MINNESOTA DEPARTMENT OF

Children, Families & Learning

Technical and Vocational Education under Minnesota's Graduation Standards

Report to the Legislature 2001

As required by Senate File 3286, Section 18

Minn. Stat. 144.396

1999 Minn. Laws Chap. 245 Art. 11 Sec. 5 Subd. 9

2000 Minn. Laws Chap. 500 Sec. 18

COMMISSIONER:

CHRISTINE JAX, Ph.D.

Technical and Vocational Education under Minnesota's Graduation Standards

Report to the Legislature 2001

As required by Senate File 3286, Section 18

FOR MORE INFORMATION CONTACT:

Daniel J. Smith, Manager
Minnesota Department of Children, Families & Learning
Tel. : 651-582-8330
FAX: 651-582-8492
E-Mail: dan.smith@state.mn.us

1500 Highway 36 West
Roseville, MN 55113-4266
TTY: (800) 627-3529 OR (651) 582-8201

Upon request, this report can be made available in alternative formats.

COST OF REPORT PREPARATION

Minnesota Statutes §3.197 requires the following:

"A report to the legislature must contain, at the beginning of the report, the cost of preparing the report, including any costs incurred by another agency or another level of government."

The following provides estimated costs incurred in the preparation of this report.

This report required the collection of information which the Department of Children, Families & Learning does not collect as part of its normal business functions. It was therefore necessary to gather and analyze information in order to prepare this report. The cost of preparing this report includes estimates of the Department of Children, Families & Learning information collection costs as well as the estimated costs of the providers of this information.

Special funding was not appropriated to cover the costs of preparing this report.

The following is an estimate of the cost incurred by the Minnesota Department of Children, Families & Learning:

$ 15,747.08

Staff from local school districts and the University of Minnesota were also involved in the preparation of this report. The following is an estimate of the cost incurred by these agencies:

$ 10,800.00

Total estimated cost for preparing this report:

$26,547.08

ACKNOWLEDGEMENTS

The Department would like to thank the participants of the committee of practitioners involved in the preparation of this report, as well as the many other educators who have provided questions and information around the technical and vocational education in Minnesota's schools.

This report will be available to the public on the Department's website: http://cfl.state.mn.us. Please direct questions regarding this report to:

Daniel Smith, Manager
Division of Lifework Development
Department of Children, Families & Learning
1500 Highway 36 West
Roseville, MN 55113-4266
Tel. 651-582-8330
FAX 651-582-8492
E-mail: dan.smith@state.mn.us

Report to the Education Committees of the Legislature
Technical and Vocational Education under
Minnesota's Graduation Standards
January 2001

EXECUTIVE SUMMARY

Introduction and Statement of Purpose

The 2000 Minnesota Legislature proposed adding an eleventh area of learning, Technical and Vocational Education, to the Profile of Learning under Minnesota's Graduation Standards and directed the Commissioner of Children, Families & Learning to:

> "... report to the education committees of the legislature by January 15, 2001, on recommendations regarding Graduation Standards rules or realignment of standards for implementing a technical and vocational education learning area."

This report responds to the Legislative request for an implementation recommendation and describes a plan to incorporate Technical and Vocational Education into the 10 existing learning areas. The report reflects the work of a committee of stakeholders assembled to assist the Commissioner, and includes an implementation model that focuses on embedding Technical and Vocational Education goals into the existing framework of the Profile of Learning.

Components of Technical and Vocational Education

For this report, the working definition of Technical and Vocational Education is that by which learners develop technological literacy and workplace skills to make informed career choices. Three components comprise the key understandings of Technical and Vocational Education: technological literacy, workplace skills, and career decision-making.

For Minnesota's Graduation Standards, three critical components of technological literacy should be addressed: systems and concepts as applied to technology; technology in society; and the design, use, maintenance, and assessment of technology systems and processes. All could be appropriately addressed at all levels of learning, though not necessarily by separate standards.

Workplace skills are defined as skills that support success within school and in the community. For this report, workplace skills include resource management, time management, perseverance, and teamwork.

Career decision-making is addressed in Minnesota's Profile of Learning at the middle and high school levels, but the National Career Development Guidelines encourage emphasis on the preparatory understanding of self and community that leads to successful career exploration and investigation as learners mature.

A Proposed Model

Two concepts were given the greatest consideration for the implementation of standards in Technical and Vocational Education. In one, Technical and Vocational Education would be addressed as a separate learning area. But the second model, which provides the most promising option for Minnesota, shows how Technical and Vocational Education concepts can be addressed within the existing 10 areas of learning. One great strength of this model is that it

would make Technical and Vocational Education a part of broader learning, thereby connecting classroom lessons to potential real-world applications.

