

K510/DRAFT-WCN-11/20/89

UNDERPINNING FOR ECONOMIC JUSTICE AND SELF RESPECT

I AM PLEASED AND HONORED TO TAKE PART IN THE PROGRAM OF "PARTICIPANTS IN BUSINESS ETHICS AND ECONOMIC JUSTICE" TO TALK ABOUT UNDERPINNING FOR ECONOMIC JUSTICE AND SELF RESPECT.

AS A BUSINESSMAN, CONCERNED ABOUT ECONOMIC JUSTICE, I HAVE BEEN DEEPLY INVOLVED FOR MORE THAN TWENTY YEARS IN COOPERATIVE ACTIVITIES TO BRING ABOUT CHANGE THAT WILL ASSURE A GREATER MEASURE OF SOCIAL JUSTICE IN OUR SOCIETY. I'LL DRAW FROM THAT EXPERIENCE IN DISCUSSING HOW WE CAN WORK TOGETHER IN MINNESOTA TO HELP IN A SIGNIFICANT WAY TO ACHIEVE THAT OBJECTIVE.

BEFORE DOING THAT, I SHOULD GIVE YOU MY PERCEPTION OF SOCIAL JUSTICE. AT THE SAME TIME, I'LL ADDRESS SELF RESPECT, WHICH IS, OF COURSE, INTERRELATED.

SOCIAL JUSTICE

IN THE SIMPLEST OF TERMS, SOCIAL JUSTICE, FOR AN INDIVIDUAL, EQUATES TO THE OPPORTUNITY FOR A MEANINGFUL JOB. OR, PUT ANOTHER WAY, THE SOURCE OF SOCIAL INJUSTICE, BE IT POVERTY, CHILD ABUSE, ALCOHOLISM OR CRIME, HIGHLY CORRELATES TO THE DENIAL OF THE RIGHT TO A DECENT JOB.

REGRETTABLY, THERE ARE MILLIONS OF PEOPLE IN THAT CATEGORY, INCLUDING THE HANDICAPPED AND DISADVANTAGED IN BOTH URBAN AND RURAL AREAS. RURAL POVERTY IS INCREASING, AND AN URBAN UNDERCLASS IS GROWING -- BOTH ARE CONTRIBUTING TO THE DEVELOPMENT OF A TWO-TIERED SOCIETY.

IF WE ARE TO BETTER RESPOND TO THE PLIGHT OF THOSE LEFT BEHIND IN OUR SOCIETY, WE MUST KEEP REMINDING OURSELVES THAT ETHICS, MORALITY AND CORPORATE RESPONSIBILITY SHOULD BE VIEWED AS COMPONENTS OF THE MUCH BROADER CONCEPT OF SOCIAL JUSTICE. BY DEFINITION, WE CAN BE MORAL, ETHICAL AND CORPORATELY RESPONSIBLE BY CONTRIBUTING AND VOLUNTEERING, YET SEE A LARGE NUMBER OF PEOPLE IN OUR SOCIETY DENIED THE OPPORTUNITY FOR MEANINGFUL JOBS EITHER BECAUSE ENOUGH GOOD JOBS ARE UNAVAILABLE, OR THEY LACK APPROPRIATE EDUCATION AND TRAINING TO QUALIFY FOR THOSE THAT DO EXIST. IN OTHER WORDS, WE CAN EASILY DELUDE OURSELVES ABOUT WHAT WE AS INDIVIDUALS ARE REALLY DOING TO ADVANCE SOCIAL JUSTICE IF OUR FOCUS IS MAINLY ON BEING GOOD AND CHARITABLE, WHICH IS AWFULLY IMPORTANT, BUT NOT ENOUGH WHEN MORE JOBS AND BETTER EDUCATION ARE NEEDED.

SINCE SELF RESPECT IS CLOSELY COUPLED WITH DOING SOMETHING WORTHWHILE; AGAIN, A MEANINGFUL JOB, OR THE PROSPECT OF

ONE, IS SINGULARLY IMPORTANT TO MANY IN THAT REGARD. ALTERNATIVELY, A SIGNIFICANT NUMBER MAY ENHANCE SELF RESPECT BY SIMPLY HELPING OTHERS ON A VOLUNTEER BASIS. OFTEN YOUNG PEOPLE, PARTICULARLY THOSE IN POVERTY-STRICKEN INNER CITIES, DO NOT SEE THE REALITY OF EVER HAVING A GOOD PAYING JOB. THIS PERCEPTION LOWERS THEIR MOTIVATION TO DO WELL IN SCHOOL. IN TURN, LOW ACADEMIC ACHIEVEMENT UNDERMINES THEIR SELF ESTEEM. IN OUR COMPLEX SOCIETY, EDUCATION IS THE KEY TO BOTH A GOOD JOB AND THE CAPABILITY TO MOST EFFECTIVELY SERVE OTHERS.

