the Internet, the Law and Today's Student's are Revolutionizing Expectations.* At the state level, the Governor, State Board of Education and legislature are strong advocates for rigorous academic standards as well as for using technology to assist in delivering quality, world-class education to all of Michigan's children.

The following recommendations are offered to turn desires and dreams into reality:

"We need to be forward looking
to adapt our educational system
to the evolving needs of the economy."
Allan Greenspan, Chairman of the
Federal Reserve

1.   **High School Reform**
      a. There has been explosive growth of e-learning in business, higher education and high school across the country and the world. This method of instruction is making it possible to offer greater, personalized instructional choices to learners of all levels.

   The National Technology Plan—Toward a New Golden Age in American Education: How the Internet, The Law and Today's Students are Revolutionizing Expectations calls for providing every student access to e-learning. Michigan has a history of educational leadership. That must continue with e-learning. Incentives, expectations and, if necessary, mandates should be established that require every Michigan high school student to take at least one e-learning course as a requisite for graduation.

   b. Even greater than the learning gap between rich and poor in Michigan is the inequity in learning environments and access to technology. Every new school building plan in the 21st century should include a thorough evaluation and assessment regarding the use of technology, the Internet and e-learning. Claiming each classroom has four computers will not lead us to victory. This is simply the equivalent of saying that a 20th century classroom was adequately equipped with four pencils to share among 30 students. Further, far too many high school students spend their senior years as a year

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of state subsidized dating. They have earned enough credits to graduate, but perhaps for social reasons opt to remain in high school. How can we free students to move on and expand their learning? Winston Churchill said that we "shape our buildings and then they shape us." As we move into the 21st century global society where learning is taking place any time and any place, we need to update Churchill's quote and ask how technology is shaping us.

Will our bricks and mortar school buildings become the knowledge jail cells of tomorrow? Once a school building is built, reasons will be found to keep students within its four walls even if new knowledge and technology render school buildings obsolete. In the 19th and 20th centuries, knowledge was imparted via one room school houses and apprenticeships. In the 20th century, large warehouse like schools were built to educate greater numbers of children in a one size fits all, assembly line fashion.

Today, there is a movement afoot to create smaller schools that focus on rigor, relationships and relevance. As future needs change, a formal process must be adopted that questions the value of all learning taking place within the four walls of a school building. How can technology, practical experience in business or the community outside of the school building better prepare our students for the competitive world they will enter? Wayne Gretzy, the great hockey player, said he was a great hockey player because he does not skate to where the puck is, but rather he skates to where the puck will be.   There is wisdom in his words. Where is the leadership that will help our schools skate to where learning will be in the future? It is recommended that:

- Prior to building a new school or embarking on a significant expansion, a technology impact statement should be written. It must include a thorough review of how technology could reduce the need for bricks and mortar. (A process similar to the CON [certificate of need] process used for hospitals.)

- A pilot project be established that permits a school district to retain the full per pupil allowance for a "non-traditional" student who, with the cooperation of parents, teachers, principals, participates in an independent study entailing travel, community service, a study plan that is executed via e-learning outside of the four walls of a school building.

c. There is a high school drop out problem in Michigan. If the problem is viewed through the lens of a public health official, it would be labeled an epidemic. It is estimated that 100,000 Michigan youth between the ages of 16 and 24 have failed to meet the requirements of high school graduation and, therefore, lack diplomas.

- The Lt. Governor's Commission on Higher Education and Economic Growth highlights the relationships between the level of education of a state's workforce and its economic vitality. Options for high school dropouts to earn a living are few. The NCLB law incorporates the drop out rates as one of the mandatory accountability measures for public schools.

  It is recommended that a school district with dropout statistics exceeding 10% be granted an incentive to develop an alternative program that aggressively recruits students who have dropped out to return to school. E-learning tools would play an important role in recapturing credits which accommodates the challenges that students who drop out often face.

- Michigan Virtual High School and Dearborn Public Schools developed Dearborn Virtual Academy. They have demonstrated that e-learning can play a vital role in dropout prevention.

This model uses a hybrid approach to meet student needs:

- Students take two flex 90-minute remediation courses offered by MVHS.
- Students earn high school credit and gain real life experience by working at an approved site.
- Students earn high school credit through service learning and volunteering in their community.
- Students engage in independent study projects developed and approved by student teacher teams.
- Students may participate in After School Academic Programs (ASAP) where a class is offered at a non-traditional time (3:15-5:15 pm).
- Students take two electives at one of Dearborn's three traditional high schools.
- Students have access to teacher consultants, social workers and a psychologist.

d. It is recommended that MVHS establish, in consultation with intermediate school districts, local school districts and public school academies, use of e-learning as a core to entice young adult dropouts to return to school.

e. Michigan Virtual High School leaders should initiate a meeting with Detroit Public School's interim CEO and the Governor's Transition Team to discuss an e-learning partnership designed to meet the needs of teachers and

students as well as to optimize fiscal and program resources during restructuring of the district.

f. Beginning with the 2005-2006 school year, MVHS shall initiate planning with a high school that has not made AYP under the federal *No Child Left Behind* law to convert to a virtual school that utilizes e-learning as the centerpiece for school reform. In the 2006 -2007 school year, the conversion shall be fully implemented.

A joint MVHS/high school team would be charged with developing and implementing the program to include the following components:

- Enrollment of 150-400 students total in grades 9 -12, perhaps a school within a school;
- Seek private funding;
- Curriculum must be rigorous, relevant and enable students to form meaningful relationships with adults;
- School must adopt rigorous standards for all students that mirror the Michigan President's Council and the Michigan Scholar requirements;
- Offer a variety of advanced placement courses;
- Encourage dual enrollment with colleges with the cost covered by the high school in partnership with corporate and private foundation funding;
- Establish individual learning plans for all students;
- Create a nurturing environment but not an "easy ride;"
- 90/90 expectation – 90% of students will graduate and 90% will pursue advanced education, trade school, certification or enter the military;
- Community Service – each student is expected to give back to the community;
- At least two courses per semester shall be e-learning, asynchronous learning with intermittent interaction between teacher and student using e-mail, chatrooms, online discussion groups or synchronous learning with a live instructor where students are logged on at the same time and communicate via a whiteboard, video, audio, or video teleconferencing;
- Become a model for using e-learning to deliver high quality professional development to teachers, administrators, and support personnel;
- Develop relationships with community based organizations, labor, business to assure access to technology;
- Work with the Michigan Department of Human Services to create a Family Resource Center at the site to provide for each family's psycho-social needs.

g. The highly interconnected world gets smaller every day. Most of the world is only an e-mail, instant message, phone call, or text message away. This

> "The skilled uses of technology in the classroom can offer students motivating, hands-on practice, and it can link students to the world far beyond their classroom and community."
> *Governor Jennifer M. Granholm*
> *State of Michigan*
> *www.michigan.gov*

international connectiveness, coupled with the global economy, requires a system of education that teaches educators and students with the same kind of connectivity.

In 2001, The National Commission on Asia in the Schools released an alarming report[35] that said that our nation's students are "dangerously uninformed about international matters," a fact that is particularly glaring in the case of Asia, a land mass that is home to more than 60% of the world's population.

> "There is a big change in the way people see the world: change in the way people live together. But for change to bear fruit, we need education on a global scale. Humankind will not recover from its mistakes without global education."
> *Rigoberta Menchi Turn,*
> *Nobel Peace Laureate*

In 2002, the Michigan Commission on Asia in the Schools,[36] comprised of representative members of business, higher and K-12 education, conducted an extensive study regarding students' knowledge of Asia. Surprisingly, students knew little about Asian customs, language, culture, religion, politics and economy in spite of the fact that Asia is fast becoming a major business and trade powerhouse.

In the foreword to John King Fairbank's book, The United States and China, Edwin Reischauer wrote, "The relations between these two great nations, their understanding or misconceptions about each other, their cooperation or friction will play a large part in determining the future of humanity."[37] America and Michigan need to develop cultural, scientific, educational and people-to-people exchanges with China that will result in economic prosperity for both countries. Michigan's efforts should be focused on creating a hospitable place for businesses to locate. Michigan must ensure the availability of a skilled workforce to attract Chinese investors.

Many public schools are doing an inadequate job not only in teaching math and science, but also in teaching student's about the world outside of the United States. Surveys conducted by The Asia Society and National Geographic Society show a huge gap in students' knowledge about the growing importance of Asia and other regions to our nation's economic prosperity.[38] Already, one in six American jobs is tied to international

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[35] National Commission on Asia in the Schools, Asia in the Schools: Preparing Young Americans for Today's Interconnected World. New York: Asia Society, 2001, p.6.

[36] Michigan commission on Asia in the Schools Report and Recommendations of the Michigan commission on Asia in the Schools,, Lansing, Michigan, Department of History, Arts and Libraries, 2002.

[37] John King Fairbank, The United States and China, American Foreign Policy Library, Harvard Press, Cambridge, Massachusetts and London, England, 1983, p xii.