Technical and Career Education – Incorporated Into Ten Existing Learning Areas

Primary (K–3)

- Add specification to Personal Health and Fitness (Physical Education and Lifetime Fitness) to incorporate resource management, time management, perseverance, and teamwork.
- Introduction to Technology (Economics and Business)

Intermediate (4–5)

- Add specification to Historical Events (Social Studies) to address technical understanding
- Career Exploration (Physical Education and Lifetime Fitness)
- Technology Skills (Economics and Business)

Middle Level (6–8)

- Add a new specification to History and Citizenship (Social Studies) to address technology in society
- Career Investigation (Physical Education and Lifetime Fitness)
- Technical Applications (Economics and Business)

High School (9–12)

- History of Science and Technology (Inquiry and Research)
- Career Development (Physical Education and Lifetime Fitness) – choice standard with Occupational Experience
- Occupational Experience (Physical Education and Lifetime Fitness) – choice standard with Career Development
- Technical Systems (Economics and Business) – choice standard with Natural and Managed Systems, Personal and Family Resource Management, Business Management, and Financial Systems

Recommendations and Rationale

As a result of our analysis and development of a model to address Technical and Vocational Education within the 10 existing learning areas, six recommendations follow.

1. Limit the number of new or modified standards and encourage bundling of standards, especially at the primary and intermediate levels.
2. Incorporate concepts of technological literacy, workplace skills, and career decision-making.

3. Add a specification pertaining to self-concept at the primary level, move career exploration to the intermediate level, move career investigation to the middle level, and add a standard for career development at the high school level.
4. Continue the expectation that technology, as a tool, will be incorporated into four learning areas: Write and Speak, Mathematical Concepts and Applications, Inquiry and Research, and Scientific Concepts and Applications.
5. Reconsider the titles of all learning areas to be consistent with the standards contained therein.
6. Create preparatory standards in economics.

Report to the Education Committees of the Legislature
Technical and Vocational Education under
Minnesota's Graduation Standards
January 2001

Introduction and Statement of Purpose

The 2000 Minnesota Legislature proposed an eleventh area of learning, Technical and Vocational Education, to the Profile of Learning under Minnesota's Graduation Standards and directed the Commissioner of Children, Families & Learning to:

> "... report to the education committees of the legislature by January 15, 2001, on recommendations regarding Graduation Standards rules or realignment of standards for implementing a technical and vocational education learning area." [Senate File 3286, Section 18]

This report responds to the Legislative request for an implementation model and describes a plan to incorporate Technical and Vocational Education in the 10 existing learning areas.

The report reflects the work of a committee of stakeholders assembled to assist the Commissioner, and includes an implementation model that was given the greatest consideration. The report does not specify the content of proposed new Graduation Standards, nor does the report specify the content of standards proposed for revision. The report does provide direction to assist in the development or revision of standards.

Staff from the Children, Families & Learning divisions of Lifework Development and Curriculum and Instruction collaborated in the development of this report and assembled the committee of stakeholders to assist in the work. Members of the committee included teachers of elementary school, middle school, high school (both within and outside of career and technical education), and special education, as well as career and technical administrators, Graduation Standards technicians, curriculum specialists, a higher education representative, and an Improvement Support Team member.

Context and Background

Minnesota's Graduation Standards have been under development for many years and have frequently received Legislative review during this development period. Minnesota's school districts have worked hard to implement the standards, but with frequent revisions to the standards there has been confusion both about the standards themselves and about implementation. The Legislature recognized that school districts are at different stages of implementation and gave latitude to school districts to decide their own timelines for full implementation of the graduation rule.

In the examination of Technical and Vocational Education, a number of issues surfaced:

- School districts are at different implementation stages under the graduation rule and have expressed concern that the addition of an eleventh learning area would cause implementation problems. Most school districts have placed the existing standards into the curriculum. The addition of a new learning area would necessitate a review of the work of placing standards that has been done to date in each Minnesota school district.

