

STATE OF MINNESOTA
STATE BOARD OF EDUCATION

STATEMENT OF NEED AND REASONABLENESS

PROPOSED MINNESOTA RULE

PARTS 3500.0500; 1060; 1075; 1150; 1600; 1900; 2010; 2020; 2900; 2950.
RELATING TO LEARNER GOALS, LEARNER OUTCOMES, AND MINIMUM PROGRAM
OFFERINGS.

AUTHORITY:

Minnesota laws 1989, Chapter 329 requires the Board to, "--- identify and adopt learner goals, essential learner outcomes, and integrated learner outcomes for curriculum areas under section 120.101, subdivision 6, and for career vocational curricula."

M.S. 121.11 Subdivision 7 states in part, "The board shall establish rules relating to, " --- courses of study,----."

BACKGROUND:

The function of these rules is twofold. First the intent is to specify the broad learner goals that are the expectations for student learning in Minnesota public schools K-12 and the program level learner outcomes that are the expectations for learning in each subject area. Secondly the purpose is to specify the manner in which the goals and outcomes are to be used by schools including the minimum program opportunities that must be provided for students in high schools throughout Minnesota.

The terminology that is used to describe the educational design toward which this proposal takes the first transitional step is, **OUTCOME BASED EDUCATION (OBE)**.

OBE is defined as an education system that is designed to align three specific elements. The system starts with the identification of the learner outcomes, descriptions of expectations for student learning. These are generally developed in a hierarchy starting from the most general, learner goals, through program level learner outcomes, unit level learner outcomes, course learner outcomes, to the most specific, lesson learner outcomes. The next step is the development of assessment procedures to determine student progress toward attainment of the outcomes. The third element is the design and implementation of instructional procedures that are appropriate to help each student attain the stated outcomes. The data collected in the assessment process is used during the instructional process to modify instruction according to the needs of each student. Historically, Minnesota, through laws and State Board of Education rules, has governed only the instructional process through specification of subject titles, credits, and hours. Controls and standards were thereby limited to the

processes of education and not the results. This proposal is the first in what is expected to be a series of changes over the next decade that will result in the State increasing its control over the outcomes of student learning and reducing, and eventually eliminating, its control over the processes of public education.

A part of this proposal deals with modifying the instructional requirements which is the antithesis of the previously described transition and can be interpreted to be in direct conflict with the basic premises of OBE. The need and reasonableness for the specific changes in this part of the rule (3500.2020) are provided later in this document where details regarding that part of the rule are provided. However, it must be understood that public education is in a state of transition that will require about a decade for all schools to complete. Since there will be students moving through the system for all of those years, it is essential that their needs for preparing for adulthood be addressed. The changes proposed in that section of the rule will provide a bridge between the current minimal "input" requirements and the emerging "outcome" requirements. Schools that are able to complete the transition into outcome based education more rapidly than the average school will use the provisions of 3500.1000 EXEMPTIONS FOR EXPERIMENTAL AND FLEXIBLE SCHOOL YEAR PROGRAMS of the State Board rules to design their programs differently from that prescribed in the proposed rule. It is envisioned that as the majority of districts implement outcome based education programs, the entire section of the rule covering minimum program requirements will be struck.

DETAIL BY SECTION

3500.1060 LEARNER GOALS

In its deliberations over the modifications to M.S. 126.663 the legislature discussed and implied in the language of the law, the development of a hierarchy of learner outcomes from the most general to most specific. The most general are referred to as, learner goals. In 1987 the State Board adopted a set of learner goals to be a model for school district consideration. These goals are directly aligned to the legislatively adopted mission for public education. M.S. 120.011 which states:

"THE PURPOSE OF PUBLIC EDUCATION IS TO HELP INDIVIDUALS ACQUIRE KNOWLEDGE, SKILLS, AND POSITIVE ATTITUDES TOWARD SELF AND OTHERS THAT WILL ENABLE THEM TO SOLVE PROBLEMS, THINK CREATIVELY, CONTINUE LEARNING, AND DEVELOP MAXIMUM POTENTIAL FOR LEADING PRODUCTIVE, FULFILLING LIVES IN A COMPLEX AND CHANGING SOCIETY."

SUBPART 1. DEFINITION

Definition of terms in any new endeavor is absolutely essential to ensure consistent and successful implementation. This is especially true when the concepts are new and subject to the interpretation of a large number of individuals as is the case in this instance. The legislature defined learner goals as, "--- the knowledge, skills,

processes, values, and attitudes pupils can expect to attain."

This rule is reasonable because it uses the legislature's definition as a starting point then adds two concepts for clarity. The phrase, "--- as a result of active participation in K-12 public education." was added to emphasize the point that learning is a participatory activity and students are not merely receptacles for information but must participate in the activity for learning to occur. This is not meant to infer that the school can merely dispense information. Professional educators have explicit responsibilities for designing programs based on student learning style, need, and interest and to motivate students to learn.

The second addition to the definition is identification of the basis for establishing learner goals. This is seen as important because it is presumed that many districts will expand upon these goals to meet additional local expectations and it is important that it be clearly understood that the State Board believes that public education must address the whole person. Schools must consider the current and future cognitive, social, emotional, physical, and career/vocational needs of students.

SUBPART 2. LEARNER GOALS.

Specification of the Board's expectation of districts in terms of their use of the learner goals is necessary. State adoption of learner goals is a new process in Minnesota and therefore it is reasonable that specification of the Board's expectations for their use is one legitimate means of increasing the consistency with which districts implement outcome based education.

The goals are divided into 13 major sections. The first three, A through C, define the Board's expectations for cognitive development. They include basic skills, general knowledge, and thinking skills. All three areas are seen as critical to life long learning and and successful adulthood in the changing world of the 21st century as called for in the legislature's definition of the purpose of public education .