[38] National Commission on Asia in the Schools, Preparing Young Americans for Today's Interconnected World, The Asia Society, New York, 2001; 2002 Global Geographic Literacy Survey, National Geographic/Paper, 2002.

trade.[39] Annual trade with Asia now equals more than $800 billion, a figure that has surpassed trade with Europe since 1979.[40] MVHS is taking steps to begin to address this need by creating a Chinese language course scheduled to be offered in early 2006.

> "e-learning is not just about school – it is about how you and your school are linked to the world."
> *A Michigan student*

The Progressive Policy Institute has called for a global Learning Media/ Technology Fund that would create and expand online and distance learning programs to deliver international content and language courses on a much wider scale.[41] The Asia Society has asked, "What would it take to have 5% of high school students learning Chinese by 2015" and have spelled out steps state policy makers can take to make this a reality.[42]

The Michigan State Board of Education passed a board resolution in 2004 supporting the value of international education and encouraging exchanges at the administrative, teacher and student level. E-learning can help connect teachers and students to their counterparts around the world. Clearly, technology has become the 21st century bridge connecting the world like never before. "In so many ways, IT (information technology) is the tool that makes it possible for educators to establish unprecedented links with distant educators. Educators are building global understanding and cultural awareness that are vital in today's connected world."[43]

> "For globalization to work for America, it must work for working people. We should measure the success of our economy by the breadth of our middle class, and the scope of opportunity offered to the poorest child to climb into that middle class."
> *John J. Sweeney*
> *President, AFL-CIO*

One such example of connecting Chinese and English learners is ePals.com, a Chinese-English Language Learning Portal. E-Pals currently has 55,000 native speaking schools from seven countries registered to connect to schools in China for e-learning project work.

Global awareness and knowledge, technological competency, problem solving and teamwork skills are required to thrive in a global environment.

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[39] State Export-Related Employment Project, International Trade Administration and Bureau of the Census, 2003.
[40] Foreign Trade Statistics, United States Census Bureau, 2004.
[41] Putting the World into Our Classrooms, A New Vision for 21st Century Education, Policy Brief, April 2005, Progressive Policy Institute, a project of the Third Way Foundation, www.ppionline.org.
[42] Expanding Chinese Language Capacity in the United States, The Asia Society, June 2005, www.askasia.org; www.internationaled.org.
[43] Technology counts 2004: Global Links – Lessons from the World, Bethesda, MD, Editorial Project in Education, May 6, 2004, p. 8.

European countries are now working together to share knowledge across political boundaries. This provides opportunities to motivate students to learn with and about each other.

As the world gets flatter, it is crucial that students have experience working with peers of different cultures, languages, religions and perspectives on the world. E-learning has the potential to open the world to our children. European countries have pursued an Internet twinning project as one method of meeting the challenges of a global economy. The goal of the twinning project is to have all secondary schools in Europe pair up to work on joint education projects via the Internet (www.etwinning.net). Michigan must race to catch up with other states and nations to optimize use of technology to connect its students.

> "You can't stop the waves, but you can learn to surf."
> *Anonymous*

Leadership Matters

In a strong, bi-partisan move, Senators Joseph Lieberman (D-CN) and Lamar Alexander (R-TN) introduced legislation that would encourage U.S. students to get to know their Chinese counterparts by exchanging ideas, discussing cultural differences and learning each other's language through e-learning applications and face-to-face exchanges. Called the United States-China Cultural Engagement Act of 2005, the bill authorizes $1.3 billion over five years to help make these exchanges possible. Supporters of this legislation should contact the bill's sponsors Sen. Lieberman (www.lieberman.senate.gov), Sen. Alexander (www.alexander.senate.gov) and Michigan Senators Carl Levin (www.levin.senate.gov) and Debbie Stabenow (ww.stabenow.senate.gov). In the rapidly changing world in which we live, the existing educational system needs to become less preoccupied with maintaining the status quo and more engaged in building a new future.

> "We can learn what we did not know. We are not only good at destroying the old world, we are also good at building the new."
> *Mao Tse-Tung, Founder, Peoples Republic of China*
> *March 5, 1949, Selected Works, Vol. IV, p. 374*

It is recommended that Michigan Virtual University, in partnership with the Michigan Department of Education, State Board of Education and the education and business community develop a pilot e-learning exchange course or school between a Michigan and a High School in Asia.

This virtual partnership will establish what Ted Sanders, past president of the Education Commission of the States (www.ecs.org) and Vivien Stewart, Vice President of Education Programs for the Asia Society

(www.asiasociety.org), refer to as exchanges where students can learn "with and not just about" each other.[44]

For reasons of illustration and personal interest China was singled out, this technology can and should be utilized to "learn with and about" other countries and cultures of the world. As an example, Michigan is the home of the largest Arabic population outside of the Middle East. Imagine the possibilities that exist to partner or, as the Europeans say, "twin" with schools in Egypt, the United Arab Emirate, Iraq, Kingdom of Saudi Arabia, Jordan, Qata, etc. Michigan has the opportunity to take the concepts Thomas Friedman[45] lays out in his book, The World is Flat, and make them come alive for our students.

It should be expected that every Michigan high school (if not all K-12 schools) should develop a partnership with a school in another country similar to the expectations of the European Union.

2. Professional Preparation

a. Teachers must have the skills and confidence to teach e-learning courses to Michigan students. It makes sense to impart that knowledge and experience during formal teacher preparation. The Michigan Department of Education should require all university teacher preparation programs to mandate at least two courses using e-learning technology for 50% or more of the coursework and that all future teachers demonstrate competence in developing and delivering an online course as a graduation requirement. MVU expertise in providing e-learning professional development is an untapped resource.

b. Legislation should be introduced that requires teachers to pass a skills assessment for licensure developed in collaboration with the Michigan Department of Education, Michigan Virtual University, Michigan Association of Computer Users in Learning, CyberMichigan, teacher organizations and other key education stakeholders. The assessment would demonstrate a teacher's knowledge and competence in integrating technology, in general, and e-learning, specifically. This legislation should be phased in over a period of time.

3. Supplemental Services

The NCLB law has set a target for all students to be proficient by 2013. Many schools are struggling to meet the increased demands for student achievement. At the same time, school districts are facing diminishing financial resources – they are being

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[44] Phi Delta Kappan, Volume 86, *3, International Education: From Community Innovation to National Policy, Ted Sanders and Vivien Stewart, November 2004, p. 203.
[45] Thomas Friedman, The World is Flat - Brief History of the Twenty First Century, Farrar, Straus and Giroux, New York, 2005.

asked to do more with less. To assist districts in complying with the NCLB law, the Michigan Department of Education and the intermediate school districts should enthusiastically encourage and assist in the development of e-learning options.

These options could focus on the provision of supplemental services (tutoring) for schools that have not met the adequate yearly progress targets under NCLB. (For additional information regarding *No Child Left Behind* supplemental service – tutoring requirements – visit the United States Department of Education's website at www.ed.gov/policy/elsec/guid/suppsvcsguid.doc.) In 2004, the Michigan Department of Education approved Michigan Virtual High School as an authorized supplemental education service provider under the federal NCLB legislation.

4. **Review the Law**

"The real digital divide is the gap that exists between schools and students."
Ferry DeRycke,
Dutch Education
Monitoring Body

If Michigan is serious about transforming its economy and assuring that its youth are prepared for the 21st century knowledge economy, it must be more aggressive in integrating e-learning into traditional education delivery systems. E-learning solutions are being used worldwide to supplement and enhance a local school's ability to provide quality education for all students. It should be the goal of Michigan policy makers to ensure that Michigan continue as an e-learning leader. **It is recommended that policymakers continue to review state laws, regulations and policies to determine if they facilitate necessary flexibility to harness the power of e-learning**.

As stakeholders move forward to recreate high schools, simple but powerful questions must be asked:

- Does the (law, policy, regulation, et al.) support the "system" or the student?
- Do laws and policies promote the digital revolution, boost technological innovation, enhance worker's skills and support entrepreneurship?
- Does the (law, policy, regulation, et al.) meet 21st century needs?
- Is limiting e-learning courses to two per student reasonable?
- If an e-learning provider meets standards, should students have unlimited access to their course offerings?
- Who should control the selection of an e-learning course – the parent/student or the local school?
- If a student masters course material in less than the standard time, should they be allowed to advance?
- What changes are necessary in the pupil accounting regulations and statutes to accommodate virtual learning applications?

Michigan Virtual University works in partnership with local and intermediate school districts. They alone cannot be responsible for re-thinking and re-tooling laws, regulations, statutes, etc. Concerted, comprehensive reviews of the legal

infrastructure supporting e-learning must be undertaken if Michigan is to continue as an e-learning leader.

> As the National Association of State Boards of Education warned in 2001 –
> *"In the absence of firm policy guidance on e-learning, the nation is rushing pell-mell toward an ad hoc system of education that exacerbates existing disparities and cannot assure high standards of education across new models of instruction."*
> (www.nasbe.org)

Evaluating Michigan's laws and regulations and changing those that impede student access to e-learning educational options would greatly enhance Michigan's system of public education. Students cannot be expected to sail into the 21st century if archaic laws are anchors that hold them down.

5. Changing Our Thinking

To improve opportunities for Michigan's students, we must be willing to change our thinking about education. Creativity, innovation and change must be rewarded. At the end of the day, rhetoric from Washington, D.C. or Lansing has never educated a single child. The biggest difference is made with the preparation, training and professional development of teachers. We must provide them with tools such as financial resources, small class sizes, updated educational resources and technology.