- The governor proposed and the Legislature concurred that categorical funding for career and technical (secondary vocational) education should be discontinued. For many years, school districts received this special revenue to support career and technical education programs. The revenue was viewed by some school districts as an incentive to provide career and technical education courses, and by others as recognition of the extra costs involved in programming that was equipment-intensive and often relied on small class sizes because of the nature of the instruction. Representatives from Minnesota school districts anticipate a reduction in the number of career and technical education offerings with the loss of categorical support, especially in rural districts where class sizes in those programs are already quite small. It is perceived that a closer connection between career and technical programs and the Graduation Standards could assure that these opportunities for learners would continue.
- Implementation of the Graduation Standards varies from district to district. It has always been the intent that the Graduation Standards should open opportunities for students and give them multiple venues to demonstrate their knowledge and skills. Some districts are using the standards well and are placing them across the curriculum in a way that provides multiple opportunities for students to demonstrate learning. Other districts, however, are placing standards according to traditional content organizers, often not allowing the placement of standards in certain elective courses or only placing standards in elective courses that are also placed in required courses, making the elective placement moot.
- The state's workforce development plan and other communication from the business community continues to lament the lack of preparedness of Minnesota students for employment. This deficiency may include inadequate preparation in basic academic skills and/or skills necessary in a cooperative workplace, such as teamwork or problem-solving. Coupled with a new awareness that schools are being asked to prepare students for careers that do not yet exist, this puts greater emphasis on the incorporation of process and transferable skills in the Graduation Standards.
- The new titles of the learning areas do not always match the standards contained therein. Early versions of the graduation rule organized the standards into learning areas with titles that purposefully did not convey traditional curriculum organizers used in Minnesota schools. The intent of this decision was to allow learners to meet the standards across the curriculum. But the learning areas proved confusing in many districts as local staff worked to place the standards into the curriculum in ways that would ensure that learners had opportunities to meet all requirements. New learning area titles were adopted by the 2000 Legislature that clearly conveyed meaning to most Minnesotans but left certain problems of misalignment with corresponding standards. Most notably this misalignment is seen in the learning area Physical Education & Lifetime Fitness, with its corresponding standards of career exploration, career investigation, and occupational experience.

It is within the context of these issues that a recommendation is brought forward.

Process

A committee of stakeholders was assembled to assist in the development of this recommendation. (A list of the members appears as Appendix A.) The committee was asked to identify necessary standards under the Technical and Vocational Education, and to recommend how they could be implemented at all levels – high school, middle level, intermediate, and

primary. It was not the charge to the committee of stakeholders to *fully* develop standards, though members did provide enough detail in their work to guide the development process.

The committee of stakeholders met three times from November 2000 through January 2001 to complete its work.

Components of Technical and Vocational Education

A working definition of Technical and Vocational Education was endorsed by which learners develop technological literacy and workplace skills to make informed career choices. Three components comprise the key understandings of Technical and Vocational Education – technological literacy, workplace skills, and career decision-making.

Technological literacy

The recent work of the International Technology Education Association (ITEA) is instructive in examining the need to help Minnesota learners to become technologically literate. ITEA has defined 20 standards for technological literacy under four headings: nature of technology, technology and society, abilities for a technological world, and the designed world. Standards have been benchmarked at four levels (K-2, 3-5, 6-8, and 9-12) which roughly align with Minnesota's primary, intermediate, middle level, and high school standards.

Minnesota had earlier decided not to identify technology as a separate area of learning but to incorporate it by rule across the areas of learning. Minnesota Rule 3501.0330 requires that learners complete an application of technology in each of four learning areas: Write and Speak, Mathematical Concepts and Applications, Inquiry and Research, and Scientific Concepts and Applications. Members of the committee of stakeholders, however, expressed concern that, while the incorporation of technology across learning areas is laudable, the standards now limit the examination of technology to computer technology, far short of the ITEA technological literacy standards. The current approach also seems haphazard in the way certain topics of technological literacy are addressed, particularly technology and society.

Three critical components of technological literacy should be addressed in Minnesota's Graduation Standards:

- systems and concepts as applied to technology;
- technology in society; and
- design, use, maintenance, and assessment of technology systems and processes.

All of these topics could be appropriately addressed at all levels of learning, though not necessarily by separate standards.

Workplace skills

There is strong support for the need to teach workplace skills. Employers regularly demand that graduates from Minnesota schools possess workplace skills since these traits correlate well with workplace success. Educators also recognize that students who have a solid understanding of workplace skills (resource management, time management, perseverance, and teamwork) demonstrate greater success in their schoolwork than do their peers who lack these skills.

In early grades, learners should address workplace skills in relation to their work in school. As students progress through the secondary grades, workplace skills should be addressed not only

through the venue of school, but should be expanded to add interrelation skills common to a work setting such as issues of planning, and labor-management relations.

Career decision-making

Career decision-making is already addressed in Minnesota's Profile of Learning at the middle and high school levels, but the National Career Development Guidelines encourage emphasis on the preparatory understanding of self and community that leads to successful career exploration and investigation as learners mature.