UNFORTUNATELY, OUR EDUCATION SYSTEM IS MIRED IN SERIOUS PROBLEMS AND UNABLE TO PROVIDE THE TYPE OF EDUCATION AND TRAINING THAT IS REQUIRED FOR THE U.S. TO BE COMPETITIVE IN THE GLOBAL MARKETPLACE. AND THERE AREN'T ENOUGH GOOD JOBS, I.E., JOBS WHICH PAY DECENT WAGES. THEREFORE, IF THERE IS TO BE SOCIAL JUSTICE AT THE LEVEL YOU AND I WANT AND TO MOST EFFECTIVELY ADDRESS THE GOALS OF THE BISHOPS' PASTORAL LETTER, WE MUST ESTABLISH PROGRAMS TO CREATE MORE NEW JOBS AND VASTLY IMPROVE EDUCATION AND TRAINING. THE WORD WE MUST BE EMPHASIZED, BECAUSE ACHIEVING THESE GOALS WILL REQUIRE ALL OF US IN BOTH THE PUBLIC AND PRIVATE SECTORS WORKING TOGETHER MORE EFFICIENTLY THROUGH COOPERATION. OTHERWISE, DURING A TIME OF BUDGET DEFICITS AND THE MANY DEMANDS FOR INCREASED SPENDING ON OTHER HUMAN SERVICES, THEY ARE UNAFFORDABLE.

CREATING MORE JOBS

THE CONCEPT OF SETTING UP PROGRAMS INVOLVING COOPERATION OF THE PUBLIC/PRIVATE SECTORS TO EXPAND INNOVATION, AND THEREBY CREATE MORE NEW JOBS, IS RELATIVELY NEW IN OUR SOCIETY, AND IT IS NOT EMBRACED BY EVERYONE.

THERE ARE STILL THOSE WHO CLING TO THE BELIEF THAT FEDERAL GOVERNMENT INTERVENTION IN INDUSTRIAL INNOVATION SHOULD BE LIMITED PRIMARILY TO SPONSORING BASIC RESEARCH BY UNIVERSITIES.

LET US BE REMINDED THAT INNOVATION IS THE PROCESS OF CREATING NEW PRODUCTS AND SERVICES. IT OFTEN STARTS WITH BASIC RESEARCH FOLLOWED BY APPLIED RESEARCH, ENGINEERING DEVELOPMENT, MANUFACTURING AND MARKETING. INNOVATION IS THE SOURCE OF MOST NEW JOBS AND PIVOTAL TO ECONOMIC DEVELOPMENT.

FOREIGN GOVERNMENTS, NOTABLY JAPAN, GERMANY AND FRANCE, ROUTINELY SUBSIDIZE APPLIED RESEARCH AND ENGINEERING DEVELOPMENT, AND THERE HAS BEEN A MUCH CLOSER RELATIONSHIP BETWEEN GOVERNMENT AND BUSINESS THAN IN THIS COUNTRY. THESE PRACTICES HAVE BEEN SUCCESSFUL AND HAVE PLAYED AN IMPORTANT ROLE IN PLACING THE U.S. AT A COMPETITIVE DISADVANTAGE. DURING THE PAST FOUR YEARS, WE HAVE LOST

MARKET SHARE IN INDUSTRY AFTER INDUSTRY, INCLUDING SEVEN OUT OF TEN HIGH TECHNOLOGY INDUSTRIES. LOSS OF MARKET LEADERSHIP IN HIGH TECH INDUSTRIES IS NOT RESTRICTED SOLELY TO REDUCED TRADE AND LOSS OF JOBS IN HIGH TECH COMPANIES. ADVERSE EFFECTS ARE ALSO FELT WIDELY IN OTHER SECTORS, BECAUSE HIGH TECH PRODUCTS, SUCH AS MICRO-COMPUTERS, ARE USED TO IMPROVE THE PERFORMANCE, QUALITY AND LOWER COST OF PRODUCTS, PROCESSES AND SERVICES IN OTHER INDUSTRIES. HENCE, OTHER INDUSTRIES CAN BE PLACED AT A SEVERE COMPETITIVE DISADVANTAGE IF THEY DO NOT HAVE THE SAME ACCESS TO THE MOST ADVANCED HIGH TECH PRODUCTS AS THEIR FOREIGN COMPETITORS.

IMPROVING THIS DISMAL SITUATION IS A GARGANTUAN TASK, REQUIRING MANY ACTIONS; HOWEVER, THE MOST IMPORTANT IS A VAST INCREASE IN INNOVATION. THE FEDERAL GOVERNMENT HAS CONTINUED TO FUND BASIC RESEARCH, EVEN INCREASING THE LEVEL SOMEWHAT; HOWEVER, THERE HAS BEEN VERY LITTLE SUPPORT FOR APPLIED RESEARCH AND ENGINEERING DEVELOPMENT. IN THE ABSENCE OF FEDERAL SUPPORT, STATES HAVE ESTABLISHED PROGRAMS FOR THAT PURPOSE. HERE IN MINNESOTA, I BELIEVE THAT WE HAVE THE MOST COMPREHENSIVE ONE. A MAJOR PART OF IT IS UNDER THE AEGIS OF THE GREATER MINNESOTA CORPORATION.

AS YOU PROBABLY KNOW, THIS ORGANIZATION IS A PUBLIC/PRIVATE CORPORATION WHICH PROMOTES INNOVATION THROUGH SUPPORT FOR

COOPERATIVE APPLIED RESEARCH AND ENGINEERING DEVELOPMENT, TECHNOLOGY TRANSFER AND TECHNICAL ASSISTANCE TO EXISTING AND START UP SMALL BUSINESSES. I'M CURRENTLY CHAIRMAN OF THE BOARD OF THE GREATER MINNESOTA CORPORATION, AS WELL AS BEING ON THE BOARD OF DIRECTORS OF TWO OF ITS COMPONENT ORGANIZATIONS, THE MINNESOTA COOPERATION OFFICE AND THE MINNESOTA ADVANCED MANUFACTURING CENTERS. BOTH PRIMARILY SUPPORT SMALL BUSINESSES. SINCE THE MCO ASSISTS ENTREPRENEURS IN SUCCESSFULLY STARTING A NEW COMPANY, AND MAMTC PROVIDES ADVANCED MANUFACTURING TECHNOLOGY TO START-UP AS WELL AS EXISTING COMPANIES, BOTH ARE DIRECTLY INVOLVED IN JOB CREATION.