> "The foundation of every state is the education of its youth."
> *Diogenes, Greek Philosopher, Third Century, B.C.*
> *(www.chiselinstone.net)*

It is recommended that federal, state, corporate and foundation funds be pooled to create a $5 million fund for universities and intermediate school districts working with MVU and Michigan teachers to develop rigorous, relevant, quality, interactive e-learning curriculum.

6. Assessment/Online Testing

Expedient and accurate data allow a teacher and student to assess mastery of a given subject or concept. The data may be used to customize the instruction that a student requires. The Michigan Department of Education is piloting a program to allow students to take the MEAP test online. This is an idea that should be aggressively pursued. Michigan is poised to be a leader in the prompt turnaround of test data. In addition to personalized instruction where remediation is needed, teachers and administrators will also be able to pinpoint where professional development is needed.

It is recommended that the Michigan Department of Education and Michigan Virtual University collaboratively seek funding to appropriately review the prepared online MEAP testing and move to full implementation as soon as technically and fiscally feasible.

7. Federal and state departments of education are moving rapidly to push policies regarding technology deployment and e-learning. Local districts, straining with flat or declining budgets, struggle to implement these changes. As e-learning grows, it is essential that Michigan Virtual High School update their template of sample policies and procedures for local district use. As well, the Michigan

Department of Education must maintain current guidelines for virtual schooling. Schools know that e-learning is an essential tool and are seeking guidance on how to implement it. Since 1999, MVHS reports more than 450 urban, suburban or rural districts have used one or more MVHS courses or online learning tools.

It is recommended that the Michigan Department of Education, intermediate school district leaders and MVHS convene a representative group of educators, e-learning experts and representatives of professional education organizations to seek input for updating the Guidelines for Virtual Schooling and to draft best practices that may be adopted by local school districts.

8. **Marketing – Educating Michigan Citizens**

Do educators outside of the e-learning circle know about its benefits? There is an old adage that if a tree falls in the woods and no one is there to hear it – did it make a sound?

a. One way to create a major sound in marketing and modeling e-learning is to engage the Governor's bully pulpit. The Governor could use e-learning technology to deliver an education/economic message to educators including the Michigan Association of School Boards, Michigan Association of School Administrators, Michigan Education Association and the Michigan Federation of Teachers.

During an online learning event that employs technology and models innovative teaching and learning tools, the Governor could call on participants, see work in progress, respond to questions and share information. The Departments of Education and Information Technology, Michigan Virtual University and local districts could work together to create a dynamic, interactive process that reinforces the need for all Michigan students to be prepared to use technology to succeed in the 21st century knowledge economy.

On August 10, 2005 the NASDAQ Stock Market opened and closed its trading session outside New York. Cisco's CEO John Chambers, along with 2000 Cisco employees, rang the bell to signal the start of trading using virtual technology. This "virtual" open demonstrates the power of technology to change the way that we live, work, play and learn in the 21st century.

b. The State Board of Education should lead the way by seeking grants from foundations and corporations to fund transformation of the State Board of Education's board room into a model technological learning center. The center will incorporate board material that is sent to laptops, video streaming that is included into presentations and an opportunity for teachers, parents and students to participate in Board discussions and public participation from their computers. The State Board of Education should model and lead the way in the uses of technology and e-learning.

c. In order to share e-learning with the general public, State Board of Education and Michigan Virtual University, in collaboration with local school districts, should set up temporary virtual classrooms in public venues across the state. Shopping malls, town halls, cultural institutions, libraries, senior citizen centers and business lobbies are venues where e-learning could be demonstrated to citizens without ties to public education. Campus Martius in downtown Detroit is one such example. It is time to take public education out of school buildings to demonstrate how accessibility to learning any time, any place and any pace is transforming our world.

d. The State Board of Education, Michigan Virtual High School, the Michigan Association of Computer Users in Learning and Cyber Michigan should establish an e-learning awards programs that highlights quality e-learning instructors, programs, and schools that are increasing academic achievement through the use of e-learning.

e. Public education is changing and needs to change faster to keep pace with technology-savvy students. An important role for public education is convincing Michigan's citizens of the relevance of technological change to our collective futures.

Michigan Virtual High School, in concert with local school district partners, must play a vital role in reinforcing key messages outlined in the Lt. Governor's Commission Report on Higher Education and Economic Growth.[46] The December 2004 report identifies strategies to double the number of Michigan residents earning college and post-secondary degrees and credentials within the next decade.

It is recommended that the MVHS re-launch itself to the public in a campaign that includes:

1. Imparting knowledge about e-learning to legislators;

2. Delivering keynote speeches to school boards, local and intermediate school superintendents, principals, and guidance counselors and virtually anyone else who will listen with facts that will dispel the myth and mistruths about e-learning and Michigan Virtual High School;

3. Develop a communications plan that reinforces the Lt. Governor's Commission Report and the need to embed technology into our schools that includes editorial board meetings, talk show appearances, feature articles as well as education and business columns.

f. To focus attention in e-learning and to remain a leader in this new education

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[46] Lt. Governor's Commission Report on Higher Education and Economic Growth, December 2004.

(r)evolution, Michigan Virtual University and Michigan Virtual High School, along with the Michigan Department of Education, State Board of Education, Governor and Legislature, business partners and other education stakeholders, should organize an international e-learning conference. A planning committee should be organized to set the agenda and program.

The European Union's e-learning conference held in Brussels, May 19 - 20, 2005 (www.elearningconferenceorg/index.htm) serves as an example to guide in the planning of Michigan's e-learning conference. The European Union's conference convened a cross section of e-learning experts and education stakeholders to provide a forum for sharing experiences, exchanging best practices and for taking stock of the added value of using information communication technology in education and training. Students were active in the planning and evaluation of the European Union's e-learning conference. The conference was organized to help the European Union become the world's most competitive and dynamic knowledge-based economy by 2010.

The goal is to create a cadre of change agents, both inside and outside of school, who clearly understand the necessity for change. **Our schools cannot be "our father's Oldsmobile" if Michigan is to lead in the future.**

9. Evaluation and Accreditation

a. As the advent of e-learning takes hold, high, measurable standards must be employed. What are the success criteria for the virtual high school, the host high school, the virtual teachers and the mentor/teacher? Michigan Virtual High School is in the process of attaining formal accreditation. This is a multi-year process that involves data collection, site visits, interviews, in-depth program evaluation as part of the Commission on International and Trans-Regional Accreditation's (CITA) evaluation process. This certification is tantamount to a "good housekeeping" seal of approval. It is important that funding be available in support of this accreditation.

MVHS emphatically states that the CITA accreditation will assist in responding to questions about course quality, program expectations and outcomes, alignment with standards, institutional capacity and business practices.[47] Accreditation of MVHS by CITA is anticipated by year end 2005. This process must be on-going to assure quality e-learning experiences for Michigan's children. To date, the Michigan Virtual High School has received "candidacy status" and an accreditation site team visit has been scheduled for October 2005.

b. Michigan Virtual University has secured private funding to examine the use of data in online high school courses. It is important that continuous effort be

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[47] Development of Michigan Virtual High School, 1999 - 2005, report to Michigan Department of Education, April 15, 2005

made to document the quality and effectiveness of online courses. These findings must be shared with all stakeholders including the Governor, legislature, school districts, teachers, parents and students.

10. **Public Act 230 of 2000 authorized the creation of Michigan Virtual High School.** Today, MVHS is the nation's second largest virtual high school. During 2003-2004 MVHS provided online courses to nearly 7000 students in 400 high schools throughout Michigan. Since its inception, it has served in excess of 20,000 students with online, semester length courses and more than 125,000 students with MEAP, ACT, SAT or PSAT review tests.

In spite of this growth, during the course of this study a lack of information, misinformation, myths and mistruths about e-learning, in general, and MVHS, specifically, were uncovered.

a. It is recommended that MVHS conduct an aggressive re-launch of its products and services as detailed in the previous section on Marketing.

"To share is to multiply…if you put people's knowledge together, you get a multiplier effect."
K2 Corporation
(www.k2.org)

b. As part of MVU's commitment to quality teaching and learning, an annual survey should be conducted by an independent agency. Survey data should measure success with regard to course rigor, alignment to Michigan standards, quality of materials, instructor responsiveness, student satisfaction, pass and completion rates and technical support. The data should be reported publicly.

c. To ensure public accountability, MVU should annually report critical demographic data on students served. The report should include, but not be limited to, reporting of gender, race, ethnicity, students receiving free or reduced lunches, schools meeting adequate yearly progress targets, and the number of students using e-learning supplemental service options. A literature review of e-learning and closing the achievement gap indicates that many states are collecting, disaggregating, analyzing and reporting just such data already. It is important that policy makers have this data at their disposal so they may make informed decisions governing e-learning policies.