The next five, D through H, define Board expectation for students' social development. They include understanding and dealing with interdependence, diversity, group effort, conflict resolution, and developing an historical perspective. Our world is becoming smaller through technical advances in communication and travel consequently understanding others, working with others, and learning from the past are becoming increasingly important to the comfortable existence in and the survival of the human race. These goals are necessary to meet the clauses in the mission statement that call for education that, "--- help individuals acquire --- attitudes toward self and others --- lead productive, fulfilling lives in a complex and changing world."

The next three, I through K, define Board expectations for the emotional development of students. They include development of a positive self-concept, setting and achieving personal goals, and coping with change. Dealing with and accepting change are difficult attitudes

and skills to master. Our world is changing faster, knowledge is doubling every 18 months and 10% of the jobs currently listed by the US Department of Labor didn't exist 10 years ago, than at any time in our history. It is, therefore, absolutely essential that individuals develop positive feelings about self and learn to grow and change with the world and local events. As stated in the mission, these goals are needed to, "---help individuals acquire ---positive attitudes toward self---."

Item L defines the Board's expectations for student learning about health and one's physical self. Research is increasingly demonstrating the interdependence of mind and body. It is apparent that for students to successfully face life in the 21st century they will have to understand and deal with their health and wellness needs. These goals are a part of the, "--- help individuals acquire knowledge, skill, and attitude--- ." clause of the mission statement.

The last item, M, defines the Board's expectation for student learning regarding careers and vocations. The changing world of work, the relationship of job to lifestyle, and the needs for holding high expectations for quality workmanship make it essential that schools address the career needs of students. Education on these issues are called for in the mission statement as follows, "---and develop maximum potential for leading productive, fulfilling lives in a complex and changing society."

3500.1075 PROGRAM LEVEL LEARNER OUTCOMES

As discussed earlier, there is an implied hierarchy to the development of learner outcomes. The most general is the learner goals that are broad statements not specific to any particular subject. The next level of specificity is the program level learner outcomes. For purposes of this rule the term, " program," is used synonymously with, "subject area." The outcomes for any one subject area specify the contributions that the subject makes to attainment of the learner goals and the total of the outcomes from all subject areas is equal to the learner goals.

The outcomes for each subject area have been identified by a committee of educators and interested others from information provided by specialists in the subject area, reviewed by the State Curriculum Advisory Committee, reviewed at a series of meetings across the state, rewritten for consistency by a team of curriculum generalists, and adopted by the Board. The review included consideration for the appropriateness of content for a K-12 program and for appropriateness of the level of expectation according to the following taxonomies:

THE TAXONOMY OF AFFECTIVE OUTCOMES *

AWARE OR AWARENESS- conscious or sensitive to the fact that a certain thing exists. May or may not be positively disposed to attend to that fact.

ACTS ON OR ACTIVELY RESPONDS- a positive disposition or commitment to act favorably in response to a stimulus regarding a subject or activity.

VALUES OR VALUING- a conscious decision that a thing, phenomenon, or idea has worth and is important. A positive predisposition to seek-out and act favorably regarding a subject or activity.

THE TAXONOMY OF COGNITIVE OUTCOMES *

KNOW, KNOWING, OR KNOWLEDGE- remembering: a) specific terminology and facts; b) characteristic ways of treating or presenting ideas and phenomenon in the field; and c) universals and abstractions in the field.

COMPREHEND OR UNDERSTAND- ability to: a) translate materials and ideas; b) explain or summarize materials; and c) predict immediate implications or effects on the basis of known facts.

APPLY OR APPLICATION- ability to determine, by oneself, how to use a principle, rule, or fact to solve a new problem or situation.

ANALYZE OR ANALYSIS- ability to: a) break an idea, principle, rule, or fact into its element parts; b) recognize unstated assumptions; c) check consistency of hypothesis with existing information; and d) recognize the use of propaganda techniques.

SYNTHESIZE OR SYNTHESIS- ability to put together parts from a single body of knowledge or from several bodies of knowledge to form a new whole.

EVALUATE OR EVALUATION- ability to make judgments about the value of something using either internal criteria (provided or established) or external criteria (comparing one body of knowledge to another).

* Adapted from: TEACHING MODELS IN EDUCATION OF THE GIFTED. C. June Maker, An Aspen Publication, Aspen Systems Corporation, Rockville, Maryland. London 1982. pp. 20-29.

It should be noted that the legislative requirement that the outcomes include thinking and problem solving skills is met through the process of including outcomes at various levels of the cognitive taxonomy in each subject area.

SUBPART I. DEFINITION.

The legislature defined learner outcomes (M.S. 126.661) as, "a specific educational goal of the curriculum," and then added the stipulation that they shall include thinking and problem solving skills. The Board believes that for consistency purposes it is essential that a more

complete definition be provided. The definition used for program level learner outcomes is consistent with current efforts in Minnesota and with those used across the nation.

SUBPART 2. APPLICABILITY.

It is necessary and reasonable that in providing a new set of standards for the content of instruction in each subject area, the Board specify its expectation for their use. Of the three uses specified, two are clarifications of points in the law and the third continues the theme that a hierarchy of outcomes needs to be identified.

The purpose of Clause A is to clarify that the program outcomes in this rule apply for all grade levels K-12. In another section of the law, M.S. 126.663 subdivision 3, in which the legislature directs the Department to develop models of learner outcomes, it states that the outcomes are for students in kindergarten through grade 12. It is reasonable that the same limitation be imputed to program outcomes which are a part of the model learner outcomes.

The purpose of Clause B, is to clarify the statement in the law that specifies that the Board shall adopt integrated outcomes which are defined as outcomes for subject areas that are not to be taught in separate classes but as an integrated part of all courses.

The purpose of Clause C, is to continue with the concept of a hierarchy of learner outcomes. It is reasonable that if the State Board adopts outcomes at the most general end of the hierarchy, that districts use them as the basis for defining their more specific unit, course, and lesson outcomes. It is only through this means that the state can be assured that its requirements are being met.