A shift in the career focus of the Profile of Learning is appropriate to build earlier development of self-awareness and to allow an understanding of careers and opportunities to occur in the intermediate and middle levels. Care will be taken to ensure that no learner is tracked by early decision-making but that learners will have a better understanding of self and opportunities to make reasonable decisions for high school and beyond. To do so, self-awareness will be added as a specification at the primary level, the middle level Career Exploration standard will be modified to address broader career fields and moved to the intermediate level, and the high school Career Investigation standard will be moved to the middle level and modified to focus on career fields rather than a specific career action plan. At the high school level, a new standard in Career Development will be created to replace Career Investigation. Under this standard, learners may focus on a single career field of interest, address the broad concepts of industry, and develop an understanding of employer-employee problem-solving and evaluating work performance against recognized standards.

A Proposed Model

A new model was given consideration for the implementation of standards in Technical and Vocational Education. (A chart of this model appears in Appendix B.) The proposal shows how Technical and Vocational Education concepts can be addressed within the existing 10 areas of learning.

While it is important to address the essential components of Technical and Vocational Education, implementation of a new learning area could cause undue hardship on school districts through the excessive creation and alteration of standards. For that reason, this report does not recommend enactment of an entirely new learning area for Technical and Vocational Education.

Rather, this model would require the following modifications to the state's graduation rule:

- Create one standard at the high school level (replaces a standard moved to the middle level) and expand the scope of another standard.
- Move one standard from the middle level to the intermediate level and replace it with a standard moved from the high school level. Modify two middle level standards to broaden their scope.
- Modify two intermediate standards to broaden their scope.
- Modify two primary standards to broaden their scope.

At the high school level, the suggested changes do not alter the number of required standards for learners. The existing standard for *Career Investigation* is moved to the middle level and a new standard for *Career Development* is created that would be a choice standard with *Occupational Experience.*

At the middle level, the *Career Investigation* standard is added, but it replaces the *Career Exploration* standard that is moved to the intermediate level. The *Technical Applications* standard is broadened to include more than computers. The concepts of technology in society are incorporated as a specification in the standard *History and Citizenship* under Social Studies.

At the intermediate level the existing *Technology Skills* standard is modified to incorporate concepts from the ITEA "The Designed World" standards. The *Career Exploration* standard is moved from the middle level. A specification is added to *Historical Events* under Social Studies to address technical understanding. To minimize the impact on instructional time, intermediate standards could be bundled. Under bundling, one performance assessment is used to evaluate progress on more than one standard.

At the primary level the *Introduction to Technology* standard is broadened to include more than computers. A specification is added under the Personal Health and Fitness standard to incorporate workplace skills. Primary standards could be bundled to minimize the impact on instructional time.

Technical and vocational education are incorporated into the 10 learning areas, which then are organized as follows (see also Appendix D):

Technical and Career Education – Incorporated Into 10 Existing Learning Areas

Primary (K–3)

- Personal Health and Fitness (Physical Education and Lifetime Fitness)
  Add specification to incorporate resource management, time management, perseverance, and teamwork
- Introduction to Technology (remains under Economics & Business)
  Broaden to be more than computers

Intermediate (4–5)

- Historical Events (Social Studies)
  Add specification to address technical understanding
- Career Exploration (moved from middle level but remains under Physical Education and Lifetime Fitness)
  Modify to emphasize general exploration of career opportunities. Incorporate resource management, time management, perseverance, and teamwork
- Technology Skills (remains under Economics & Business)
  Expand to incorporate concepts from The Designed World (ITEA standards)

Middle Level (6–8)

- History and Citizenship (remains under Social Studies)
  Incorporate a new specification to address technology in society
- Career Investigation (moved from high school level but remains under Physical Education and Lifetime Fitness)
  Modify to shift emphasis to investigation of career fields. Incorporate resource management, time management, perseverance, and teamwork

- Technical Applications (remains under Economics & Business)
  Broadened to include more than computers

High School (9–12)

- History of Science and Technology (remains under Inquiry and Research)
  Modify existing standard under Inquiry & Research and add a specification to emphasize technology
- Career Development (new standard under Physical Education and Lifetime Fitness to replace Career Investigation)
  Include components of:
  - Skill development in one career field;
  - All aspects of industry;
  - Applying effective problem-solving strategies in employer-employee, co-worker, and customer-client situations; and
  - Evaluating job performance according to standards and expectations of the workplace and personal job goals.

  Choice standard with Occupational Experience
- Occupational Experience (remains under Physical Education and Lifetime Fitness)
  Choice standard with Career Development
- Technical Systems (remains under Economics & Business)
  Continue as a choice standard with:
  - Natural and Managed Systems;
  - Personal and Family Resource Management;
  - Business Management; and
  - Financial Systems;

The three primary components of career and technical education would be incorporated throughout the standards as follows:

Primary

Technological Literacy – addressed in Introduction to Technology (Economics and Business).

