

Measurement and Evaluation

In This Issue...

CCSSO Begins NAEP Project
on Arts Education
Assessment.....page 1

Evaluation of Arts Education in
Minnesota.....page 5

Editor's Desk...page 16

Council of Chief State School Officers Begins National Assessment of Educational Progress Project on Arts Education Assessment

Frank Philip
Council of Chief State School Officers

Overview

The 1996 NAEP (National Assessment of Educational Progress) Arts Education Consensus Project began on September 14, 1992. During the next eighteen months, the project will develop a consensus on the content of K-12 arts education, an assessment framework and specifications for a proposed national assessment of students' knowledge and ability in four arts areas, dance, music, theatre, and art, in grades 4, 8, and 12.

The Council of Chief State School Officers (CCSSO), in cooperation with its subcontractors the College Board and the Council for Basic Education, is undertaking this project for the National Assessment Governing Board (NAGB), NAEP's policy-making body which, in August of 1991, voted to include the arts in the 1996 NAEP.

The national consensus process in arts education is similar to that used by CCSSO for the NAEP reading, mathematics, science, geography, and United States history national assessments. Two committees have been formed by CCSSO to achieve this goal.

A 28-member Steering Committee, co-chaired by Ramsay Selden (CCSSO) and A. Graham Down (Council for Basic Education), will include representatives from professional education organizations, parent groups, artist organizations, representatives from business, policymakers, and the public at large. The Steering Committee will provide policy and procedural guidance during the project.

The second committee, a 32-member Planning Committee, will shoulder the responsibility for the consensus on content and writing the assessment framework. The Planning Committee is composed of K-12 teachers and arts educators from higher education, practicing artists, and assessment specialists. Frank Philip (CCSSO) will chair this committee.

To aid the two committees in their work, public hearings were held nationwide to allow for broad public input into the development process. The

Regional Evaluation Representatives

East

Richard Sang
Queens College/CUNY
Flushing, NY 11367

West

Carol Harrison
California State University
Fullerton, CA 92634

South

Patricia Sink
University of North Carolina
Greensboro, NC 27412

Southwest

Charles Chapman
Southwest Oklahoma State University
Weatherford, OK 73096

Northwest

Ed Asmus
University of Utah
Salt Lake City, UT 84112

Northcentral

Susan Vaughan
State Supervisor of Music
550 Cedar Street
St. Paul, MN 55101

sites for the public hearings were San Francisco (February 4, 1993), Orlando (February 9, 1993), and New York City (February 24, 1993).

Additional hearings to gather input about the drafts of the Assessment Framework will be scheduled for the fall.

Funded by the National Endowment for the Arts in collaboration with the Getty Center for Education in the Arts of the J. Paul Getty Trust, the 1996 NAEP Arts Education Consensus Project will work in tandem with the National Standards for Arts Education project. This unique timing will allow the two separate projects to coordinate efforts on many levels to ensure a clear and consistent definition of arts education and the best way to assess it.

The National Standards

The voluntary National Standards for Arts Education are being developed by four national arts education professional organizations with the cooperation of the National Council of State Arts Education Consultants. In January of 1992, the National Dance Association, the American Alliance for Theatre Education, the National Art Education Association, and the Music Educators National Conference (MENC) formed an ad hoc organization called the Consortium of National Arts Education Associations. With the MENC acting as the fiscal agent, the organizations received a grant from the United States Department of Education (with the National Endowment of the Arts and the National Endowment of the Humanities providing partial support) to write the voluntary national standards.

The National Committee for Arts Standards, an oversight committee, has supervised and guided the development of the new standards. The committee is chaired by Graham Down of the Council for Basic Education, who also co-chairs the NAEP Assessment Steering Committee.

The two projects will produce uniquely different outcomes. The

evaluation of the condition and progress of student achievement.

NAEP is a congressionally mandated project of the National Center for Education Statistics, U. S. Department of Education. In 1988, Congress created the National Assessment Governing Board to set policy for NAEP. The 24-member Board is responsible for selecting subject areas to be assessed, developing assessment objectives and specifications through a national consensus process, and setting appropriate achievement goals.

NAEP gathers information from a nationally representative sample of students to provide results for the nation by region. More recently, a

trial state assessment has reported achievement data at the state level in some subjects, for those states choosing to participate. At present, NAEP policy forbids reporting below the state level.

Why measure achievement in arts education?