11. **Assessment of E-Learning Resources**

E-learning is evolving and expanding every day. This exceptional growth is illustrated by the proliferation of websites over the past five years (see section entitled e-learning websites). Chapter 15 outlines five approaches that have been established to assist in the analysis of e-learning instructional solutions.

a. **It is recommended that Michigan establish a statewide process for periodic review of online instructional solutions**. Subject matter and technology should be examined using a multidisciplinary approach. It is important that as

new e-learning tools emerge, a dynamic, statewide, collaborative process be established to ensure high standards. The current review process, if done at all, is done by the school districts or the intermediate school districts. It is duplicative, ad hoc, costly and overly reliant on vendors.

b. At the end of the day, the quality of an e-learning course, like a traditional face-to-face course, is dependent on the quality of the instructor. Even a great classroom teacher must be given the appropriate knowledge to effectively use e-learning. There must be initial as well as on-going professional development. Opportunities for teachers to share best practices, challenges and solutions, and students' experiences should be scheduled regularly.
Guidelines for evaluating K-12 online teachers have been developed by the Southern Regional Education Board (SREB). The guidelines are based on the SREB's Essential Principals of Quality with the assistance of their Educational Technology Cooperative representatives. These representatives have hired, trained and evaluated teachers of web-based courses. Keep in mind that all teacher evaluation systems must comply with collective bargaining agreements. It goes without saying that they must also be fair, valid, reliable and implemented after engaging teachers. Steps must be taken to ensure that teachers have been properly trained and feel prepared to teach e-learning courses.

It is recommended that MVU's existing plans for instructor monitoring and evaluation be expedited and institutionalized as soon as possible. It is critical to the growth of e-learning in Michigan that only the best teachers are hired. **Teachers must be given orientation, on-going professional development and appropriate monitoring, evaluation and supervision**.

c. The recommendation for initial orientation, on-going professional development, monitoring and evaluation of teachers is equally important for the MVHS mentors at the local schools. **It is recommended that a best practices handbook be developed that spells out the responsibilities, expectations, skills and attributes required of a mentor**. An evaluation process should also be detailed.

d. Nothing will halt the momentum of e-learning faster than discovering inappropriate interaction between an e-learning teacher and student or finding an e-learning teacher with a criminal record.

It is recommended that MVHS continue to conduct a thorough background check of all e-learning teachers. This must include individual teachers contracting to teach or non-profit or for-profit vendors.

e. Under *No Child Left Behind*, teachers who teach core academic subjects (reading, language arts, science and math) must meet "highly qualified" requirements by the 2005-2006 school year. Accordingly, this provision of *No*

Child Left Behind requires teachers to possess a bachelor's degree, be certified in the subject/grades they teach, be licensed to teach in that state, demonstrate knowledge and teaching skills and not teach with a temporary, emergency or provisional license. It is estimated that Michigan may have three to five thousand teachers who will fail to meet the "highly qualified" requirements**.**

It is recommended that Michigan Virtual University develop appropriate professional development to assist these teachers meet the "highly qualified" criteria.

> "There is a new fervor in American education, a new creativity – driven in part by this generation of tech-savvy students – that bodes well for the future of our country. We must listen to our students"
> *Susan Patrick, Director,*
> *Office of Educational Technology,*
> *United States Department of Education*
> *(www.ed.gov)*

12. The Michigan Department of Education is updating the Statewide Technology Plan. The planning process is engaging and collaborative and involves a host of stakeholders. Completion is anticipated by the end of 2005.

It is recommended that:

• The Michigan Department of Education mirror the United States Department of Education action and seek the input of students in developing the technology plan. An online survey process (http://www.netday.org) was used to solicit student's thoughts. The voice of students is often overlooked in policy debates between educators, policymakers and planners. Listening to end users and actively seeking their input will strengthen the final product.

• The Michigan Department of Education's Education Technology Plan should incorporate recommendations from the United States Department of Education's 2004 Technology Plan—Toward a New Golden Age In American Education: How the Internet, the Law and Today's Students are Revolutionizing Expectations.[48]

They include:

     i.   Provide every student access to e-learning;

     ii.   Enable every teacher to participate in e-learning training;

     iii.   Encourage the use of e-learning options to meet *No Child Left Behind* requirements for highly qualified teachers, supplemental services and parental choice;

     iv.   Develop quality measures and accreditation standards for e-

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[48] The National Education Technology Plan is available at http://www.nationaleducationtechplan.org

learning that mirror those required for course credit.

- The Education Technology Plan be accompanied by a document that identifies budgetary needs and likely funding sources that will assure implementation.

13. The tuition cost for MVHS and other e-learning options was identified as a barrier to establishing or expanding this program. This was particularly true in urban schools with lower per pupil foundation allowances and higher percentages of low income student populations.

To expand e-learning in under performing high schools that are not meeting the adequate yearly progress targets under No Child Left Behind, **it is recommended that the legislature consider no fee tuition access to MVHS online courses for this population or assess a significantly lower fee and direct school districts to use federal Title I funds to cover the expense.**

> "If we move slower than our global peers, we will be left behind. That's the economic danger. It's about jobs and the economic future of our country."
> *John Chambers, President and CEO, Cisco Systems*

The school would be expected to develop a comprehensive school improvement plan built around the use of e-learning. The intermediate school district and the State Department of Education would approve the plan prior to implementation.

14. James M. Kouzes and Barry Z. Posner state in their book, The Leadership Challenge, that when getting things done in organizations, leaders engage in Five Practices of Exemplary Leadership:[49]

> "By early 2007, Oakland County, Michigan will blanket the county's entire 910 square miles – making it the largest project of its kind in the nation. Wireless Oakland is a cyber tiger whose roar will be heard around the world."
> *L. Brooks Patterson, Oakland County Executive*
> *www.co.oakland.mi.us*

- ➢ Model the Way
- ➢ Inspire a Shared Vision
- ➢ Challenge the Process
- ➢ Enable Others to Act
- ➢ Encourage the Heart

If you can dream it – you can make it reality. Michigan needs to unleash its creativity, innovation and risk tolerance to dream of a day when every student and teacher will be empowered with wireless mobile learning. Learning should not be hampered by time, place or space.

The Governor and legislature should lead the vision that over the next decade Michigan's goal will be to provide every middle and high school teacher and student with a wireless mobile device so that learning is accessible 24/7. A day must be envisioned where technology will be as accessible to teachers and students as chalk and pencils are today. Michigan's goal should be to lead the education technology – e-learning revolution. With leadership, this can be Michigan's reality.

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[49] James M. Kouzes and Barry Z. Posner's book, The Leadership Challenge, p. 5.

15. Establish a pilot program at a suburban and urban school district in Oakland County that builds upon Oakland County Executive L. Brooks Patterson's vision to be a wireless county. The county executive is showing great public leadership supported by private entrepreneurs that will prepare Oakland County for the 21st century.

> "Equipping every teacher and
> Every student with a laptop has
> The potential to revolutionize
> Michigan's system of education."
> *Bruce Montgomery, Executive Director,*
> *Freedom to Learn, Ferris State University*
> *(www.ftlwireless.org)*

Equip every middle and high school student within a district with a mobile device that will make learning available any way, any place, any time and any space. The funding for this project may come from Michigan Economic Development corporation grants, business and private foundations, public-private partnerships and, if necessary, the School Aid Fund. The state should follow the local leadership of county executive L. Brooks Patterson and invest in the future for our students.

16. From an economic perspective, development of a vibrant e-learning sector holds great promise. With the investment of millions of dollars from the Michigan Economic Development Corporation in MVU and the links between K-12 education, our universities, and the business, government and research communities, Michigan is poised to be a major player in the emerging e-learning arena, but only with continued policy and fiscal support and leadership.

> "Business success today
> is not about the big beating
> the small, but about the agile
> outrunning the slow."
> *Nick H.M. VanDam,*
> *Chief Learning Officer, Deloitte*
> *Touche Tohmaton and founder*
> *of e-learning for kids*
> *(www.e-learningforkid.org)*

Michigan's Economy Has Gone Global

There is a shift in the economy from a reliance on heavy lifting manufacturing jobs to a knowledge-based economy where citizens must be able to think for a living. E-learning can help create future employees who are prepared for high technology jobs. Michigan has the second highest unemployment rate in the nation; yet we have thousands of unfilled, high paying jobs because of a mismatch between unemployed and underemployed workers and the skills and knowledge required by employers.

Former Governor John Engler, now president of the National Manufacturers Association (NMA), said, "The emerging employment problem in manufacturing is not a shortage of jobs, but rather a shortage of qualified applicants…A full 36% of NMA members said they have employment positions unfilled because they cannot find qualified workers. This confirms what our members have been saying for years – that the people applying for manufacturing jobs today simply do not have the math, science and technological aptitude they need to work in modern manufacturing."[50]

Jerry Jasinowski, president of NAM's Manufacturing Institute adds, "…while the departure of low-level manufacturing jobs to China and India has received much

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[50] National Association of Manufacturing Press Release, March 7, 2005. www.nam.org.

attention, manufacturers like Dell, Motorola, Honeywell and Harley-Davidson need employees with technical skills to create high-end, cutting-edge products that beat the global competition."[51] The NAM has created a national campaign, Dream It – Do It (www.dreamitdoit.org) to help young people identify what they are passionate about and to utilize career resources to find careers in manufacturing where starting pay is about 20% higher than average.