Workplace Skills – addressed as a specification under Personal Health and Fitness (Physical Education and Lifetime Fitness).

Career Decision-Making – addressed as a specification under Personal Health and Fitness (Physical Education and Lifetime Fitness).

Intermediate

Technological Literacy – addressed in Technology Skills (Economics and Business), Living and Nonliving Systems (Scientific Concepts and Applications), and Historical Events (Social Studies).

Workplace Skills – addressed to some extent in Historical Events (Social Studies) and in Speaking (Write and Speak).

Career Decision-Making – addressed in Career Exploration (Physical Education and Lifetime Fitness).

Middle Level

Technological Literacy – addressed in Technology Applications (Economics and Business).

Workplace Skills – addressed in Interpersonal Communications (Write and Speak) and in Group Resources (Economics and Business).

Career Decision-Making – addressed in Career Investigation (Physical Education and Lifetime Fitness).

High School

Technological Literacy – addressed in Technical Systems (Economics and Business) and to some extent in History of Science and Technology (Inquiry and Research) and Natural and Managed Systems (Economics and Business).

Workplace Skills – addressed in Career Development (Physical Education and Lifetime Fitness) and in Interpersonal Communications (Write and Speak).

Career Decision-Making – addressed in both Career Development (Physical Education and Lifetime Fitness) and Occupational Experience (Physical Education and Lifetime Fitness).

Recommendations and Rationale

As a result of our analysis and development of a model to address Technical and Vocational Education, six recommendations follow.

1. *Limit the number of new or modified standards and encourage bundling of standards, especially at the primary and intermediate levels.*

   School districts have worked hard for many years to implement Minnesota's Graduation Standards and have expressed concern that frequent changes to these evolving standards have made implementation difficult. If the Graduation Standards are fluid and adaptable to the changing needs of the state and its education system, periodic review of the standards, their placement, and related instruction is appropriate. Modifications should not be taken lightly, however, since the impact on the organization of curriculum and instruction in the schools could be considerable. By limiting the number of new or changed standards, school districts will be more receptive to the changes proposed to address Technical and Vocational Education in the standards.

2. *Incorporate concepts of technological literacy, workplace skills, and career decision-making.*

   Minnesota's Graduation Standards identify essential content and concepts for students to gain through their school experiences, but do not define a curriculum framework or recommend a delivery model to address standards. It is recommended that Minnesota define Technical and Vocational Education under three main concepts:

   - Technological literacy, defined in terms of systems and concepts as applied to technology, technology in society, and the design, use, maintenance, and assessment of technology systems and processes. The understanding of technology currently in the Graduation Standards must be broadened to be more than computer technology.

- Workplace skills, defined in terms of resource management, time management, perseverance, and teamwork, with additional concepts of planning and labor–management issues addressed at the high school level.
- Career decision-making, defined in terms of a learner's understanding of self and community, through career exploration and investigation to career development.

3. *Add a specification pertaining to self-concept at the primary level, move career exploration to the intermediate level, move career investigation to the middle level, and add a standard for career development at the high school level.*

   National Career Development Guidelines suggest that learners should begin the process of career development at an early age through an understanding of self and community that eventually allows investigation of opportunities of interest and the means to attain personal goals. By moving the career sequence in Minnesota's Graduation Standards to an earlier age, learners in high school will be more plan-oriented in their work and will see connections between their high school experiences and their future endeavors. The recommendations contained in this report recognize that some learners are ready to begin specific career preparation in their high school years, and set the expectation that schools make opportunities available for students to begin career preparation when they are ready. There is no expectation, however, that all students will choose career paths or that decisions made by students through this process are irreversible.

4. *Continue the expectation that technology, as a tool, will be incorporated into four learning areas: Write and Speak, Mathematical Concepts and Applications, Inquiry and Research, and Scientific Concepts and Applications.*

   Minnesota's Graduation Standards have appropriately recognized that technology can be a useful tool in many areas of learning and have set an expectation that technology will be used to meet standards in four areas of learning. The standards, however, have been less explicit about technology as content, thus the recommendations of this report to address technological literacy more clearly in the rule. The addition of content standards in technological literacy enhances a learner's understanding and makes it easier for students to address the expectation that technology is used to address other standards.

5. *Reconsider the titles of learning areas to be consistent with the standards contained therein.*

   Legislative action in 2000 addressed the titles of the learning areas to make them more clearly understood by the public. However, the recommendations in this report and other modifications to Minnesota's Graduation Standards create some misalignment between learning area titles and the standards contained in those areas. The title of each learning area should be examined after all additions and modifications to the standards are made, and learning area titles should be changed as appropriate to make them consistent with the standards while communicating to the public in general terms the content contained in each learning area.