SUBPARTS 3 THROUGH 9

The legislature specified that the Board adopt outcomes for curricular areas listed in M.S. 120.101, subdivision 6. Included in that list are: communication skills, health and physical education, mathematics and science, and social studies.

This rule uses the phrase, language arts, to cover the topics listed under communications skills in M.S. 120.101 subdivision 6, except that fine arts is included as a separate subject area. While it is agreed that fine arts are a form of communication, it is reasonable to make this change since fine arts has historically been accepted as a group of bodies of knowledge that share creativity and performance as their primary attributes. Language arts on the other hand are fundamental human communication skills that may or may not rely on or demonstrate creativity. Included under the generic term fine arts are the individual disciplines of dance, theater, music, visual art, and media arts.

Of particular importance in the health outcomes is the emphasis on the development of both understanding and application skills. The evidence is strong that physical health issues such as AIDS and mental health issues such as abuse are having an increasingly negative impact on the human condition. Such evidence seems logically to require that

students learn both the facts of the various issues and strategies for eliminating or minimizing their negative impact.

While the law defines communications skills as reading, writing, and literature, this rule expands the topics to include speaking and listening. Professional literature and common practice have long recognized that receptive communication includes both listening and reading and expressive communication includes both writing and speaking. Since all four topics plus the study of literature are accepted as integral to language arts it is reasonable to include them in the program outcomes of the subject.

The rule changes the term, physical education to, "physical fitness and wellness," for two reasons. First, inclusion of the word education is redundant since the entire rule describes education and secondly, the term physical fitness and wellness is more generally descriptive of the program and the outcomes included.

A relatively large number of studies have been issued recently that demonstrate a rather low level of attainment in mathematics on the part of American youth. While the studies routinely show that students do not learn enough math due, in part, to failure to take the math courses that are available, the studies do address the issue of rigor in the content of instruction. The outcomes in this rule are consistent with those recommended on the studies and reports.

The science outcomes do not address the specific outcomes of any of the various branches of science such as chemistry or physics. Rather they identify the basic scientific concepts, higher order skills, and the attitudes that need to be developed. This is reasonable in that we are moving toward integrating all curriculum to assure that students begin to understand the value of each of the subject areas to their everyday lives. The design of the science outcomes in this rule is a direct step in that direction.

Program level learner outcomes for social studies are currently under study and will be presented for the rule making process at a later date.

The board included a set of outcomes for world languages for two reasons. First, study of other languages and cultures has long been accepted as a part of public education on an elective basis. The emphasis on knowing, understanding, and working with peoples from other cultures and countries requires that such studies be continued. Since public schools should and do provide classes in world languages and cultures it is reasonable that the state establish the same type of standards for this program as all others.

SUBPART 10 VOCATIONAL SUBJECT AREAS.

The legislature specifically directed the State Board to identify and adopt learner outcomes, "--- for --- vocational curricula." Learner outcomes for six vocational subjects are included in the rule. They are: agriculture occupations, business, consumer home economics, health occupations, marketing occupations, service occupations, and trade and

industrial occupations. It is reasonable that the outcomes included be of sufficient rigor so as to be useful to the students upon completion of the program. Each of those subject areas includes the outcomes considered by professionals in the respective fields to be essential for either entry level employment or advanced placement in a post secondary training program in the subject.

SUBPART 11 SUBJECT AREAS TO INTEGRATED INTO ALL COURSES AND PROGRAMS
The legislature specifically directed the State Board to identify and adopt, "----integrated learner outcomes for curriculum areas." As described, earlier the intention is to specify learner outcomes for subjects for which instruction will be provided only through integration into other courses and programs. Of the seven programs included in this rule one, career and work readiness, was specified in the legislation; four, environmental issues, information technology, media, and youth services have been included in previous rules; and two family life and parenting and international perspectives are newly identified by the Board. The most significant concept in these programs is that instruction is to be provided through integration in all appropriate general and vocational subjects.

The outcomes that have been used by educators in the design of previously required programs in career and work readiness, environmental issues, information technology, media, and youth services are the outcomes specified in this rule.

Increasing and recurring social problems attributed to the erosion of the influence of the American family has led the Board to the conclusion that expectations for student learning more about the importance of family life and parenting are critical. It is reasonable that one essential activity to strengthen the American family is for everyone to develop an understanding of the positive role the family can play in one's life. It is precisely those outcomes that are identified in the rule.

As discussed earlier, our world is becoming smaller through technical advances in communication and travel. Not only must we understand others better and work with others more effectively, we must be aware of and deal with problems and events world-wide. Also people world-wide must deal with problems and events in our backyards. The disaster at Chernoble and the oil spill in Alaska are but two recent examples of events that effect everyone. It is therefore reasonable to include outcomes that focus on those issues and that those outcomes be addressed in all subject areas.

3500.1150 REQUIRED OFFERINGS FOR ELEMENTARY SCHOOLS.

There are three changes proposed in the elementary rule.

The first is changes in the wording of clauses A and B of subpart 1 to include language that more accurately reflects the terminology used in outcome based education. Also clauses C and D were added to provide a parallel applicability requirement and curriculum integration requirement to those required of secondary schools.

The second adds to the subject areas included in Subpart 5 INTEGRATION OF REQUIRED CURRICULAR OFFERINGS so that requirements for integrating instruction for all seven subject areas specified in 3500.1075 subpart 11 applies equally to elementary schools.

These two changes are reasonable in that consistent language and parallel requirements will facilitate understanding and therefore implementation of the rules by schools.

The third change removes clause C. of Subpart 6 in which districts were required to implement a curriculum review cycle of not more than 8 years. This is obsolete language because the legislature has since enacted the requirement that a district's curriculum review cycle cannot exceed 6 years. M.S. 126.67 Subdivision 2b.