Competitive states and nations are ahead of Michigan because they have created widely accessible public education and skill development through the extensive use of e-learning. There is a natural convergence of workers in need of skills that may be easily offered by the use of e-learning. E-learning has the potential to reduce the gap between the skills and knowledge individuals have and the skills and knowledge required by employers.

"e-learning is key to generating growth and jobs for the knowledge-based economy and to developing a well educated, skilled and adaptable workforce."
Viviane Reding, European Commissioner for Information, Society and Media

Michigan must create a covenant between its citizens, businesses and government to harness the power of the technological, information based global economy to make it work for citizens seeking employment in the future. It must also fast forward its restructuring of tax, business and Pre-K-20 reform, worker retraining and lifelong learning opportunities to raise the productivity of knowledge, and income of its citizens in response to the opportunities and challenges that the disruptive, technological driven, knowledge, world economy presents.

In 2000, the National Governors Association (www.NGA.org) and the American Society for Training and Development (www.astd.org) produced a report, "A Vision of E-learning for America's Workforce, Commission on Technology and Adult Learning."[52] The report may be used as a foundation for Michigan as it harnesses e-learning as an education and economic development driver.

The report states that:

1. e-learning can broaden opportunities for skill development and employment in high quality jobs for all segments of the population, contributing to income growth, improved lives and a more informed and contributing citizenry;
2. e-learning can play a vitally important role in equipping workers with the skills they need to succeed in the 21st century digital economy;
3. e-learning can increase worker's knowledge and skills so they can be more productive, find and keep high quality jobs, advance in their careers and have a positive impact on the success of their employers, their families and

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[51] National Association of Manufacturing Press Release, February 3, 2005.
[52] National Governors Association (www.NGA.org) and the American Society for Training and Development (www.astd.org) report, "A Vision of E-learning for America's Workforce, Commission on Technology and Adult Learning," 2000.

communities;

4. E-learning can broaden access to high quality education and training opportunities and, in turn, boost income growth at all levels.

E-learning has the dual potential of creating knowledge jobs that Michigan needs to create and training and retraining unemployed or underemployed people to prepare them for the jobs of the future. With advances in communication technology and the Internet, the world has been flattened. Service jobs are as likely to be outsourced as manufacturing jobs. Many people focus on the astounding double digit economic growth China is experiencing. The real story of the determination and commitment the Chinese have to educate their children to world class standards is missed. Jeffrey Colvin, Senior Editor at Large for *Fortune* Magazine drives home this point when he said, "China will produce 3.3 million college graduates this year, India 3.1 million (all of them English speaking), the U.S. just 1.3 million.

In engineering, China graduates over 600,000, India 350,000 and America only 70,000."[53] In an increasingly global and competitive world economy, work will continue to flow to countries, states and regions with educated, skilled workers and low wages.

Today's economy places value on broad knowledge and skills, flexibility, cross-training, multitasking, teaming, problem solving and project

> "In the knowledge economy, an educated citizenry is critical to success. If a community does not get smarter, it WILL get poorer"
> *Conclusion from the Michigan Knowledge Economy Index published by Michigan State University Community and Economic Development Program, July 2004*

based work according to the National Skills Standards Board.[54] China, due to its population size and recent entry into the world economy, may win the low cost wage battle, but Michigan can prevail with a womb-to-tomb investment in education, job training, retraining and lifelong learning. **Michigan's future lies in our ability to be creative and innovative and to imagine and invent.** Workers must be equipped not simply with technical know-how, but also with the ability to create, analyze and transform information and to interact effectively with others. Moreover, that learning will increasingly be a lifelong endeavor.[55]

A *Detroit News* article quote from Lou Glazer, president and CEO of a think-tank focused on Michigan's workforce trends, Michigan Futures, summed up the plight of Michigan's workers, "…the path to the middle class – a high paying, low skilled factory job – is over. Period – its dead."[56] The Progressive Policy

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[53] Jeffrey Colvin, "Can America Compete, Is America the World's 97 lb. Weakling?, Fortune Magazine, July 25, 2005, Vol. 151, No. 15.

[54] National Skills Standards Board, Using Skills, Standards, and Certifications in Workforce Investment Broad Programs, 2002.

[55] "The Evolving Demand for Skills," remarks by Alan Greenspan at the United States Department of Labor National Skills Summit, April 11, 2000.

[56] *The Detroit News*, Hard Times in Michigan - Jobless Struggle To Find Work, Louis Aguilar, July 21, 1005, p.1.

Institute's Technology and New Economy Project (www.neweconomyindex.org) offers a number of strategies and creative ideas that may help move Michigan forward.

1. The Governor should consider appointing a task force that will produce a business plan within a three month period focused on harnessing the power of e-learning to train and retrain Michigan's workforce to thrive in the global, technology driven, knowledge economy. Membership may include representatives from the Department of Labor and Economic Growth, Department of Education, major research universities, MVU, Department of Information Technology, business sector, legislature, and labor and any others with a vested interest in ensuring that Michigan has access to a skilled workforce.

   Suggested meeting venues include The Henry Ford where creative, innovators like Thomas Edison, Harvey Firestone and Henry Ford are celebrated as geniuses who helped change the world and the Rivera Court at the Detroit Institute of Arts where the artistic expression of Diego Rivera captures Michigan's automotive history. The murals depict the world's largest industrial complex, the Ford Rouge Plant, and the men and women who helped transform a nation.

2. A massive public-private fund should be established to invest in the education, training and lifelong learning of Michigan citizens uprooted by technological change and global competition. It is not likely that Michigan workers can follow jobs offshore. Collective creativity must be used to create new knowledge jobs in Michigan and to assure that workers and students are prepared for them. There is no better investment for Michigan's future than investing in womb-to-tomb education and retraining employees displaced from work due to global forces and a lack of marketable skills.

3. Redirect existing adult education resources to have MVU develop e-learning course modules that would be distributed through libraries, schools, community colleges, community centers, faith-based centers and work training unemployment offices. The material would have the capacity to prepare individuals to take the GED, increase reading and writing skills and increase numerical skills.

> "If we are to achieve results never before accomplished, we must employ methods never before attempted."
> *Sir Francis Bacon*

The state that helped put the world on wheels will not rust away if the creative, innovative spirit of its people can be tapped. Their energy must be directed to creating a brighter future rather than clinging to the past. Michigan must embrace e-learning and globalization. It must not run from it.

17. Embedding Technology in the Classroom

A recurring theme heard from teachers, administrators, curriculum directors and information technology staff was the lack of quality, timely, useful professional development to effectively integrate technology, generally, and e-learning, specifically, into the daily educational routine to enhance teaching and learning.

In 1988, Public Act 339 gave the Michigan Department of Education the ability to levy a fee of $125.00 for the initial teacher certificate and a $25 fee for teacher permits. These fees are to be used for the operation of the Michigan Department of Education teacher certification office, teacher and administrator professional development and other quality related activities. These fees have not been increased since the inception of the program. An increase of $25 for the teacher certificate and $5 for the permits would generate $700,000 annually.

It is recommended that the Governor and legislature increase these fees by at least the amount mentioned above and that additional revenue be earmarked for professional development, generally directed at embedding technology in the classroom and, specifically, on utilizing e-learning to enhance academic achievement for Michigan students.

It is further recommended that the State Board of Education appoint a technology professional development advisory panel consisting of members of the Michigan Education Association, Michigan Federation of Teachers, Michigan Association of Computer Users in Learning, CyberMichigan, Michigan Association of School Administrators, Michigan Principals' Associations (both elementary and secondary) and Michigan Virtual University to advise the Superintendent of Public Instruction and State Board of Education on the investment of these funds.

18. Providing Resources for E-Learning

Tight budgets resulting from structural budget challenges, Michigan's economy and the highest unemployment rate in the nation as well as federal cuts or status quo education funding make new money for funding e-learning unlikely. Competitors in other states and nations are leap-frogging Michigan's early investment in e-learning. They are exploiting technology to advance their educational and economic competitive edge.

Technology has leveled the playing field. Michigan needs to be on the cutting edge to make technology work to its advantage. The opportunity exists for Michigan's schools to transcend the boundaries of time and space. With e-learning technology, schools may now provide any place, anytime quality education options for ALL students.

The students of Detroit, Bloomfield, Pontiac, Grand Rapids and Flint are not competing with students in adjacent districts. They are competing with students across the world. **A school district that does not exploit the power of any time, any place learning is putting its students at a significant disadvantage in the highly competitive global world economy.**

Today's students will confront a rapidly changing information, knowledge and technological world that will defy predictability. It is our collective responsibility to make certain students are well prepared. To thrive in the global economy, Michigan will require bold leadership that challenges the status quo with regard to general education and e-learning.

It is recommended that Michigan:

1. Embrace the United States Department of Education's National Technology Plan to assure that every high school student be provided access to e-learning.

2. To begin this process, allocate half of one high school student's per pupil state funding allocation in the 2005-2006 school year to develop e-learning access and opportunities for students.