PRIOR TO THE FORMATION OF THE GREATER MINNESOTA CORPORATION, I INVESTED A SUBSTANTIAL AMOUNT OF TIME IN HELPING TO START SEVERAL ORGANIZATIONS TO FOSTER COOPERATION IN MINNESOTA AND THE MIDWEST FOR SUPPORTING INNOVATION, INCLUDING THE MIDWEST TECHNOLOGY DEVELOPMENT INSTITUTE, THE MINNESOTA SEED CAPITAL FUND, THE MINNESOTA COOPERATION OFFICE AND THE NORTH STAR RESEARCH INSTITUTE. DURING THE MANY YEARS OVER WHICH THIS EFFORT EXTENDED, I'VE SEEN INTEREST GROW SIGNIFICANTLY IN SUCH ORGANIZATIONS. INITIALLY, IT WAS VERY LOW, ESPECIALLY BY THE BUSINESS SECTOR. EVEN THOUGH IT HAS INCREASED, MORE SUPPORT IS NEEDED FOR THEM; AND, AS I SAID, THERE ARE STILL THOSE WHO ARE NOT IN FAVOR OF THE APPROACH.

OBVIOUSLY, THE GMC, MCO, MAMTC AND OTHER PUBLIC/PRIVATE ORGANIZATIONS SUPPORTING INNOVATION WILL ONLY BE AS SUCCESSFUL AS THE SUPPORT RECEIVED FROM THE GRASSROOTS -- YOU AND ME. I URGE ALL OF YOU TO CONSIDER HOW TO INCREASE YOUR INVOLVEMENT IN ONE OR MORE OF THE PUBLIC/PRIVATE COOPERATIVE JOB CREATING ACTIVITIES IN MINNESOTA.

I WOULD LIKE TO TALK FURTHER ABOUT JOB CREATION; HOWEVER, THERE ISN'T TIME, BECAUSES I WANT TO DESCRIBE A NATIONWIDE PROGRAM FOR IMPROVING EDUCATION, AND ONE IN WHICH I HOPE YOU WILL WANT TO PARTICIPATE.

WCNI

THIS PROGRAM IS UNDER THE AEGIS OF THE WILLIAM C. NORRIS INSTITUTE OF WHICH I AM CHAIRMAN. ITS MISSION IS TO CATALYZE PUBLIC/PRIVATE COOPERATION TO ADDRESS MAJOR UNMET OR POORLY MET SOCIETAL NEEDS, WHICH WILL ONLY BE ADEQUATELY MET THROUGH COOPERATION BECAUSE OF SCARCE RESOURCES.

HOWEVER, IN AMERICAN SOCIETY, WE HAVE YET TO DEVELOP A CULTURE OF COOPERATION. WHILE THERE HAS BEEN SIGNIFICANT PROGRESS IN THIS DIRECTION, WE STILL ARE PRONE TO COMPETE AMONG OURSELVES THAN COOPERATE. THUS, IT USUALLY TAKES A CATALYST TO GET ORGANIZATIONS TO COOPERATE TO THE REQUIRED EXTENT, AND THAT IS A MAJOR FUNCTION OF THE INSTITUTE. IN

ORDER TO IMPLEMENT A NUMBER OF INSTITUTE INITIATIVES, CONSORTIA ARE BEING FORMED COMPRISED OF REPRESENTATIVES OF APPLICABLE PUBLIC/PRIVATE SECTORS WHO COME TOGETHER TO HELP SHAPE THE DIRECTION OF THE INITIATIVE, AGREE ON A COMMON STATEMENT OF PRINCIPLES AND DEVELOP A STRATEGY FOR IMPLEMENTATION.

TWO OF THE INSTITUTES MAJOR INITIATIVES ARE NATIONWIDE COOPERATIVE PROGRAMS FOR IMPROVING EDUCATIONAL OUTCOMES. THEY ARE THE K-12 TRANSFORMED SCHOOLS CONSORTIUM AND THE TECHNOLOGY-BASED ENGINEERING EDUCATION CONSORTIUM.

THESE CONSORTIA PROVIDE DIRECTION FOR AN EFFECTIVE RESPONSE TO SERIOUS PROBLEMS IN AMERICAN EDUCATION, WHICH HAVE PERSISTED IN SPITE OF RECOMMENDATIONS FOR IMPROVEMENT EMANATING FROM MYRIAD STUDIES BY HIGHLY COMPETENT COMMISSIONS AND TASK FORCES. ADDITIONALLY, AN ENORMOUS AMOUNT OF ATTENTION HAS BEEN FOCUSED ON THE NEED FOR CONSTRUCTIVE NATIONWIDE CHANGE BY TEACHERS, SCHOOL BOARDS, STUDENTS, PARENTS, STATE AND LOCAL GOVERNMENTS, BUSINESSES, FOUNDATIONS AND OTHERS, INCLUDING PRESIDENT BUSH, WHO HAS MADE EDUCATION ONE OF HIS TOP PRIORITIES.