3500.1600 MIDDLE SCHOOL CURRICULUM

Subpart 3. APPLICABILITY.

The insert specifies the applicability of the learner goals and program level learner outcomes to middle level programs. Identical inserts are proposed for all grade levels. It is reasonable that the Board should specify parallel requirements for each of the several school levels.

3500.1900 CURRICULUM FOR JUNIOR SECONDARY SCHOOLS.

Subpart 1. COMMON BRANCHES AND HOURS

The only change in this subpart is a revision in the format.

Subpart 3. APPLICABILITY

The insert specifies the applicability of the learner goals and program level learner outcomes to junior high programs. Identical inserts are proposed at all grade levels. It is reasonable that the Board should specify parallel requirements for each of the several school levels.

3500.2020 REQUIRED COURSE OFFERINGS FOR SENIOR SECONDARY SCHOOLS.

The purpose of this part of this rule is to specify the the courses that must be offered in or through every senior secondary school. As stated earlier, such a requirement can be interpreted to be in direct conflict with the basic premises of OBE. In general terms, the need and reasonableness of modifying this rule is based on the need to meet the needs of students who will complete their secondary schooling before the full implementation of OBE in all schools. Since it is expected to require about a decade for all schools to fully implement effective education programs based on OBE concepts, students who graduate before that event must be assured of the opportunity to be adequately prepared for their future. As expressed earlier, it is envisioned that as the majority of districts implement outcome based education programs, this entire rule will be struck. In the meantime schools that do implement effective OBE programs will be encouraged to use 3500.1000 EXEMPTIONS FOR EXPERIMENTAL AND FLEXIBLE SCHOOL YEAR PROGRAMS to design and implement their programs.

Subpart 1. SCHOOL DISTRICT OPTIONS.

This subpart does not change the existing requirement. The change is merely to put the former requirement into the new format.

Subpart 2. APPLICABILITY.

This subpart is identical to the language added in 3500.1150, 1600, and 1900. The purpose is to clarify that the required courses be designed to assist students achieve the stated outcomes. It is reasonable for the Board to expect that required courses lead to desired ends.

Subpart 3A. AGRICULTURE OCCUPATIONS, BUSINESS, CONSUMER HOME ECONOMICS, HEALTH OCCUPATIONS, MARKETING OCCUPATIONS, SERVICE OCCUPATIONS, AND TRADE AND INDUSTRIAL OCCUPATIONS.

The current rule requires that a school offer one, 1 credit course in industrial arts but no specific vocational courses are required in senior secondary schools. However, William J. Spring in his three nation study, "YOUTH UNEMPLOYMENT AND THE TRANSITION FROM SCHOOL TO WORK: PROGRAMS IN BOSTON, FRANKFURT, AND LONDON," published in the NEW ENGLAND ECONOMIC REVIEW concluded that modern industrial/technical societies need more technicians and craftpersons than are currently being trained. Minnesota statistics show that while about 60% of high school graduates initially enroll in some post secondary program, only 22% of 25-29 year old young adults have actually graduated. Also, 77% of high school graduates are in the labor market one year after graduation. A 1989 task force commissioned to study of secondary vocational education concluded that students need: a clear connection between school curriculum and real life; and a clear vision of possible occupations and life-role options. Given that: a) less than 25% of Minnesota high school graduates complete post secondary training, b) it is recognized internationally that more workers with technical training are needed, and c) students need opportunities to connect school to real life, it is reasonable that the State Board require that some opportunities be available in public high schools. This rule will require that each school provide at least one course in each of four vocational subject areas. Schools have the flexibility to select which subject areas will be provided except that Business must be provided. It is reasonable that one of the subjects be Business because the Minnesota Department of Jobs and Training labor market survey indicates that the ratio of trained employees per available job is extremely low for the business and marketing job areas as compared to other occupational areas.

Subpart 3B. CAREER AND WORK READINESS, ENVIRONMENTAL ISSUES, INFORMATION TECHNOLOGY, INTERNATIONAL PERSPECTIVES, AND MEDIA.

The requirements for Career, Environmental Issues, Information Technology, and Media are identical to the previous requirements for those subject areas. They are merely placed in the new format. The combining of the phrase, "Work Readiness," with Career is a recognition of the need to emphasize the point that preparation for work is essential for all students as a part of their preparation for life. The 1988 report of a task force on Education for Employment concluded, "--- all students in pre-kindergarten through grade 12 must be taught work-readiness in a fully integrated curriculum." Given the importance

of the issue to all students it is reasonable to combine work-readiness with studies of careers and to do so in a manner that requires that instruction in it be provided through integration in all subjects.

Subpart 3C. FAMILY LIFE AND PARENTING.

As stated previously, increasing and recurring social problems attributed to the erosion of the influence of the American family has led the Board to the conclusion that expectations for student learning more about the importance of family life and parenting are critical. The Board believes that this is such a critical issue that it includes a requirement for specific studies to be offered. The requirement is reasonable because it provides districts the opportunity to offer those studies in one or more of three ways. Districts may elect to combine these studies within the context of a home economics course and/or within the school's health courses. Using one or both of these options would not require the district to add any courses. Alternatively, districts may elect to provide these studies in a completely separate course which will, for some districts, require the addition of another course.

Subpart 3D. FINE ARTS.

Previous requirements in fine arts were limited to music and visual art. In an effort to provide students with opportunities in other art media, this rule reduces the requirement in each of those disciplines from two course to 1 and 1/2 courses and adds a requirement for an additional 1 and 1/2 courses in other areas of art. The end result for students is the opportunity to explore and develop skills in at least one additional artistic media. The end result for schools is the requirement to provide at least 1 and 1/2 courses selected from dance, theater, and media arts. The requirement for an additional 1/2 course is reasonable in terms of the opportunities it opens for students. Flexibility for schools was added as follows: a) a school may count one of its courses as meeting both a physical fitness and wellness and a fine arts-dance requirement if the course provides opportunities for learning in both sets of learner outcomes, and b) a school may count one of its courses as meeting both a language arts and a fine arts-theater requirement if the course provides learning in both sets of learner outcomes.