3. In the 2006-2007 school year raise the above allocation to 100% of one student's per pupil funding (FTE).

4. Schools are free to choose from any e-learning vendor who:

   o Is accredited by a national accreditation body recognized by the Michigan State Board of Education
   o Offers courses that meet the rigorous Michigan Benchmarks and Standards

5. Reserve resources for an independent evaluation and review regarding how e-learning courses compare to traditional courses in preparation for college or work, performance on standardized tests and in meeting Adequate Yearly Progress (AYP) targets required by *No Child Left Behind* and Michigan's Accreditation Program.

6. If a high school chooses not to use resources set aside for e-learning opportunities for their students, the money would be returned to the Michigan Department of Education and redeployed to high schools desiring to expand e-learning.

7. For Michigan to regain a leadership role in education innovation and transformation, it must remain financially and politically committed to successful programs such as e-learning and the Freedom to Learn Laptop initiative that optimize return on research and development investment. Programs must be investments for the long haul rather than momentary political promises. If Michigan wants to lead in the 21st century, it must make

long-term commitments from visionary leadership and financial investments; otherwise, cynicism among teachers and students may be created rather than the reward and incentive that was intended.

> "The e-learning revolution will forever change the way we think about and engage in education." *Gene I. Maeroff, Founding Director – Hechinger Institute on Education and Media – Teacher's College, Columbia University and author of Classroom of One, an insightful book on e-learning.*

E-Learning and Other Helpful Websites

        To understand how fast the world is moving and how rapidly knowledge is created one need look no further than the proliferation of e-learning organizations that have sprung up over the last decade. There are a multitude of organizations that have evolved at the local, state, national and international levels to support online e-learning solutions. The thrust and mission of these organizations include information knowledge sharing, advocacy, content and curriculum development, technical support, professional associations, research and policy development.

        The following list of websites and organizations is intended to be a resource to policy makers and local school districts contemplating establishing or expanding e-learning. No endorsement of any site, product or service is intended.

www.aace.org	Association for the Advancement of Computing in Education
www.aasiant.org	The Association for Asian Studies is the largest society in the world – a scholarly, non-political, non-profit professional association open to persons interested in education about Asia that is a valuable teaching resource about Asia
www.achieve.org	Achieve, Inc., created by the National Governors Association, prepares students for the 21st century knowledge economy
www.adl.org	Advanced Distributed Learning, a collaborative effort to harness the power of information technologies to modernize structured learning
www.aed.org	A link between the problem and the solution, helping to build capacity of individuals communities and families – connecting people, creating change
www.aft.org	American Federation of Teachers Website
www.albawaba.com	E-learning in the Arabic-speaking world
www.aliapple.com	Apple learning interchange for teaching and learning

www.all4ed.org	Alliance for Excellent Education
www.alt.ac.uk	United Kingdom Association for Learning Technology
www.amdg.ws	Provides Internet and site based programs to learners of all ages
www.amered.com	Provides assessment tools and core curriculum to match all skill levels for all students
www.americaconnects.net	American Connects Consortium dedicated to use of information technology to improve achievement in education
www.answers.com	Fast answers and facts to any question imaginable
www.aohs.state.al.us	Alabama Virtual High School
www.aolatschool.com	Web-based service for teachers and students with over 32,000 resources and 10,000 lesson plans and professional development opportunities
www.apexlearning.com	e-learning service provider
www.aplusmath.com	Developed to help students improve math skills interactively
www.astd,org	American Standards for Training and Development. an e-learning community
www.atomiclearning.com	Staff development
www.aventurelearning.com	Deploys virtual learning technology supplements in the classroom and credit recovery
www.babbagenetschool.com	Babbage Net School is a virtual high school
www.benton.org	The Benton Foundation is dedicated to advocating for a public vision for the digital age
www.blackboard.com	Software company for E-learning
www.brainpop.com	Animated video clips to stream for lesson

	supplements
www.brookings.edu	The Brookings Institute, independent research shaping the future
www.campusk12.com	Campus K12: CK12 Teacher Campus provides a virtual learning community with powerful features designed to ensure professional development success.
www.cancore.ca	A Canadian website that enhances the ability of educators to locate material from online collections of educational resources
www.caret.org	Center for Applied Research in Education Technology
www.casenex.com	Collaborative online approach to professional development
www.cgcs.org	Council of large urban school districts
www.childrenspartnership.org	Research, analysis and advocacy to place the needs of children at the forefront of emerging policy debates
www.ciconline.org	Cable in the Classroom. The Cable Industry Education Foundation
www.cisco.com/go/education	Full array of education solutions including Cisco Networking Academy, a comprehensive e-learning program
www.class.com	Provides e-learning solution, credit recovery, alternative education, virtual school and achievement gap information
www.class.usa.com	Information on Online education at the college level
www.clrn.org	California Learning Resource Network – one stop shop for California educators for supplemental e-learning resources
www.cmu.edu.oli	West Ed Distance Learning Network

www.cnets.ite.org	National education technology standards for school administrators
www.cnx.rice.edu	Worldwide collaborative of free course content from pre K – college
www.coatt.org	Consortium for Outstanding Achievement in Teaching with Technology
www.coe.wayne.edu	Website for the College of Education at Wayne State University
www.col.k12.co.us	Colorado Online Learning
www.columbia.edu	Columbia University offers a gateway to selected electronic learning resources developed by faculty
www.compasslearning.com	Technology solutions and research based assessment, aligned pK-12 curriculum and comprehensive reporting
www.compuhigh	Provides an accredited e-learning high school diploma program
www.concord.org	Create interactive material for IT focused on digital equity
www.connectionacademy.com	National provider of virtual public school for grades K-8
www.contentbank.org	For people who work in community based organizations in need of online resources to assist clients
www.cosn.org	Non-profit organization to advance K-12 use of technology
www.creativecommons.org	Share work online
www.ctcnet.rog	Network of over 1000 organizations dedicated to improving quality of life in their communities through technology
www.ctredpol.org	Center for Education Policy

www.cybermichigan.org	Cyber Michigan is focused on bringing the public, private and not for profit sectors together to assure quality access to information and communication technology
www.cyberwisdom.net	Complete e-learning and knowledge management solutions; market leader for e-learning solutions for business, education and government in the Peoples Republic of China
www.dell4k12.com	Shows how multi-media tools allow students and teachers to optimize learning
www.desire2learn.com	E-learning vendor offering complete learning management system
www.detc.org	Distance Education and Training Council
www.digitalthink.com	Creates e-learning solutions and course for private and public companies
www.distance-educator.com	Reinventing distance education since 1970
www.dlrn.org/virtual.html	List of virtual schools
www.downes.ca	Canadian digital research laboratory for the use of online media in education
www.e4l.org	European Institute for e-learning
www.eclassroom.com	Provider of education solutions for virtual schools and online professional development
www.ecollege	Provides necessary technology and service to power the growth of online distance learning
www.edc.org	International nonprofit dedicated to enhancing learning, promoting health and fostering a deeper understanding of the world
www.ed.gov	U.S. Department of Education website
www.eden-online.org	European Distance and e-learning Network

www.edreform.net	Free resources on education reform including best practices
www.educause.edu	Advanced learning through IT Innovation
www.educationindistry.org	Education Industry Association, a professional network of education related businesses
www.edpolicylab.org	Arizona State University shares research about student performance standards, assessment, curriculum and language policy issues
www.education.state.mn,us/html/intco	Minnesota Department of Education
www.eflexlearning.net	Australian Flexible Learning Framework supporting e-learning opportunities
www.e-framework.org	Australian government Department of Education Science and Technology
www.ejel.org	United Kingdom's electronic journal on e-learning which provides prospective on topics relevant to the study, implementation and management of e-learning
www.elearnactivity.com	Where adult learning productivity, creativity and activity meet online
www.elearningalliance.org	Scotland's e-learning membership association
www.elearningavenue.com	Opportunities for adult learners in business, life science, industry, programming, etc.
www.elearning.campussource.de	E-learning and education journal
www.elearningcenter.co.uk	E-learning resource from the United Kingdom
www.elearningeuropa.info	Information and communication technologies to improve learning; an initiative of the European Commission
www.e-learningforkids.org	Nonprofit learning tools for teachers, students and parents created by Nick H.M. Van Dam, Chief Learning Officer for Deliotte Touche

Tohmatsu

www.elearningforum.com	Promotes understanding and uses of learning in industry and government worldwide
www.elearningguru.com	Actionable information from e-learning experts
www.elearnspace.org	Explores e-learning, knowledge, management, networks, community and technology
www.elearningspace.org	Comprehensive resource for K-12, higher education and corporate applications
www.elearnopedia.com	World Wide e-learning resources
www.elementk.com	Integrated online professional development
www.elig.org	European e-learning Industry Group
www.elluminate.com	Web Conferencing and e-learning solutions for real time organizations
www.epathlearning.com	Easy to use tools and services that enable subject matter experts to build, deliver and manage e-learning solutions
www.eschoolnews.com	Monthly newspaper to help K-20 decision makers use technology to transform schools and reach goals
www.escore.com	Education Center using technology in K-12 to make learning fun
www.etap.org	Electronic Teaching Assistance Program aligned with state standards for K-12 curriculum
www.etutor.com	K-12 Internet education program for students, parents and educators
www.etwinning.net	European school partnership where two schools from different countries use e-learning to advance knowledge

www.eirodl.org	European journal on open, distance and e-learning
www.ePals.com	Chinese/English Language and Learning portal providing e-learning resources to teachers, parents and students.
www.explorelearning.com	Catalogue of modular interactive simulations in math and science for teachers and students in grades 6-12
www.fathom.com	Provides a range of online content material developed by member organizations including the University of Michigan, RAND Corporation and the London School of Economics
www.flvs.net	Florida Virtual School
www.fpa.org	Foreign Policy Association dedicated to teaching Americans about the world via an educator's corner
www.fltwireless.org	Michigan's one to one wireless technology program designed to engage students
www.futurekids.com	Creating a worldwide e-learning community that improves student performance
www.futureofchildren.org	Publication of the Woodrow Wilson School of Public Policy and International Affairs at Princeton University
www.gaillovely.com	Online resources for early learners
www.games2train.com	Games based learning approach
www.gatesfoundation.org	Bill and Melinda Gates Foundation
www.geant2.net	European backbone network with Europe's research and education networks
www.geneseeisd.org	Genesee Intermediate School District's network for telecommunication that transmits voice, video, data over fiber optics connecting