6. *Create preparatory standards in economics.*

   There is a problem with the fact that no preparatory standards exist at the primary or intermediate level for economics. While the links between economics and business are clear,

preparation beyond technology applications would be appropriate to ensure success with the concepts of economics that exist in standards at the middle and high school levels.

Conclusions

It is appropriate to modify Minnesota's Graduation Standards to ensure that students have opportunities to learn the concepts and processes of technology and career decision making. These concepts can be addressed by incorporating appropriate concepts within the 10 learning areas of Minnesota's Profile of Learning, or can also be addressed under the eleventh area of learning proposed by the 2000 Legislature. In either case, work remains to create new standards or modify existing standards to address technology and careers.

The models proposed in this report do not add requirements for individual learners at the high school level beyond the 24 now in rule. Schools will need to be given adequate time to implement the changes to Minnesota's Graduation Standards proposed in this report, and staff at the Minnesota Department of Children, Families & Learning will need to be assigned to make necessary modifications to the standards and to work with schools to implement the new and modified standards once they are in place.

Appendices

Appendix A – Learning Area 11 Task Force Members

Appendix B – Implementation Model for Technical and Vocational Education

Appendix C –Side-by-Side Models for Technical and Vocational Education in Profile of Learning

Appendix D – Technical and Vocational Education Incorporated Into Ten Existing Learning Areas

Appendix E – Resource List

Report to the Education Committees of the Legislature
Technical and Vocational Education under
Minnesota's Graduation Standards

January 2001

APPENDICES

Appendix A
Learning Area 11 Task Force Members

Keith Anderson
Technology Education teacher
Chippewa Middle School
Mounds View

Susan Anderson
Elementary specialist
Agriculture in the Classroom
Redwood Falls

Jim Arndt
Career and Technical Administrator
Duluth Public Schools
Duluth

Beth Aune
Specialist – Post-secondary Relations
Minnesota Department of Children, Families & Learning

Glen Boettcher
Agriculture educator
Stillwater Senior High School
Stillwater

Marlys Bucher
Career & Technical Education Specialist
Minnesota Department of Children, Families & Learning

Diane Cirksena
Instructional Support Team
Minnesota Department of Children, Families & Learning

John Flatt
Technology Education instructor
Detroit Lakes High School
Detroit Lakes

Barb Hill
Elementary teacher
Homecroft Elementary School
Duluth

Jan Kellner
Family & Consumer Science Specialist
Minnesota Department of Children, Families & Learning

Carol Knicker
Special Education teacher
Mounds View High School
Mounds View

Joel Larsen
Agriculture Education Specialist
Minnesota Department of Children, Families & Learning

Mary Lillesve
Manager, Curriculum and Instruction
Minnesota Department of Children, Families & Learning

Mike Lindstrom
Graduation Standards Specialist
Anoka-Hennepin Public Schools
Anoka

John Mattson
Graduation Standards Specialist
Duluth Public Schools
Duluth

Ginny Pease
Curriculum Director – Technology
Hopkins Public Schools
Hopkins

Joan Proza
Instructional Support Team member
Minnesota Department of Children, Families & Learning

Daniel Smith
Manager, Lifework Development
Minnesota Department of Children, Families & Learning

Mike Smoczyk
Career and Technical Administrator
Northeast Metro Intermediate Dist. 916
White Bear Lake

James Stone
Dept. of Work, Family and Community
University of Minnesota
St. Paul

Tom Strom
Supervisor, Career and Technical Educ.
Minnesota Department of Children, Families & Learning