3E. HEALTH

Previous rules required that schools offer one, 1/2 credit course in health. Expectations for that course were essentially limited to developing an understanding of bodily functions and diseases. This rule adds a requirement for an additional 1/2 course. The need for this addition is dictated by the dramatic increase in health related issues about which students must develop knowledge and skills. Included in this ever expanding list are understanding and developing personal strategies for dealing with sexually transmitted diseases such as AIDS, chemical abuse, tobacco use prevention, alcohol affects on driving and other life situations, physical and sexual abuse, teen-age suicide, and more. In addition research clearly demonstrates that simply memorizing and understanding the body and the various diseases is ineffective in making behavioral changes. Students must have the opportunity to develop and practice strategies for dealing with those many issues. It

is therefore reasonable to require an additional 1/2 credit course within which instruction in the emerging issues can be provided.

Subpart 3F. LANGUAGE ARTS.

Previous rules required the same number of courses and credits as are required in this rule. The change required herein is that at least three of the five required courses will provide learning opportunities balanced among the four language skills of listening and speaking, reading, and writing. Reading is assumed to be inclusive of literature. The remaining courses may be designed to address any one or more of those skills on an individual basis. This is reasonable because it helps assure that students will have the opportunity to develop a wide range of communication skills.

Additionally this rule includes the requirement that schools offer learning opportunities for students to master the communication skills specified by the local board of education. The requirement to provide such opportunities is specified in M.S. 126.67 subdivision 3a. It is reasonable that this requirement be included as a part of this rule in order that the full range of curricular requirements for language arts be understood and obvious to all concerned groups and individuals.

Subpart 3G. MATHEMATICS

Recent reports of evaluations of the results of education in the United States indicate a frightening lack of skills in mathematics on the part of our high school graduates. This lack was best summarized by the National Research Council in their publication, EVERYBODY COUNTS A REPORT TO THE NATION ON THE FUTURE OF MATHEMATICS EDUCATION. SUMMARY

"Three of every four Americans stop studying mathematics before completing career or job prerequisites. Most students leave school without sufficient preparation in mathematics to cope with either the on-the-job demands for problem-solving or college expectations for mathematics literacy. Industry, universities, and the armed forces are thus burdened by extensive and costly demands for remedial education. Our country cannot afford continuing generations of students who by lack of mathematical power are limited to second-class status in the society in which they live. It cannot afford to weaken its pre-eminent position in science and technology.
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In addition to the general lack of students' skills in mathematics, colleges and universities are requiring increasing amounts of mathematics. For instance, Dr. John Printz, associate Director Office of admissions at the University of Minnesota states that math requirements include: "Three years of math including two years of algebra and a year of geometry. Calculus is necessary to enter the business program at the University, most students do not realize this." Other college and post secondary systems identify similar requirements.

Previous requirements in mathematics included one, 1 credit, course in ninth grade and three, 1 credit, courses in the senior high school. This rule requires the availability of fundamental mathematics concepts

courses in both the ninth grade and in grades ten-twelve. In addition this rule requires the availability of a five year curriculum in mathematics to be available to students during grades 8-12. It is understood that requiring the availability of a course does not guarantee student success or even that students will take the courses. It is certain, however, that if the courses are not available the students cannot take them. It is therefore reasonable that schools be required to offer the courses students need to prepare for their future.

Additionally this rule includes the requirement that schools offer learning opportunities for students to master the mathematics skills specified by the local board of education. The requirement to provide such opportunities is specified in M.S. 126.67 subdivision 3a. It is reasonable that this requirement be included as a part of this rule in order that the full range of curricular requirements for language arts be understood and obvious to all concerned groups and individuals.

SUBPART 3H. PHYSICAL FITNESS AND WELLNESS.

The previous requirements in physical fitness and wellness courses were for 2/3 of a credit course in ninth grade and 1/2 credit course in tenth grade. This rule requires a 1/2 credit course in ninth grade and a 1/2 credit course for grades ten through twelve. The reduced requirement in ninth grade is reasonable based on the fact that providing a 2/3 credit course poses an extreme hardship on districts in terms of developing a schedule for a course with an odd number of hours. The modified requirement for the high school course is reasonable because it adds flexibility for both the school and students and does not reduce opportunities for students.

Subpart 3I. SCIENCE.

There are no changes in the requirements for science offerings, they are merely placed in the new format.

Subpart 3J. SOCIAL STUDIES.

The requirements in terms of number of courses to be offered does not change from the previous requirements. The previous requirement that at least one of the courses cover contemporary world problems is eliminated. That is reasonable because of inclusion of a requirement that the learner outcomes identified as international perspectives be integrated into all subject areas. The previous requirement that one of the courses be in American studies is eliminated. That is reasonable because each of the history, geography, political science, and economics requirements must address national level issues. The added specificity of the content of the various courses that are required is reasonable because those topics provide a balance in terms of opportunities for students to study in a wide range of the social sciences rather than be limited to one or two areas as is possible under the current rule.

Subpart 3K. WORLD LANGUAGES.

The previous requirement for course offerings in world languages was that each school must provide students the opportunity to enroll in at least 2 years of one language other than English. This rule requires

that each student have the opportunity to enroll in at least 3 years of one language other than English. That is reasonable because of the language requirement at the University of Minnesota. Since its implementation, incoming students will be expected to be at least halfway toward proficiency required for graduation. This may mean three to six years of study prior to college. Students who do not meet that requirement will have to take the necessary language courses for credit that does not count toward graduation.

Subpart 3L. YOUTH SERVICES.

There are no changes in the requirements for youth services offerings, they are merely placed in the new format.