	21 school districts
www.glef.org	Teaching in a digital age sponsored by the George Lucas Foundation
www.goknow.com	Provider of educational software, curriculum and professional development for handheld computers
www.gotoiq.com	Wisconsin's largest charter cyber high school
www.govhs	Virtual high school, a non-profit collaboration of high schools, teachers and students
www.growingstars.com	Live, one-on-one tutoring Online
www.grundwald.com	Research and consulting in the new media industry
www.harcourtachieve.com	Education solutions
www.howtomaster.com	E-learning tools and content to help teachers integrate technology
www.hoyle.com/	Distance learning on the Net that links to distance learning web sites
www.hp.com/go/k12solutions	Hewlett Packard's products and services – 1:1 computing e-learning solutions
www.http://dep.disney.go.com	Disney online providing cyber lessons and web-based ideas for the classroom
www.ibm.com/education	IBM's education website
www.icde.org	International Council for open and distance education; aim is to promote intercultural cooperation and understanding through flexible and online learning throughout the world
www.idla.k12.id.us	Idaho Digital Learning Academy
www.iel.org	Institute for Educational Leadership
www.iie.org	Institute of International Education – a world leader in international exchange of people and

ideas

www.ignitelearning.com	Assessment and supplemental learning material
www.iknowthat.com	Help students discover lifelong learning skills using interactive technology
www.intel.com	Solutions for transforming education
www.internationaled.org	Online gateway to improving K-12 teaching and learning about all facets of other world regions
www.Internet2.edu	Consortium of universities, K-12 educators, industry and government dedicated to accelerating tomorrow's Internet
www.Internet4classrooms.com	Helping teachers use the Internet effectively
www.ivhs.org	Illinois Virtual High School
www.kalpasystems.com	Provider of information technology products for education and industry such as professional development, registration and management systems
www.kaptest.com	Online instructional programs to improve school results
www.kcdistancelearningcom	Uses distance learning to bring educational opportunities to every student – operates Keystone National High School, the nation's largest online high school
www.kn.pacbell.com	Knowledge Network explores SBC's website
www.know-2.org	Joint project between England and Netherlands to support e-learning, education and technology
www.knowledge-base.com	Consulting company in the e-learning arena
www.knowledgepresenter.com	Tool to allow creation of high quality e-learning

www.kvits.org	Kentucky Virtual High School
www.k12.com/	K-12 home school curriculum
www.leadmichigan.org	Leadership development program for principals, superintendents through development of technology related skills
www.leapfrog.com	Instructional programs that combine research based content and interactivity to help teachers teach and children learn
www.elearningpost.com	Intelligent digest of daily links to articles about learning, community building, instructional design and knowledge management
www.learningpt.org	Learning Point Associates – comprehensive menu of educational products and services
www.learningtoday.com	Interactive learning material for special needs children
www.learnonline.com	Online professional development for continuing education
www.learnport.org	MiLP provides an opportunity to grow professionally with the support of exceptional online professional development and communications tools.
www.learnwise.com	Family of e-learning products including Schoolwise, a content management system
www.linksystems.com	Provides integrated distance learning solutions worldwide
www.MACUL.org	Michigan Association for Computer Users in Learning
www.magellan.edu	Magellan University's mission is to serve K-12 teacher professional development via online courses
www.maise.com/701 tips.org	701 tips for e-learning is a free digital book by the Maise Center

www.mcli.dist.maricopa.edu	Multiple links to web courseware comparisons and studies
www.mel.org	Michigan e-Library
www.meritsoftware.com	Self paced, skill building program designed to improve student achievement
www.meta-learninglab.com	To increase people's capacity to learn
www.michigan.gov/mde	Michigan Department of Education
www.microsoft.com	Microsoft's education website
www.mivhs.org	Michigan Virtual High School
www.mlearning.com	Information on mobile learning tools
www.moodle.org	Course management system to help educators create quality online courses
www.nacol.org	North American Council for Online Learning
www.nasbe.org	National Association of State School Boards of Education
www.nces.ed.gov/pubs2005	The Forum Unified Education Technology site allows educators to assess, acquire, manage and secure technology in education settings
www.ncrel.org/tech/elearn.htm	North Central Region Education Lab
www.ncsl.org	National Conference of State Legislatures
www.nea.org	National Education Association
www.neateachertoolkit.com	Fully integrated web based application that empowers teachers to make curricular decisions with confidence
www.netc.org/digitalbridges	Northwest Educational Training Consortium assisting K-12 teachers and administrators in designing Internet technologies

www.netday.org	Connecting every child to a brighter future by helping educators meet educational goals through the effective uses of technology
www.netg.com	Delivers next generation knowledge on demand to global enterprises
www.nettrekker.com	A Search Engine that provides over 180,000 pre-screened K-12 resources
www.nga.org	National Governors Association
www.notschool.net	An online research project to reengage young people into learning
www.novationonline.info	Journal of online education NOVA from Southeastern University
www.nul.org	National Urban League website
www.ocw.mit.edu	Massachusetts Institute of Technology free and open educational resource for faculty, students and self learners
www.oii.org	Online Internet Institute helps improve achievement by using the Internet
www.oln.org	Ohio Learning Network
www.orchard.com	State specific assessment with targeted instruction and data driven management tools
www.partnerssdl.org	Partners in Distance Learning committed to expanding learning opportunities for students through use of technology
www.pbskids.org	Children's Internet experience
www.pearsondigital.com	NovaNet comprehensive curriculum that extends individualized learning beyond the classroom
www.Pew.org	Internet and American Life Project explores the impact of the Internet on families, communities, daily life, education et al

www.plato.com	Providers of e-learning solutions
www.power-glide.com	Provider of e-learning solutions to teach foreign languages
www.primaveratech.org	An Online high school
www.proquest.k12.com	Digital teaching and learning resource for K-12 schools and libraries
www.protonmedia.com	Deploys innovative 3D software solutions that preserve the human touch of the classroom
www.rtec.org	Network of Regional Technology in Education Consortia: professional development
www.sasinschool.com	Web based teaching and learning curriculum
www.scholastic.com/kids	Children's learning site
www.schoolmatters.com	Standard and Poors service
www.scs.sk.ca/cyber/aok12s/home.htm	Association of Online K-12 Schools
www.setda.org/	State Educational Technology Directors Association
www.skillsforaccess.uk.org	Guide to creating accessible multi-media for e-learning
www.skillsoft.com	Provider of enterprise e-learning with learning resources targeted to business and IT workers
www.skillszlearn.co.za	Provider of e-learning courses and services for the corporate world
www.smartthinking.com	E-tutoring company
www.smithsonianeeducation.org	Education website of the Smithsonian Museum

www.sric-bi.com.scribnews.shtml	SRI consulting publishes over 700 documents a year on e-learning topics
www./ste.org	International Society for Technology in Education
www.takingitglobal.org	An international organization led by youth and empowered by technology
www.tapeedin.org	Online workplace for an international community of education professionals
www.tcrecord.org	The Voice of Scholarship in Education
www.teachingjournals.com	20 instructional journals for leading Technology solutions
www.techlearning.com	Online information on Technology trends, news, funding sources for educators
www.techplan.org	Michigan Department of Education Technology Plan designed to assist local districts in designing technology plans
www.thegateway.org	Gateway to educational material
www.thejournal.com/institute	Online professional development classes for teachers including how to infuse technology into the classroom
www.theteachingcommission.org	Bi-partisan group of business, philanthropy and education dedicated to improving student performance and closing the achievement gap
www.thinklearning.com	Online formative assessment solutions to help predict how close a school is to making AYP targets
www.time4learning.org	Home based online learning for preschool - 5th grades
www.todays-learners.com	Service Provider
www.toplearningresources.com	One-Stop information source to help educators identify quality curriculum based

	supplemental resources
www.trainingmag.com	Training and professional development magazine for primary corporate trainers and school personnel
www.trainingwatch.com	Digest of e-learning best practices
www.txdla.org	Texas Distance Learning Association
www.ucompass.com	Service Provider
www.unitedstreaming.com	K-12 standards based digital video on demand
www.usdla.org	United States Distance Learning Association links users of distance learning
www.vhs.ca	Canadian virtual private online high school
www.wiche.edu/telecom/projects/	Western Interstate Commission for Higher Education
www.wikipedia.org	Free online encyclopedia everyone may edit
www.wisconsinvirtualschool.org	Wisconsin Virtual High School
www.youthaction.net.org	Youth Action Net connecting youth to create change
www.21stcenturyskills.org	Advocacy organization dedicated to infusing 21st century skills into education
www.2.edc.org/cope	Center of Online Professional Education
www.2.edc.org/cct	Center of Children and Technology

Resource People

In preparing this report countless articles were read, experts and e-learning pioneers were consulted, websites were visited and a thorough literature search was conducted. By far, the most valuable input came from listening to teachers, students, administrators. Their ideas were vast and chockfull of thoughts about how e-learning could help in teaching and learning. They are poised to integrate e-learning into solutions that will assist in meeting the myriad challenges faced in suburban, urban and rural schools.