Appendix B – Implementation Model for Technical and Vocational Education

Incorporated Into Ten Learning Areas

Inquiry & Research	Social Studies	Physical Education & Lifetime Fitness	Economics & Business
Primary (K-3			
Data Categorization, Classification and Recording	Family, School and Community	Personal Health and Fitness *Add specification to address resource management, time management, perseverance and teamwork*	Introduction to Technology *Broaden to be more than computers*
Intermediate (4-5			
Media, Observation and Investigation	Historical Events *Add a specification to address technical understanding* Geography and Citizenship	Personal Health and Nutrition Physical Education and Fitness Career Exploration *Move from middle level and modify to address general exploration of career opportunities. Incorporate resource management, time management, perseverance and teamwork*	Technology Skills *Expand to incorporate The Designed World*
Middle School (6-8)			
Direct Observation Accessing Information Controlled Experiments	History and Citizenship *Incorporate specification to address technology in society* Current Issue Analysis Geography and Culture	Personal Health Physical Education and Fitness Career Exploration (to Intermediate) Career Investigation *Move from high school and modify to emphasize investigation of career fields. Incorporate resource and time management, perseverance and teamwork*	Personal Resources Group Resources Informed Consumerism Technology Applications *Broadened to include more than computers*
High School (9-12)			
Choose 1: Math Research History through Culture History of the Arts World History and Cultures Recorders of History Issue Analysis History of Science **and Technology** *Modify by adding specification to address technology* Choose 1: Research Process Social Science Processes Research and Create a Business Plan Market Research Case Study New Product Development	Required: Themes of U.S. History Required: U.S. Citizenship Required: Diverse Perspectives Choose 1: Human Geography Institutions and Traditions in Society Community Interaction	Required: Individual and Community Health Required: Physical Education and Fitness Choose 1: Career Investigation (to Middle School) **Career Development (new)** *Includes skill development in one career field, all aspects of industry, applying workplace problem solving strategies, evaluating job performance* Occupational Experience	Required: Economic Systems Choose one: Natural and Managed Systems Personal and Family Resource Management Business Management Financial System Technical Systems

Black – standard
Blue – new standard
Gray – moved standard
Italic – modifications

Appendix C – Side-by-Side Models for Technical and Vocational Education in Profile of Learning

As Learning Area 11

Physical Education & Lifetime Fitness

Primary (K-3)

Personal Health and Fitness
Add specification

Intermediate (4-5)

Personal Health and Nutrition
Physical Education and Fitness

Middle School (6-8)

Personal Health
Physical Education and Fitness
Career Exploration

High School (9-12)

Required
Individual and Community Health
Required
Physical Education and Fitness
Choose one:
Career Investigation
Occupational Experience

Economics & Business

Introduction to Technology

Technology Skills

Personal Resources
Group Resources
Informed Consumerism
Technology Applications

Required
Economic Systems

Choose one:
Natural and Managed Systems
Personal and Family Resource Management
Business Management
Financial Systems
Technical Systems

Technical & Career Education

Introduction to Technology
Broaden to be more than computers

Technical Understanding (new)
Technology Skills
Expand to incorporate The Designed World
Career Exploration
Modify to emphasize general exploration of career opportunities

Technology in Society (new)
Technology Applications
Broadened to be more than computers
Career Investigation
Modify to emphasize investigation of career fields

Optional
Technology in Society and the Designed World (new)
Choose 1:
Career Development (new)
Includes skill development in one career field, all aspects of industry, applying workplace problem solving strategies, evaluating job performance
Occupational Experience

Choose 1 with options from Economics and Business
Technical Systems

Incorporated Into Ten Learning Areas

Inquiry & Research

Primary (K-3)

Data Categorization, Classification and Recording

Intermediate (4-5)

Media, Observation and Investigation

Middle School (6-8)

Direct Observation
Accessing Information
Controlled Experiments

High School (9-12)

Choose 1:
Math Research
History through Culture
History of the Arts
World History and Cultures
Recorders of History
Issue Analysis
History of Science **and Technology**
Modify by adding specification to address technology
Choose 1:
Research Process
Social Science Processes
Research and Create a Business Plan
Market Research
Case Study
New Product Development

Social Studies

Family, School and Community

Historical Events
Add a specification to address technical understanding
Geography and Citizenship

History and Citizenship
Incorporate specification to address technology in society
Current Issue Analysis
Geography and Culture

Required:
Themes of U.S. History
Required:
U.S. Citizenship
Required:
Diverse Perspectives
Choose 1:
Human Geography
Institutions and Traditions in Society
Community Interaction

Physical Education & Lifetime Fitness

Personal Health and Fitness
Add specification to address resource management, time management, perseverance and teamwork

Personal Health and Nutrition
Physical Education and Fitness
Career Exploration
Move from middle level and modify to address general exploration of career opportunities. Incorporate resource management, time management, perseverance and teamwork

Personal Health
Physical Education and Fitness
Career Exploration
Career Investigation
Move from high school and modify to emphasize investigation of career fields. Incorporate resource and time management, perseverance and teamwork

Required:
Individual and Community Health
Required:
Physical Education and Fitness
Choose 1:
Career Investigation
Career Development (new)
Includes skill development in one career field, all aspects of industry, applying workplace problem solving strategies, evaluating job performance
Occupational Experience

Economics & Business

Introduction to Technology
Broaden to be more than computers

Technology Skills
Expand to incorporate The Designed World

Personal Resources
Group Resources
Informed Consumerism
Technology Applications
Broadened to include more than computers

Required:
Economic Systems
Choose one:
Natural and Managed Systems
Personal and Family Resource Management
Business Management
Financial System
Technical Systems