Subpart 3M. ELECTIVES.

The previous requirement for electives was that districts provide 10 electives selected from 5 subject areas. This rule reduces that requirement 5 elective courses for a three year senior secondary school and 6 elective courses for a four year secondary school. Schools, of course, have the option to offer more. It is reasonable to reduce this requirement in light of the added specific course offerings required in vocational, math, fine arts, health, and world languages.

3500.2900 BASIS FOR AWARDING SECONDARY SCHOOL CREDIT.

The purposes of this and the next section are to clarify and separate the requirements for awarding a credit to a student for successful completion of a course from those that prescribe the means by which a district can provide learning opportunities. The current rule, BASIS FOR SECONDARY SCHOOL CREDIT, includes both concepts and they are, at times, a cause for some confusion.

Subpart 1. BASIC REQUIREMENTS.

The purpose for the change in subpart 1 is to require that schools establish a process through which a student can, "test out," of a course. The current rule provides schools the authority to decide whether such a process will be available. While having such a process is required in this rule, complete discretion is left to the district regarding how a student will, "demonstrate," that he or she has met the learner outcomes. It is reasonable to require that districts provide this opportunity so as to allow students to make the wisest use of their time and not be required to sit in classes where they are able to demonstrate proficiency in the material. The reasonableness is further extended by allowing schools the flexibility to determine the process that students must go through to demonstrate proficiency.

3500.2950 BASIS FOR MEETING SENIOR SECONDARY CREDIT OFFERING REQUIREMENTS.

Subpart 1. GENERALLY.

The purpose of this subpart is to clarify how the various subparts of this are to be applied to district instructional design.

Subpart 2. COURSE OFFERING CREDIT DEFINED.

The requirement that a credit equal 120 clock hours is the same as

previously contained in 3500.2010 and 2110. The semester, trimester, and quarter options are included for the sake of clarity and do not represent a change from the past. The phrase, "in a single year," is included to clarify that it is not the Board's intention to permit totaling the hours spent in a two course sequence over two years and, due to scheduling idiosyncrasies, count the hours as meeting the requirements for three courses. Since there has been some confusion over this issue it is reasonable to clarify Board intent in the rule.

Subpart 3. APPLICABILITY.

The purpose of this section is to ensure that schools that offer course required by this rule either off-campus or as a summer programs according to M.S. 124A.27 Subdivision 9, do so with appropriate components and support services. The Board's concern stems from issues such as: a student who lives too far from school to walk or who must work to help the family during the summer is provided an opportunity to participate in a program only during the summer when no transportation is provided or when he/she cannot attend; a school offers a science course only during the summer but due to limitations on space, staff, or materials offers only the lecture and discussion portions of the course without the laboratory activities normally a part of the course. It is reasonable that if a course is counted to meet the requirements of this rule, it must be provided in a manner that assures equal access to all students and is a complete course that meets the full intent of this rule.

Subpart 4. SCHEDULING.

The purpose of this rule is to assure that every course and program listed in 3500.1600; 1900; and 2020, are in fact accessible to every student sometime during their school career. Since the purpose of requiring that certain courses be offered is to meet the needs of students, it is reasonable that they be scheduled in such a way as to assure every student the opportunity to enroll. This means the elimination of idiosyncrasies in the schedule that result in such things as a course always being scheduled opposite a required course thereby effectively eliminating the opportunity to enroll.

Subpart 5. LENGTH OF PERIODS.

The purpose of this rule is to clarify that length and frequency of class periods is school choice and is not dictated by any pre-set requirement. It is reasonable that since the length of periods and the frequency of class meetings can be varied with positive results, that their design should be decided at the school subject only to the minimum time requirement over a quarter, trimester, semester, or year.

Subpart 6. OPPORTUNITY.

3500.3500 requires that a secondary school day be at least 6 hours in length. It is reasonable that students be allowed to profitably engage in a formal learning experience during each of the hours of the day that they are required to be in attendance by spending each of those hours enrolled in a class.

Subpart 7. VARIANCES.

The purpose of this rule is to provide assurance to schools that when

they demonstrate that they have implemented an OBE program based on the program level learner outcomes adopted by the Board, the Board will grant a variance pursuant to 3500.1000. This is reasonable because it follows the stated intention using 3500.2020 as a bridge to OBE rather than as a permanent set of more stringent requirements.

Subpart 8. DISTANCE LEARNING PERMITTED.

The purpose of this rule is to specify the conditions under which distance learning through the various audio and video transmission options can be used by schools to meet the course offering requirements.

Clauses A. and B. provide that the transmission system must be completely interactive between all sites and must provide real time motion and sound between all sites. This is a reasonable requirement for two reasons. First, the technology is now affordably available to meet this requirement. Second, this capability is essential in order to assure that teachers have the capability to use all teaching methods they would use in a regular classroom including interacting with and monitor student progress as the lesson progresses.

Clause C. provides that older transmission systems, in place prior to December 31, 1989, may continue to operate in their present form until such time as expansions or other improvements are made. This is reasonable because it eliminates the perception that the Board is penalizing (by requiring immediate transition into new technology) schools that implemented distance learning during the early stages of its technical development

Subpart 9. COOPERATIVE AGREEMENTS.

The purpose of this rule is to simply affirm that all means of sharing and cooperating identified in the various laws may be used to meet the course requirement provisions of 3500.2020 as long as the time requirements of 3500.2020 are met in all cases. It is reasonable to specify this in rule to eliminate the possible interpretation that the laws allowing and encouraging cooperation obviate the minimum time requirements stipulated in rule.

Subpart 10. CORRESPONDENCE COURSES.