ALTHOUGH THE PROBLEMS IN EDUCATION HAVE BEEN HIGHLY PUBLICIZED, LET ME MENTION, AS BACKGROUND, A NUMBER OF THE

MOST SERIOUS, STARTING WITH THE SEEMINGLY INEXORABLE RISE IN THE COST OF EDUCATION. E.G., PUBLIC SCHOOL EXPENDITURES INCREASED 40% DURING THE PAST FIVE YEARS. UNDERGRADUATE EDUCATION COSTS CONTINUE TO MOVE UP AS WELL.

WHERE CHANGES IN EDUCATION HAVE OCCURRED, THEY HAVE MOSTLY HELPED THOSE STUDENTS WHO NEED THEM THE LEAST, THE BETTER ACHIEVERS. HOWEVER, THERE IS LITTLE EVIDENCE THAT MINORITIES, THOSE MOST IN NEED, HAVE BENEFITED. IN FACT, THE GAP BETWEEN THE HAVE'S AND HAVE NOT'S IN EDUCATION IS WIDENING. THE GREATER CHALLENGE IS CERTAINLY WITH THE DISADVANTAGED, BUT WE CAN'T AFFORD TO WASTE THE POTENTIAL OF THE BEST STUDENTS EITHER, WHICH OUR PRESENT SYSTEM IS STILL DOING.

WE SEE CONTINUING HIGH DROP OUT RATES. IN OUR LARGEST CITIES, THEY RANGE BETWEEN 40 TO 60%. DROP OUTS AND THOSE WHO GRADUATE WITHOUT HAVING MASTERED BASIC SKILLS CONTINUE TO FEED THE ENORMOUS POOL OF FUNCTIONALLY AND marginally ILLITERATE, WHICH IS CURRENTLY ESTIMATED AT 72 MILLION ADULTS, MORE THAN 28% OF OUR POPULATION.

ESPECIALLY ALARMING, IS POOR PERFORMANCE IN BASIC SKILLS. THE MOST RECENT REPORT I HAVE SEEN BY THE NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS, NOTED THAT FEWER THAN

5% OF 17 YEAR OLDS TESTED IN THE LAST READING ASSESSMENT COULD READ AT THE LEVEL REQUIRED BY HIGHER EDUCATION. ONLY SIX PERCENT COULD SOLVE MATH PROBLEMS REQUIRING SEVERAL STEPS.

CONSEQUENTLY, OUR EDUCATIONAL SYSTEM CONTINUES TO BE A SIGNIFICANT PART OF THE REASON FOR THE STEADY DECLINE IN THE ABILITY OF OUR WORK FORCE TO ROUTINELY APPLY BASIC NOTIONS OF SCIENCE AND MATH, AND AT A TIME WHEN A LARGER PROPORTION OF JOBS DEMANDS GREATER TECHNICAL SKILLS.

IN CONTRAST, THE JAPANESE SYSTEM FAR EXCEEDS OURS IN PREPARING EDUCATED WORKERS FOR A SIGNIFICANT ROLE IN BUSINESS. ONE REASON IS THAT YOUNGSTERS IN JAPAN SPEND MORE TIME DEMONSTRATING THEIR ABILITY TO HANDLE SCIENCE, MATH AND FOREIGN LANGUAGES. SPECIFICALLY, WITH RESPECT TO MATH AND SCIENCE, THE PERCENTAGE OF HIGH SCHOOL STUDENTS IN JAPAN TAKING THREE YEARS OF SCIENCE AND MATH IS MORE THAN TWICE THAT IN THE UNITED STATES. THIS SAME UNFAVORABLE COMPARISON FOR THE U.S. HOLDS WITH RESPECT TO WEST GERMANY AND THE SOVIET UNION. CONSEQUENTLY, IT IS DIFFICULT TO OVERSTATE THE SERIOUSNESS OF THE HANDICAP IMPOSED ON U.S. INDUSTRY BY THE CONTINUING DECLINE IN TECHNICAL SKILLS OF THE WORK FORCE.

INADEQUATE PROGRESS IN RESPONDING TO THE SKILLS GAP IN THE WORKFORCE AND MANY OTHER PROBLEMS IS IN LARGE PART A REFLECTION OF THE LACK OF A BROAD CONSENSUS ON HOW TO BRING ABOUT THE NECESSARY IMPROVEMENT IN EDUCATION. THIS POINT IS COGENTLY MADE BY THE RECENT REPORT OF THE BUSINESS-HIGHER EDUCATION FORUM, "AMERICAN POTENTIAL: THE HUMAN DIMENSION," WHICH STATED, AND I QUOTE: "SOME 20 MAJOR REPORTS ON EDUCATION AND THE ECONOMY WERE EXAMINED; TOGETHER THEY OFFER 285 DISCRETE RECOMMENDATIONS. AMONG THESE 285, ONLY NINE ENJOY THE SUPPORT OF FIVE OR MORE OF THE 20 REPORTS. MORE TO THE POINT, OVER 70 PERCENT OF THE SPECIFIC RECOMMENDATIONS HAVE ONLY A SINGLE CHAMPION STANDING BEHIND THEM. IT IS LITTLE WONDER THAT PROGRESS IN RAISING STUDENT ACHIEVEMENT HAS BEEN MUCH TOO SLOW: AS DIFFERENT PILOTS SEIZE THE RUDDER OF EDUCATIONAL REFORM THE SHIP GOES ROUND IN CIRCLES." END OF QUOTE.