There is no way to create an all-inclusive list of the teachers and students who shared their valuable input. Following is a partial list of individuals, university staff, schools and intermediate school districts as well as out-of-state experts who gave their time and shared resources to assist in the understanding of the power of e-learning.

- Neil Allison, Vice President, Business Development, Smarthinking, Inc.
- Shail Arora, CEO, Gradepoint, Inc. *
- Dr. John Artis, Superintendent, Dearborn Public Schools
- Dr. Alex Bailey, Superintendent, Oak Park Public Schools
- Elizabeth Bauer, State Board of Education Member and Chair of the Embracing the Information Age Task Force *
- Pam Birtolo, Director of Instruction, Florida Virtual School
- Susan Bissonnette, Technology Teacher and Librarian, Waverly Community Schools *
- Dr. Robert Blomeyer, Sr. Technology Researchers, North Central Regional Education Laboratory, Learning Point Associates Center for Technology
- Dr. Kathleen Booher, Executive Director, Tri-County Alliance *
- Dr. Mike Bugenski, State Of Michigan Director, North Central Association of Colleges and Schools
- Gina Burkhart, President and CEO, Learning Point and Associates
- Dr. Kenneth S. Burnley, CEO, Detroit Public Schools
- Dr. Bill Bushaw, Executive Director, Phi Delta Kappa International
- Dr. John Camp, Associate Vice President, Chief information Officer, Wayne State University

- Clayton Campbell, Mentor, Lead Teacher, Dearborn Public Schools *
- Terry Campbell, Principal, Dearborn Virtual Academy
- Bill Cecil, 5th Grade Teacher, Michigan's 2004 Teacher of the Year, Waverly Community Schools *
- Dr. Juanita Clay-Chambers, Chief Academic Officer, Detroit Public Schools
- Dr. William Coale, Executive Director - Administrative Services, Centerline Public Schools *
- Bob Currie, Executive Director, Michigan Virtual High School
- Dr. Marlene Davis, Superintendent, Wayne RESA
- Dr. Nancy Davis, Assistant Superintendent, Academics, Novi Public Schools; Founding Executive Director, Michigan Virtual High School
- Dan DeGrow, Superintendent, St. Clair Intermediate School District
- Mike DeVault, Superintendent, Macomb Intermediate School District
- Karen Domino, Director of Technology Services, Washtenaw Intermediate School District
- Ryan Donlan, Superintendent, Bay Arenac Community High School *
- Dr. Diane Fisher, Principal, Denby High School, Detroit Public Schools
- Dr. Jim Geisler, Superintendent, Walled Lake Public Schools
- Marion Ginopolis, Director, Gates Leading the Future project *
- Dr. Sangeetha Gopalakrishnan, Interim Director, Foreign Language Technology Center, Wayne State University
- Greg Handel, Director, Workforce Development, Greater Detroit Regional Chamber of Commerce *
- Dr. James Harris, Superintendent, Taylor Public Schools *
- Glen Harvey, CEO, WestEd
- David Hecker, Executive Director, Michigan Federation of Teachers
- Dr. Steve Ilmer, Associate Dean, College of Education Wayne State University *
- Susan LaGrois, Professional Assistant, College of Education, Wayne State University
- Dr. Larry Lattimore, Principal, Northwestern High School, Detroit Public Schools
- Lee Lewis, Assistant Superintendent, Taylor Public Schools *
- Dr. Rebecca Luna, Principal, Western International High School, Detroit Public Schools
- Dr. Jim McCann, Superintendent, Lamphere Public Schools
- Carolyn McCarthy, Board Member, Michigan Association for Computer Users in Learning and Education Technology Coordinator, Shiawassee Regional Education Services District *
- Dr. Tom McLennan, Executive Director, Metro Bureau of School Services
- Justin McMorrow, E.College.org
- Steve McNew, Assistant Superintendent of Curriculum and Instruction, Monroe Intermediate School District
- Dr. Caesar Mickens, Executive Director - Staff Development, Detroit Public Schools
- Dr. Bill Miller, Superintendent, Washtenaw Intermediate School District
- Dr. Robert Moore, Senior Deputy CEO, Detroit Public Schools
- Tom Moridada, Superintendent, Inkster Public Schools

- Howard Morris, former Superintendent, Inkster Public Schools
- Dr. David Myers, Learnport Administrator, Michigan Virtual University
- Mike Oswalt, Assistant Superintendent for Technology, Calhoun Intermediate School District
- Vivian Palmer, Distance Learning/Technology Coordinator, Detroit Public Schools, Crockett Career Technical Center
- Dr. Jabari Vuai Prempeh, Consultant, Oak Park Schools
- Dr. David Pruneau, Superintendent, Brighton Public Schools
- Dr. Casey Reason, Assistant Superintendent - Instructional Services, Northville Public Schools *
- Dr. Dave Richard, Technology Director, Rochester Schools
- Dr, Rita Richey, Professor, Administrative and Organizational Studies, Wayne State University
- Dr. Sally Roberts, Assistant Professor - Mathematics, Wayne State University
- Doug Ross, Superintendent, University Prep High School
- Dr. Jim Ryan, Superintendent, Plymouth-Canton Community Schools
- Tom Schuman, President, TKS Consulting
- Dr. Dick Shank, President, Mott Community College
- Paul Smith, Director of Secondary Education, Dearborn Public Schools
- Dr. Ron Sniderman, Executive Director, Instructional Media and Technology Services, Wayne RESA
- Dr. Don Spencer, Superintendent, Monroe Intermediate School District
- Ron Stefanski, Director of Sales Effectiveness and Talent Management , Thomson Gale *
- Tim Stroud, Executive Director, North American Council of Online Users (NACOL)
- Joshua Talison, Principal, Roosevelt Middle School, Oak Park Schools
- Michael Tenbush, Executive Director, ThinkDetroit
- Dr. Sally Vaughn, Superintendent, Livingston County Intermediate School District
- Dr. Mary Waker, Director - Education Technology Center, College of Education, Wayne State University
- Dr. Shedrick Ward, Program Manager - Technology Resource Center, Detroit Public Schools
- Michael David Warren, Judge, Oakland County Circuit Court, Former Michigan Board of Education Member and Chair of the Embracing the Information Age Task Force
- Ric Wiltsie, Executive Director, Michigan Association for Computer Users in Learning (MACUL)
- Pam Wong, former Chief of Staff and Director of Communication, Michigan Department of Education *
- Linda Wood, Executive Assistant, North American Council of Online Learners (NACOL)
- Dr. Paula Wood, Dean, College of Education, Wayne State University
- Dr. Joan Wright, Principal, Oak Park High School
- Julie Young, President and CEO, Florida Virtual School

About the Author

Tom Watkins served as Michigan's Superintendent of Public Instruction from 2001-2005. His career accomplishments include developing shelters for runaway youth, the creation of the first charter school in two states, serving as President and CEO of a major business organization, Director of the Michigan Department of Mental Health, faculty and administrative positions at Wayne State University, local elected official and as a management consultant for a major CPA firm.

Watkins has published hundreds of articles in magazines and newspapers nationwide. He authored a book, <u>They Help Us Paint Rainbows</u>; a collection of students' reflections on the question, "What makes your teacher great?"

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This report is available online at
Michigan Virtual University
(www.MIVU.org)
and on the website of the
College of Education at Wayne State University
(www.coe.wayne.edu).

[Feedback](#)

So, what do you think? Share your views at www.MIVU.org. Your reactions, ideas, thoughts, and reflections matter. Your input on this report is important to advance the quality of teaching and learning.

I have never believed that all wisdom and knowledge emanated from the State Capitol, nor do I think that all the great ideas that exist in Michigan classrooms have been identified for inclusion in this report. The recommendations made in this report are the result of an extensive search of the literature, countless hours searching websites, conversations with e-learning experts and pioneers within and without of Michigan borders, feedback from a cross-section of Michigan educators and business entrepreneurs in a focus group to review recommendations and listening to countless teachers, administrators, and students.

Now, it is your turn. How do you believe e-learning can and should be used to advance quality teaching and learning in Michigan? Do you agree/disagree with a particular recommendation? – Tell us why. If money was no object, what would you do to infuse e-learning in your school?

Go to and share your ideas, thoughts, concerns, and reactions. Together, we are truly better. Just **IMAGINE** the possibilities!

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