Current rule 3500.2900 defines the circumstances under which schools may provide instruction through correspondence courses. The purpose of Clause A of this proposed rule is to eliminate the option of using correspondence courses to meet the course offering requirements listed in 3500.1600; 1900; and 2020. This ban was not included in the current rule but it was not intended, by the Board, that correspondence courses be used in this manner. Since it is the intention of the Board to require that the listed courses be provided directly by a teacher, either in person or by interactive real-time electronics, it is reasonable to clearly eliminate this instructional model as a means of meeting the course offering requirement.

The current rule itemizes certain conditions when, to meet the needs of a specific student, a correspondence course may be appropriate. Clause B of this rule eliminates the list and simply states that

correspondence courses can be used anytime to meet the unique needs of a student. This could include offering, as appropriate to meet the needs of a student, a correspondence course version of one or more of the required courses in addition to a teacher directed version of the course. This is reasonable because it is impossible to predict all of the conditions under which a correspondence course might be appropriate and that is a decision best left to school staff and the student on site.

Clause C of this rule is identical to the language in the current rule.

REPEALERS

3500.0500 SUBPART 4. CIVIL DEFENSE EDUCATION

The language and intent of this subpart are obsolete in its current form and are no longer needed. It is the last vestiges of a more comprehensive set of civil defense requirements adopted during the late sixties and early seventies. The presumed concepts inherent in civil defense education are now integrated into various other subject areas such as social studies, international perspectives, and health which includes aspects of safety education.

3500.2010 REQUIRED CURRICULUM OFFERINGS FOR THREE-YEAR SENIOR SECONDARY SCHOOLS.

and

3500.2110 REQUIRED CURRICULUM OFFERINGS FOR FOUR- YEAR SENIOR SECONDARY SCHOOLS.

The changes in requirements proposed by the State Board indicate that a different format would facilitate understanding of the new requirements. It is therefore reasonable that these two rules be struck completely in favor of a new format.

3500.2900 BASIS FOR SECONDARY SCHOOL CREDIT Subpart 4. CORRESPONDENCE COURSES.

Correspondence courses are one of the means by which schools can provide learning opportunities rather than a requirement for awarding credit and consequently is removed from this section, revised, and included in 3500.2950.

FISCAL NOTE

As required by the Administrative Procedures Act the State Board of Education has conducted an extensive effort to accurately identify the costs to local school districts of implementing these proposed rules.

A telephone survey of 10% of the school districts in Minnesota was conducted during the week of August 28 through September 1, 1989. The high school principal or district superintendent was contacted in each district. The results of that survey indicate that the total statewide cost to the school districts for implementing the proposed rule would be approximately \$1,750,000 in each of the first two years. This

estimate is based on the findings of this study in which it was determined that a statewide total of 56.5 staff will be needed to implement the proposed rule. The average salary for a teacher in Minnesota is \$30,663, multiplied times 56.5 teachers equals \$1,750,000.

METHODOLOGY. Districts were divided into five groups based on the number of sections of students enrolled. Thirty students is assumed to equal one section. Ten percent of the districts in each category was selected for the survey by the District Data/Management Information Section of the Department of Education .

CATEGORY	NO. OF SECTIONS IN SCHOOL	NO. OF DISTRICTS IN CATEGORY	NO. OF DISTRICTS IN CATEGORY
A	0.0 - 0.5	38	4
B	0.5 - 1.0	103	10
C	1.0 - 1.5	66	7
D	1.5 - 2.0	43	5
E	2.0 - MAX.	185	18*

* Includes one district from a city of the First Class

A set of questions relating to the parts of the rule considered to be potential cost centers for school districts was developed. These questions were read verbatim to each interviewee.

QUESTIONS FOR TELEPHONE INTERVIEWS
MINIMUM PROGRAM OFFERING RULE
COST INTERVIEW

The State Board of Education is proposing a new set of rules covering minimum program offering requirements. Your district was randomly selected to participate in a telephone interview to determine the estimated cost for implementing the rule. ARE YOU WILLING TO SPEND ABOUT 15 MINUTES ANSWERING A FEW QUESTIONS?

Q. DO YOU OPERATE A THREE OR A FOUR YEAR HIGH SCHOOL?

(Read opening statements below according to the answer given.)

FINE ARTS

3 year high school

The current rule requires that you offer 2 one credit courses in music and 2 one credit courses in visual art.

The proposed rule requires that you offer the equivalent of 3 one-half credit courses in each of: music; visual art; and in any one or more of theater arts, dance, or media arts.

Districts may design a single course to meet the minimum program requirement in fine arts and physical fitness and wellness if it

addresses the program level learner outcomes for both physical fitness and wellness and the dance portion of fine arts.

Districts may design a single course to meet the minimum program requirements in fine arts and language arts if it addresses the program level learner outcomes for both the speech portion of language arts and the theater arts portion of fine arts.

4 year high school

The current rule requires that you offer 2 one credit courses in music and 2 one credit courses in visual art.

The proposed rule requires that you offer the equivalent of 4 one-half credit courses in each of music; visual art; and in any one or more of theater arts, dance, or media arts.

Districts may design a single course to meet the minimum program requirement in fine arts and physical fitness and wellness if it addresses the program level learner outcomes for both physical fitness and wellness and the dance portion of fine arts.

Districts may design a single course to meet the minimum program requirements in fine arts and language arts if it addresses the program level learner outcomes for both the speech portion of language arts and the theater arts portion of fine arts.

Q. WILL YOU NEED TO ADD STAFF TO OFFER THOSE COURSES? IF SO, HOW MANY?

Q. DO YOU HAVE SUFFICIENT SPACE IN WHICH TO OFFER THOSE COURSES? IF NO HOW MANY ROOMS DO YOU NEED?

HEALTH

3 year high school

The current rule requires that you offer 1 one-half credit course in health.

The proposed rule requires that you offer 2 one-half credit courses in health.

4 year high school

The current rule requires that you offer 1 one-half credit course in health.

The proposed rule requires that you offer 2 one-half credit courses in health.