FURTHERMORE, ACTIONS FOR IMPROVEMENT THAT HAVE BEEN TAKEN ARE OFTEN FRACTIONATED, ISOLATED AND DUPLICATIVE. CONSEQUENTLY, EVEN WORTHWHILE CHANGES HAVE HAD ONLY LIMITED BENEFIT, AND THE WHEEL IS BEING RE-INVENTED IN HUNDREDS OF PLACES.

THE K-12 TRANSFORMED SCHOOLS AND TECHNOLOGY-BASED ENGINEERING EDUCATION CONSORTIA WHICH FOSTER BROADLY-BASED

COOPERATION, CANNOT ONLY HELP GAIN A CONSENSUS ON WHAT NEEDS TO BE DONE, BUT TO DEVELOP IMPROVEMENTS MOST EFFICIENTLY BY POOLING RESOURCES AND ELIMINATING DUPLICATION THROUGH COOPERATION.

PREMISES

THESE TWO COOPERATIVE PROGRAMS ARE BASED ON A NUMBER OF PREMISES, WHICH INCLUDE:

1. THE U.S. EDUCATION SYSTEM REQUIRES BASIC STRUCTURAL CHANGE; MODIFICATIONS HERE AND THERE HAVEN'T PRODUCED THE DESIRED RESULTS.
2. PERSONALIZED INSTRUCTION, MANAGED AND DELIVERED BY COMPUTER-BASED TECHNOLOGY, IS ESSENTIAL FOR ACHIEVING THE REQUIRED PERFORMANCE AT AN AFFORDABLE COST.
3. EVIDENCE ABOUND THAT CURRENTLY AVAILABLE COMPUTER-BASED TECHNOLOGY IS COST EFFECTIVE AND THAT ITS COST WILL CONTINUE TO DECREASE WHILE PERFORMANCE INCREASES.
4. MOST IMPORTANT, WIDESPREAD COOPERATION IS REQUIRED TO ACCELERATE THE UTILIZATION OF TECHNOLOGY IN EDUCATION AND CONTINUE ITS DEVELOPMENT, BECAUSE EDUCATIONALLY AND

ECONOMICALLY, IT IS NOT FEASIBLE FOR ONE SCHOOL OR A FEW SCHOOLS TO PERFORM THE NECESSARY DEVELOPMENT AND IMPLEMENT SUCH A PROGRAM. THE MAGNITUDE OF THE UNDERTAKING REQUIRES THAT A LARGE NUMBER OF SCHOOLS WORK COOPERATIVELY IN A NATIONWIDE ORGANIZATION.

THESE PREMISES UNDERLIE A NEW APPROACH PROVIDING PERSONALIZED LEARNING FOR EACH STUDENT AND THE MEANS TO ACHIEVE FULL INDIVIDUAL POTENTIAL. THE APPROACH UTILIZES COMPUTER-BASED TECHNOLOGY AS THE PRIMARY METHOD FOR THE MANAGEMENT AND DELIVERY OF INSTRUCTION. THIS, AS OPPOSED TO CURRENT USE, WHICH IS ADD-ON OR SUPPLEMENTARY. AN INCREMENTAL IMPROVEMENT IN LEARNING IS ACHIEVED BUT AT AN INCREMENTAL INCREASE IN COST.

IN THE PRIMARY MODE OF DELIVERY, THE COMPUTER IS USED TO DISSEMINATE INFORMATION AND KNOWLEDGE, SERVE AS A LABORATORY DEVICE, MANAGE INSTRUCTION, CONDUCT TESTS AND GENERATE REPORTS. THIS FREES TEACHERS OF INEFFICIENT, TRADITIONAL LECTURING, TESTING AND RECORD KEEPING; HENCE, THEY HAVE MORE TIME TO DEVOTE TO MEETING THE NEEDS OF INDIVIDUAL STUDENTS.

MY DEFINITION OF A COMPUTER TECHNOLOGY-BASED SYSTEM INCLUDES AUDIO, TELEVISION, INTERACTIVE VIDEO, GRAPHICAL

DISPLAYS, SIMULATION, ANIMATION, EXPERT SYSTEMS, AND OTHER LEARNING TECHNOLOGIES AND MATERIALS, ALL MANAGED BY COMPUTER.

K-12 PROGRAM

LET ME NOW DESCRIBE THE K-12 CONSORTIUM PROGRAM. MAJOR OBJECTIVES INCLUDE IMPROVEMENT IN THE ACADEMIC PERFORMANCE OF THE ENTIRE RANGE OF STUDENTS WHICH WOULD SIGNIFICANTLY EXCEED THOSE ANTICIPATED BY THE TRADITIONAL MODE OF INSTRUCTION REDUCING DROP OUTS AND LEVELING OFF THE EVER-RISING COST OF EDUCATION.

AT ITS FOUNDATION, AND ONE OF THE UNDERLYING PREMISES PREVIOUSLY NOTED, IS THE FULL IMPLEMENTATION OF AN INDIVIDUALIZED COMPUTER TECHNOLOGY-BASED APPROACH. THIS IS ACCOMPLISHED IN A SERIES OF STEPS.