There are two principal reasons for measuring achievement in arts education. The first reason is primarily educational in nature and the second emphasizes the elements of politics, public perceptions, and economic reality.

First, the assessment of achievement informs the teacher and the learner about the effectiveness of instruction and experiences which will provide expected learning outcomes. The evidence can also be shared with parents and others interested in the learner's development. In a perfect world, this educational use of results is the prime goal of assessment.

"The National Assessment of Educational Progress is the only nationally representative and continuing assessment of what America's students know and can do in various subject areas."

NAEP process will provide an assessment framework which is a blueprint for developing the national assessment. The voluntary national standards will be used to provide a coherent vision of arts education to guide the development of curriculum and appropriate instructional measures.

What is NAEP?

The National Assessment of Educational Progress (NAEP) is the only nationally representative and continuing assessment of what America's students know and can do in various subject areas. Since 1969, assessments have been conducted to provide comprehensive information on student knowledge and skills at ages 9, 13, and 17, and more recently for students in grades 4, 8, and 12. By making the information on student performance and related factors available to policymakers, parents, practitioners, and the general public, NAEP is an integral part of our nation's

But arts education and general education are also part of a world that orders its priorities according to other issues besides education. Arts education, as a part of the core curriculum with expectations for learning by all students, needs to provide evidence of substantive content, experience, and achievement similar to other areas of the curriculum.

In an age of accountability driven by fewer and fewer resources for education, arts education must join the competition and demonstrate effective learning in an area of the curriculum that provides unique knowledge, skills, and experience not found anywhere else. And while the assessment of arts education cannot accomplish this task alone, it is clearly one key prerequisite to achieving parity in the curriculum.

Why Is It so Important to assess the arts now?

Arts education is faced with some truly significant opportunities that will not always be available. No other curricular area has been given the opportunity to develop voluntary national standards and a NAEP assessment at the same time. This confluence of defining the learning and the assessment gives arts educators a vehicle to thoughtfully question our assumptions about learning in the arts, identify appropriate adjustments to meet the needs of a changing world, and provide a means for measuring the effectiveness of the process.

What are the development steps involved?

The development of an assessment framework is the first step in a three step process. Included in the first step are five substeps: 1) writing and disseminating an issues paper for wide public input; 2) conducting a national consensus process to deter-

mine the content for assessment; 3) developing the assessment framework and specifications that provide the working plan for developing the assessment measures; 4) the identification of important variables related to instruction to improve the understanding of the assessment results; and 5) the development of reporting strategies.

The second step is the development of the test itself. The contract for constructing the actual assessment instrument will be awarded after the first step is completed in the winter of 1994, contingent upon the authorization of funds by Congress.

The final step is field testing in 1995 and the planned implementation of the assessment in 1996.

Just what is an assessment framework?

The NAEP Assessment Framework will guide the development of the NAEP Assessment. The comprehensive assessment framework is a written narrative of the expectations for learning with suggestions for assessment measures. The framework is like a blueprint or musical score which guides the development of the assessment instruments. It is based on a national consensus of the expectations for learning in arts education (what students should know and be able to do in four arts education areas: dance, music, theatre, and visual arts). Unlike a curriculum framework, which drives the development of instruction, an assessment framework establishes guidelines for measuring the student achievement.

Ideally, both the NAEP Assessment Framework and the new voluntary National Standards for Arts Education should be based on the same vision of arts education. The two projects have been sensitive to this need and have worked closely to

build in links which allow the separate programs to inform and enhance each other, producing the needed integration of arts learning and assessment.

Who is Involved In developing the assessment framework?

The National Assessment Governing Board has contracted with the Council of Chief State School Officers for developing the arts consensus process. At CCSSO, the project director is Ramsay Selden, director of the State Education Assessment Center. Frank Philip, arts education specialist on leave from the Michigan State Department of Education, will provide coordination for the project including the consensus process, development of the Assessment Framework and Specifications, communication, and the general schedule. Jon Quam will oversee the development of the assessment framework and Ed Roeber will oversee the development of assessment planning and specifications.

There will be two subcontractors for the project. The College Board will assist by developing the specifications document. Representing the College Board will be Robert Orrill, the executive director of the Office of Academic Affairs, with Carol Myford of the Educational Testing Service serving as the lead staff person.

The second subcontractor will be the Council for Basic Education. The Council, under the leadership of its president, A. Graham Down, will provide assistance with the consensus process. Acting as contributing consultants will be Dennis Palmer Wolf from Harvard and the PACE project, and Ruth Mitchell from the Council for Basic Education.