Black – standard
Blue – new standard
Gray – moved standard
Italic – modificatio

Appendix D
Technical and Vocational Education Incorporated Into Ten Existing Learning Areas

Primary (K–3)

- Personal Health and Fitness (Physical Education and Lifetime Fitness)
  Add specification to incorporate resource management, time management, perseverance, and teamwork.
- Introduction to Technology (remains under Economics & Business)
  Broaden to be more than computers

Intermediate (4–5)

- Historical Events (Social Studies)
  Add specification to address technical understanding
- Career Exploration (moved from middle level but remains under Physical Education and Lifetime Fitness)
  Modify to emphasize general exploration of career opportunities. Incorporate resource management, time management, perseverance, and teamwork.
- Technology Skills (remains under Economics & Business)
  Expand to incorporate concepts from The Designed World (ITEA standards)

Middle Level (6–8)

- History and Citizenship (remains under Social Studies)
  Incorporate a new specification to address technology in society
- Career Investigation (moved from high school level but remains under Physical Education and Lifetime Fitness)
  Modify to shift emphasis to investigation of career fields. Incorporate resource management, time management, perseverance, and teamwork.
- Technical Applications (remains under Economics & Business)
  Broadened to include more than computers

High School (9–12)

- History of Science and Technology (remains under Inquiry & Research)
  Modify existing standard and add a specification to emphasize technology
- Career Development (new standard under Physical Education and Lifetime Fitness to replace Career Investigation)
  Include components of:
  - Skill development in one career field
  - All aspects of industry
  - Applying effective problem-solving strategies in employer-employee, co-worker, and customer-client situations
  - Evaluating job performance according to standards and expectations of the workplace and personal job goals

  Choice standard with Occupational Experience
- Occupational Experience (remains under Physical Education and Lifetime Fitness)
  Choice standard with Career Development
- Technical Systems (remains under Economics & Business)
  Continue as a choice standard with:
  - Natural and Managed Systems
  - Personal and Family Resource Management
  - Business Management
  - Financial Systems

Appendix E
Resource List

A bill for an act relating to education; amending state graduation requirements; amending graduation rules, S.F. 3286, (2000).

Achieve, Inc. and the Council for Basic Education. (2000, November). Aiming Higher: A Report on Education Standards and Policy For Minnesota. Atlanta, GA.

International Technology Education Association. (2000). Standards for Technological Literacy: Content for the Study of Technology. Executive Summary. Reston, VA.

Learning How To Work in New Jersey. (2000, December 14). Vocational Training News, 31, 49, 4.

Minnesota Department of Children, Families & Learning, Division of Lifework Development. (2000). Career Pathways Categories. Roseville, MN.

Minnesota Department of Children, Families & Learning, Department of Curriculum and Instruction. (2000). Minnesota Graduation Standards Content Standards of the Profile of Learning. Roseville, MN.

Minnesota Department of Children, Families & Learning. (2000). Minnesota's High Standards. Roseville, MN.

Minnesota Department of Children, Families & Learning. (2000). Minnesota's Preparatory Standards K–8. Roseville, MN.

Minnesota Department of Children, Families & Learning. (1998). Processes/Concepts in Decision Making. Roseville, MN.

Minnesota Department of Children, Families & Learning. (1998). Processes/Concepts in Scientific Applications. Roseville, MN.

Minnesota Department of Children, Families & Learning. (2000, June). Summary of 2000 Session Laws Relating to Profile of Learning, early release. Roseville, MN.

Minnesota Department of Children, Families & Learning. (1997). Task Management Skills. Roseville, MN.

Minnesota Department of Children, Families & Learning. (1998). Technology Expectations and Use Implications, Graduation Standards – State of Minnesota. Roseville, MN.

National Career Development Guidelines, National Occupational Information Coordinating Committee (NOICC), Northwest Regional Educational Library, Washington, DC (1989).

Northeast Metro Tech Prep Conference. (1999, November). All Aspects of Industry (AAI): Connecting the Classroom and the Workplace. St. Paul, MN: Deb Hagen and Mike Smoczyk.

U.S. Department of Labor. (1992). Learning A Living: A Blueprint For High Performance, A SCANS Report for America 2000. (Stock Number 029-000-00439-1). Washington, DC: U.S. Government Printing Office.

MINNESOTA
DEPARTMENT OF

Children, Families & Learning

MISSION

"Increasing the capacity of Minnesota communities to measurably improve the well being of children and families."

1500 HIGHWAY 36 WEST
ROSEVILLE, MN 55113-4266

T: (651) 582-8200
TTY: (651) 582-8201
http://cfl.state.mn.us