THE INITIAL STEP IN THE PROGRAM IS TO ESTABLISH TRANSFORMED SCHOOLS. THESE CAN BE NEW SCHOOLS WITHIN EXISTING SCHOOLS, OR THEY CAN BE FREE STANDING. EACH TRANSFORMED SCHOOL WILL COMMENCE WITH STUDENTS IN THREE CONSECUTIVE GRADES BETWEEN THE FOURTH AND NINTH GRADES, WITH THE TOTAL NUMBER OF STUDENTS DETERMINED BY LOCAL CONDITIONS. AT LEAST ONE GRADE WILL BE ADDED EACH YEAR SO THAT LEARNERS AT THE THIRD LEVEL ARE PROVIDED AN ONGOING PROGRAM WITH THE SAME

FORMAT. EVENTUALLY, IT IS ANTICIPATED THAT THE FULL K-12 CONTINUUM WILL BE IN PLACE.

A PRIMARY FEATURE IS THE MULTIFUNCTIONAL TECHNOLOGY CORE, CONSISTING OF THE COMPUTER HARDWARE, SOFTWARE AND COURSEWARE. INCIDENTALLY, THE TERM COURSEWARE REFERS TO COMPUTER-BASED LESSON MATERIALS. THE TECHNOLOGY CORE WILL ESSENTIALLY BE THE SAME FOR ALL PARTICIPATING SCHOOLS IN ORDER TO ACHIEVE THE BEST LEARNING OUTCOMES AT THE LOWEST COST.

THE EDUCATION FORMAT AND PROGRAM UTILIZED IN THE NEW SCHOOL IS BUILT AROUND THE BASIC TRANSFORMATION FROM TRADITIONAL GROUP LEARNING TO INDIVIDUALIZED EDUCATION. IN THE NEW FORMAT, EACH STUDENT IS ASSESSED AND DIAGNOSED BY A LOCAL TEAM OF TEACHERS AND THE YOUNGSTER'S PARENT(S) TO ASCERTAIN HIS/HER STRENGTHS, WEAKNESSES, NEEDS AND CAPABILITIES. TEAM CONSENSUS DETERMINES AN INDIVIDUAL LEARNING PLAN. THE STUDENT FOLLOWS THE LEARNING PLAN AT A RATE AND PACE APPROPRIATE TO INDIVIDUAL CAPABILITIES. THE LEARNER'S PROGRESS IS MONITORED, THE LEARNING ACTIVITIES ARE GUIDED BY THE TEACHER(S), AND THE INDIVIDUAL PLAN IS ADJUSTED WHENEVER NECESSARY TO ENHANCE PERFORMANCE.

TEACHERS IN THE NEW SCHOOLS FUNCTION AS DIAGNOSTICIANS AND FACILITATORS OF LEARNING. WITH THE AID OF LABOR-SAVING

COMPUTER TECHNOLOGY, THEY ARE FREED FROM THE TRADITIONAL GROUP LEARNING RESTRICTIONS TO WORK WITH INDIVIDUAL LEARNERS AND WITH SMALL GROUPS. MUCH OF THE NON-TEACHING, CLASSROOM MANAGEMENT CHORES AND FUNCTIONS THAT CONSUME VALUABLE TEACHER TIME IN THE TRADITIONAL FORMAT IS MANAGED BY THE COMPUTER-BASED SYSTEM.

PRC: CONTINUOUS MONITORING AND REPORTING OF INDIVIDUAL AND GROUP PROGRESS WILL PROVIDE PARENTS AND SCHOOL DISTRICT OFFICIALS WITH CURRENT INFORMATION ON PROGRAM AND STUDENT PERFORMANCE. TO HELP ASSURE THE MOST MEANINGFUL AND OBJECTIVE EVALUATION, A PERFORMANCE REVIEW COMMITTEE (PRC) COMPOSED OF EDUCATION EXPERTS HAVING NO AFFILIATION WITH THE SCHOOL DISTRICT WILL EVALUATE ACHIEVEMENT DATA AND OVERALL PROGRAM PERFORMANCE.

COMMITMENT: PARTICIPATING SCHOOLS ARE COMMITTED TO WORK COOPERATIVELY TO PLAN AND IMPLEMENT A TRANSFORMED SCHOOL.

PLANNING IS BEING PERFORMED BY FOUR TASK FORCES CONSISTING OF CONSORTIUM MEMBERS IN THE KEY AREAS OF:

- o MULTIFUNCTIONAL TECHNOLOGY CORE
- o DESIGN AND IMPLEMENTATION OF A PERSONALIZED EDUCATION MANAGEMENT SYSTEM, INCLUDING THE ESSENTIAL COMPONENT OF A PERSONALIZED EDUCATIONAL PLAN (PEP) FOR EACH STUDENT

- o EVALUATION

- o STAFF DEVELOPMENT

COST: LAUNCHING THE NEW SCHOOLS REQUIRES FUNDING FOR ONE-TIME COSTS OF MAKING THE TRANSITION FROM THE TRADITIONAL SYSTEM. THESE CONSIST MAINLY OF PLANNING, TEACHER TRAINING, EVALUATION AND THE MULTIFUNCTIONAL TECHNOLOGY CORE, I.E, THE COMPUTER EQUIPMENT, SOFTWARE AND COURSEWARE. START-UP COSTS WILL VARY, TO SOME EXTENT, IN ACCORDANCE WITH THE NUMBER OF PERSONAL COMPUTERS CURRENTLY AVAILABLE, THE EXTENT OF EVALUATION DESIRED AND NUMBER OF TEACHERS ENGAGED IN PLANNING. FOR PRELIMINARY PLANNING PURPOSES, A COST OF \$250,000 IS APPROPRIATE. AFTER THREE YEARS OF OPERATION, THE NEW SCHOOL WILL BE FINANCED ENTIRELY BY THE REGULAR PER PUPIL ALLOCATIONS.