Q. WILL YOU NEED TO ADD STAFF TO OFFER THOSE COURSES? IF SO, HOW MANY?

Q. DO YOU HAVE SUFFICIENT SPACE IN WHICH TO OFFER THOSE COURSES? IF NO, HOW MANY ROOMS DO YOU NEED?

MATHEMATICS

3 year high school

The current rule requires that you offer 3 courses in mathematics.

The proposed rule requires that you offer:

- 1 one credit course in fundamental mathematics concepts
- 1 one credit course in each of: algebra I: geometry: and advanced algebra.

- 2 one credit courses in advanced topics such as pre-calculus and calculus.

At least one of the courses must include trigonometry.

The 5 advanced courses, starting with algebra I, may be any five course sequence, by any titles, that integrates these and other math concepts.

Courses programs or services to help students achieve your AOM standards.

4 year high school

The current rule requires that you offer 4 courses in mathematics.

The proposed rule requires that you offer:

- 2 one credit course in fundamental mathematics concepts
- 1 one credit course in each of: algebra I: geometry: and advanced algebra.

- 2 one credit courses in advanced topics such as pre-calculus and calculus.

At least one of the courses must include trigonometry.

The 5 advanced courses starting with algebra I may be any five course

sequence, by any titles, that integrates these and other math concepts.

Courses, programs, or services to help students achieve your AOM standards.

Q. WILL YOU NEED TO ADD STAFF TO OFFER THOSE COURSES? IF SO, HOW MANY?

Q. DO YOU HAVE SUFFICIENT SPACE IN WHICH TO OFFER THOSE COURSES? IF NO, HOW MANY ROOMS DO YOU NEED?

VOCATIONAL EDUCATION

3 year high school

The current rule requires that you offer 1 one credit course in industrial arts.

The proposed rule requires that each district select four of Agriculture Occupations, Business, Consumer Home Economics, Health Occupations, Marketing Occupations, Service Occupations, Trade and Industrial Occupations. Each district shall offer at least 1 one credit course in each of the four areas. One of the areas shall be business.

4 year high school

The current rule requires that you offer 1 one credit course in industrial arts.

The proposed rule requires that each district select four of Agriculture Occupations, Business, Consumer Home Economics, Health Occupations, Marketing Occupations, Service Occupations, Trade and Industrial Occupations. Each district shall offer at least 1 one credit course in each of the four areas. One of the areas shall be business.

Q. WILL YOU NEED TO ADD STAFF TO OFFER THOSE COURSES? IF SO, HOW MANY?

Q. DO YOU HAVE SUFFICIENT SPACE IN WHICH TO OFFER THOSE COURSES? IF NO, HOW MANY ROOMS DO YOU NEED?

WORLD LANGUAGES

The current rule requires that you offer at least two years of one language other than English.

The proposed rule requires that you offer at least three years of one language other than English.

Q. WILL YOU NEED TO ADD STAFF TO OFFER THOSE COURSES? IF SO, HOW MANY?

Q. DO YOU HAVE SUFFICIENT SPACE IN WHICH TO OFFER THOSE COURSES? IF NO, HOW MANY ROOMS DO YOU NEED?

ELECTIVES

3 year high school

The current rule requires that you offer at least 10 electives selected from 5 subject areas.

The proposed rule requires that you offer at least 5 one credit courses selected from any subject area, in addition to the specific requirements.

4 year high school

The current rule requires that you offer at least 10 electives selected from 5 subject areas.

The proposed rule requires that you offer at least 6 one credit courses selected from any subject area, in addition to the specific requirements.

Q. WILL YOUR DISTRICT USE ANY OF THOSE COURSES NO LONGER REQUIRED, TO MAKE UP THE NEW REQUIREMENTS? IF YES, HOW MANY?

OPPORTUNITY

In effect, (because the current rules require that each student earn at least 5 credits per year to graduate) the current rule requires that each district allow each student to earn at least 5 credits per year.

The proposed rule requires that each district allow every student to earn at least 6 credits per year.

Q. WILL YOU NEED TO ADD STAFF TO OFFER THOSE COURSES? IF SO, HOW MANY?

Q. DO YOU HAVE SUFFICIENT SPACE IN WHICH TO OFFER THOSE COURSES? IF NO, HOW MANY ROOMS DO YOU NEED?

The survey technique used was to call the principal of the sample schools, identify the purpose of the survey, read the survey questions, and request his/her best estimate of the impact of the rule if it were adopted and implemented in the fall of 1990. In the case of districts with more than one high school, the first school listed in the Minnesota Educational Directory was contacted and their response was multiplied by the number of high schools in the district. The interviewer found the respondents to be generally acquainted with the proposed rule and well-informed as to the present curriculum in their schools and the staffing needs which would result from the adoption of the proposed rule.

The interviewer read the requirements of the existing rule and those in the proposed rule and asked if additional staff would be needed to implement the new rule. If the respondent answered affirmatively the interviewer asked for an estimate of the number of new staff required in each of the five subject areas for which the proposed rule increases the requirement. The respondent was then asked to estimate the the number of existing elective classes that would be eliminated in order to implement the new rule. In several cases this reduced the overall requirement for new staff to meet the proposed rule. The total of staff estimated to be needed by all schools in each sample was divided by the number of schools in that sample. That average per district in the sample was multiplied by the total number of districts in the category. Finally, the total number of staff needed by all districts in all categories were added to obtain the estimated equivalent staff needs for the state.

CATEGORY	NO. OF DISTRICTS	NET STAFF NEEDS
A	38	6.64
B	103	22.6
C	66	12.53
D	43	1.2
E	185	13.6
TOTAL		56.5

No sample school indicated that additional space would be needed to implement the proposed rule. No costs other than the staff additions

were identified other than normal texts and materials associated with additional courses.

The final survey question related to the proposed rule which would require districts to allow all students to enroll in at least six courses each year. No school in the sample indicated any additional costs related to this requirement.