STATUS: CONSORTIUM ORGANIZATION ACTIVITIES HAVE BEEN PRIMARILY FOCUSED IN MINNESOTA BECAUSE OF STAFF LIMITATIONS. AT THE PRESENT TIME, 14 MINNESOTA SCHOOL DISTRICTS ARE PARTICIPANTS IN THE CONSORTIUM. MEMBERS ARE AT VARIOUS STAGES OF IMPLEMENTING THEIR VERSION OF A TRANSFORMED SCHOOL. THE TRANSFORMED SCHOOL IN ST. PAUL OPENED IN SEPTEMBER. OTHER DISTRICTS ARE NOT AS FAR ALONG AND PROGRESS IN MANY INSTANCES IS BEING DELAYED BY LACK OF ADEQUATE FUNDING.

ORGANIZING EFFORTS ARE BEING GRADUALLY EXTENDED TO OTHER STATES. THERE ARE SCHOOL DISTRICTS WITH SERIOUS INTEREST IN LOUISIANA, CALIFORNIA, NEW JERSEY VERMONT AND MASSACHUSETTS. IN FACT, THE SHELBURNE, VERMONT SCHOOL DISTRICT HAS SIGNED AN AGREEMENT TO PARTICIPATE. THE NEW JERSEY COMMISSION ON SCIENCE AND TECHNOLOGY IS ALSO A MEMBER, AND IT IS PROVIDING ASSISTANCE IN RECRUITING K-12 SCHOOL MEMBERS IN NEW JERSEY.

FINANCING: UNFORTUNATELY, PROGRESS IN IMPLEMENTING TRANSFORMED SCHOOLS IS IMPEDED BY LACK OF FUNDING. IN TODAY'S ENVIRONMENT, PUBLIC SCHOOLS, EVEN THE LARGEST, OFTEN HAVE LIMITED LATITUDE TO EFFECT CHANGE BY REALLOCATION FROM EXISTING BUDGETS. FURTHER, FOR A NUMBER OF REASONS, IT IS DIFFICULT TO GET APPROPRIATIONS FROM MOST STATE LEGISLATURES FOR NEW PROGRAMS. A MAJOR REASON IS, OF COURSE ALREADY TIGHT STATE BUDGETS AND THE MANY OTHER URGENT SOCIAL PROGRAMS TO BE ADDRESSED, SUCH AS DRUGS, CRIMINAL JUSTICE AND THE HOMELESS. IN ADDITION, THERE IS SKEPTICISM RESULTING FROM UNSUCCESSFUL EFFORTS TO ACHIEVE IMPROVEMENT AND, AS NOTED EARLIER, THE LACK OF A BROAD CONSENSUS ON WHAT SHOULD BE DONE.

CONSEQUENTLY, IMPLEMENTATION, IN A TIMELY MANNER, OF A NATIONWIDE TRANSFORMED SCHOOLS PROGRAM WILL REQUIRE PARTIAL

FEDERAL FUNDING. A BROAD CONSENSUS ON WHAT NEEDS TO BE DONE IS ESSENTIAL IN ORDER TO GET APPROPRIATE ACTION BY THE U.S. CONGRESS AND, AS NOTED EARLIER, THE CONSORTIUM IS HELPING TO DEVELOP IT.

TBEEC

LET ME NOW MENTION A FEW HIGHLIGHTS ON THE PROGRAM BEING PLANNED AND IMPLEMENTED BY THE TECHNOLOGY-BASED ENGINEERING EDUCATION CONSORTIUM -- TBEEC, IN SHORT. MAJOR GOALS OF THE TBEEC PROGRAM INCLUDE THE IMPROVEMENT OF THE PROCESS AND QUALITY OF ENGINEERING AND CONTINUING EDUCATION AND TO DRAMATICALLY INCREASE THE COMPLETION RATE FOR ALL STUDENTS ENTERING ENGINEERING AND TECHNOLOGY PROGRAMS OF STUDY.

THE TBEEC PROGRAM IS SIMILAR TO THAT OF K-12 IN THAT PERSONALIZED LEARNING IS PROVIDED FOR EACH STUDENT WITH MAXIMUM UTILIZATION OF COMPUTER-BASED TECHNOLOGY FOR THE MANAGEMENT AND DELIVERY OF INSTRUCTION.

THE NECESSARY COMPUTER SOFTWARE AND COURSEWARE FOR ENGINEERING AND CONTINUING EDUCATION WILL BE DEVELOPED, EVALUATED, DISSEMINATED, USED AND MAINTAINED THROUGH COOPERATIVE EFFORTS OF CONSORTIUM MEMBERS. THIS WILL BE DONE IN ACCORDANCE WITH STANDARDS DETERMINED BY THE CONSORTIUM.

DEVELOPING THE REQUIRED COURSEWARE WILL REQUIRE A LARGE INVESTMENT IN DOLLARS AND FACULTY TIME, AND COOPERATION AMONG A LARGE NUMBER OF UNIVERSITIES IS NECESSARY TO ASSURE THAT THE COMPUTER-BASED COURSEWARE WILL BE OF HIGHEST QUALITY AND DEVELOPED AND MAINTAINED MOST EFFICIENTLY. IN ADDITION TO AGREEING TO COOPERATE IN THE DEVELOPMENT, EVALUATION, DISSEMINATION AND MAINTENANCE OF COURSEWARE, EACH PARTICIPATING ENGINEERING SCHOOL COMMITS TO USING IT.

CONTINUING EDUCATION: THE CONTINUING EDUCATION COMPONENT WILL HAVE THE SAME PRIORITY AS UNDERGRADUATE ENGINEERING EDUCATION. MUCH OF THE COURSEWARE PREPARED FOR ENGINEERING CURRICULA WILL, OF COURSE, BE APPLICABLE TO RE-TOOLING PRACTICING ENGINEERS. BECAUSE THE SKILLS OF A GRADUATE ENGINEER ARE ESTIMATED TO BECOME 50% OBSOLETE FIVE YEARS AFTER GRADUATION, CONTINUOUS RESKILLING IS REQUIRED. THIS IS COSTLY AND, IN THE LONG RUN, ONLY AFFORDABLE THROUGH THE USE OF TECHNOLOGY.

STATUS: TBEEC HAS MADE CONSIDERABLE PROGRESS. CURRENTLY, 50 ENGINEERING SCHOOLS HAVE JOINED, OR ARE IN THE PROCESS OF JOINING, THE CONSORTIUM. WE HAVE ESTABLISHED A GOAL OF HAVING 150 MEMBERS BY THE MIDDLE OF NEXT YEAR, AND I'M CONFIDENT THAT IT WILL BE MET BECAUSE OF THE STRONG INTEREST IN TBEEC.

CONCLUSION

MUCH MORE CAN BE SAID ABOUT THE TBEEC PROGRAM AS WELL AS THE K-12 CONSORTIUM PROGRAM; HOWEVER, IT IS TIME TO CONCLUDE.

LET ME BEGIN BY EMPHASIZING THAT BOTH PROGRAMS ARE BEING PLANNED AND IMPLEMENTED BY TEACHERS WHICH IS, OF COURSE, ESSENTIAL FOR SUCCESS.

BECAUSE BASIC TOOLS ARE BEING PROVIDED, BOTH PROGRAMS, ESPECIALLY K-12, CAN SUPPORT MANY OTHER CHANGES WHICH ARE BEING ADVOCATED, INCLUDING CHOICE, SCHOOL-BASED MANAGEMENT, OUTCOME-BASED EDUCATION AND MENTORING.

WHILE MY GOAL TO HELP IMPROVE EDUCATION AND TRAINING APPLIES TO ALL LEARNERS, I ESPECIALLY WANT TO REACH THE DISADVANTAGED WITH HIGH QUALITY EDUCATION AND TRAINING. EVEN THOUGH CONSIDERABLE PROGRESS HAS BEEN ACHIEVED HERE AND THERE, IT IS FAR SHORT OF WHAT IS FEASIBLE. AS A RESULT, THERE HAS BEEN AN ACCOMPANYING HIGH DEGREE OF FRUSTRATION DURING PAST YEARS BECAUSE SOMETHING WAS ALWAYS MISSING -- LACK OF TECHNOLOGY WHICH WAS NOT AS COST-EFFECTIVE AS DESIRED -- LACK OF CONVICTION BY MANY THAT PERSONALIZED EDUCATION WAS THE WAY TO GO -- LACK OF UNDERSTANDING OF THE POTENTIAL OF TECHNOLOGY AND SO ON.

TODAY, HOWEVER, WE HAVE AN ARRAY OF POWERFUL, AFFORDABLE TECHNOLOGIES WHICH CAN PROVIDE LEARNING EXPERIENCES BEYOND WHAT A HUMAN BEING CAN OFFER; A GOOD TEACHER CAN BE EVEN A BETTER TEACHER WITH TECHNOLOGY; AND A GROWING BELIEF THAT EDUCATION MUST BE RESTRUCTURED TO INCLUDE A PERSONAL LEARNING PLAN FOR EACH STUDENT. MOST IMPORTANT, AMERICA, WITH COOPERATION AMONG ALL SECTORS, CAN AFFORD A COMPREHENSIVE COMPUTER-BASED, INDIVIDUALIZED EDUCATION SYSTEM IN EVEN THE POOREST COMMUNITIES. THE TASK AT HAND IS TO GET IT IN PLACE IN THE MOST TIMELY MANNER.

TO THAT END, I HAVE A CHALLENGE TO OFFER WHICH IS SIMPLY THAT YOUR GROUP BE THE PRIME MOVER FOR ESTABLISHING A TRANSFORMED SCHOOL IN THIS AREA.

YOU ARE BLESSED WITH MORE RESOURCES THAN MOST PLACES, AND YOUR SCHOOLS ARE AMONG THE BEST. THIS ADDS UP TO A STRONG POSITION FROM WHICH TO LAUNCH A NEW TRANSFORMED SCHOOL.

THE K-12 CONSORTIUM NEEDS YOUR HELP IN LEADING THE WAY FOR GETTING NEW TRANSFORMED SCHOOLS STARTED, PROPERLY STRUCTURING THE OVERALL EFFORT, AND GAINING THE BROAD CONSENSUS NECESSARY FOR THE MOST TIMELY NATIONWIDE IMPLEMENTATION.

I WILL PLEDGE THE FULL SUPPORT OF THE K-12 CONSORTIUM AND MY INSTITUTE IN HELPING TO ASSURE THE SUCCESS OF A TRANSFORMED SCHOOL IN THIS AREA. I CAN'T THINK OF A MORE EFFECTIVE WAY FOR YOU TO HELP CREATE A WELLSPRING FOR BUILDING SELF RESPECT AND A GREATER MEASURE OF SOCIAL JUSTICE IN AMERICA.