How is this project funded?

The consensus project for the 1996 NAEP Arts Education Assess-

ment was made possible with funds from the National Endowment for the Arts in collaboration with the Getty Center for Education in the Arts of the J. Paul Getty Trust. At this time, only the first phase of the project is funded, with the test development in 1994/95 and field testing and implementation in 1995/96 requiring future funding.

How will this NAEP relate to other levels for assessment?

The NAEP assessment needs to be put in a larger context to be understood fully. The NAEP is a national level assessment and will provide only part of the picture. Still needed are a comprehensive plan to facilitate a voluntary articulation of the national standards, the NAEP assessment, and the state level assessments by the various state departments of education, and the assessment programs at the district and classroom levels. The process will draw on experience from former NAEP arts assessments from the 1970s as well as the experiences of the various states which have conducted large scale assessments over the past 20 years.

The project will encourage not only the best traditional measures to assess knowledge, but will also examine the potential for using interactive video, portfolio techniques, and other performance based measures that can capture the special qualities of arts education.

Clearly, a national assessment cannot measure all learning at all levels by all children, nor should it be the prototype for all other assessment at the state or local level. What NAEP can do is set a tone and a pace for additional work at other levels and

side of school, among others. Thus, achievement results may be reported in terms of arts courses taken, teacher experience, or frequency of participation in nonschool-related arts activities.

Frank Philip

NAEP results will be reported primarily in terms of achievement levels, according to National Assessment Governing Board policy. These levels describe what students at each grade should know and be able to do at the basic, proficient, and advanced levels.

Proficiency represents competency over challenging subject matter, incorporating language in the National Education Goals. The basic level reflects partial mastery of the content and skills, while

advanced defines superior performance.

If the NAEP arts assessment is conducted at the national level, results will be reported for the nation and for geographic regions, based on a representative national sample of students in grades 4, 8, and 12. It has not been decided whether the arts assessment will only be given at the national level, or will also be available to states that wish to administer the test. In the later case, state-level results will be available on the NAEP arts assessment for those states choosing to participate.

"What the National Assessment of Educational Progress [will] do is set a tone and a pace for additional work at other levels and serve as an impetus for the development of comprehensive systems for learning and assessment. NAEP results are used to inform policy makers, parents, practitioners, and the general public about the achievement of our nation's students."

serve as an impetus for the development of comprehensive systems for learning and assessment.

How will the results from the national assessment be used?

NAEP results are used to inform policy makers, parents, practitioners, and the general public about the achievement of our nation's students.

In addition to the outcomes of the assessment, results are reported in relation to other factors that provide a meaningful context in which to interpret NAEP findings. NAEP collects background information from students, teachers, and school principals on variables ranging from demographic factors to instructional practices, school policies, teacher training, and students' experiences out-

Evaluation of Arts Education in Minnesota: A Description of Minnesota's Arts Assessment Programs

**Susan Vaughan, Arts Education Specialist
Minnesota Department of Education**

Background of NAEP Assessments

The primary goal of the assessments created by the NAEP has been to report the current educational status of young Americans and to monitor any changes in achievement that may have occurred over a prescribed testing period (Procedural Handbook, 1981). The original charge, "to determine the progress of the nation's educational programs" was given to the United States Office of Education chartered in 1867. It was not until the early 1920s that this challenge was met through the evolution of the "testing movement," which provided a basis upon which scientific procedures could be applied to education. Since that time an array of instruments to assess academic aptitude, achievement, personality, and intellectual potential has been designed, tested, and evaluated.

In the middle 1960s, Francis Keppel, then United States Commissioner of Education, initiated conversation with educational theorists and scholars led by Ralph Tyler. This conversation was carried out through the Committee on Assessing the Progress of Education (C.A.P.E.) that expanded into what is today known as the NAEP. After a brief experimental period of funding by the Carnegie Corporation, control of NAEP was shifted to the Education Commission of the States. By 1969, the United States Office of Education had assumed fiscal and monitoring responsibilities (Mark, 1978).

The NAEP program initially received some outward opposition from the membership of the American Association of School Administrators, which feared that the testing might be used to stress measures of accountability for gauging teacher preparedness and to promote competency-based education programs. Competency-based programs require students to meet specified criteria measuring achievement, attainment, or competence in order to complete courses, programs, or levels of learning. This demonstrated achievement enables students to progress to their next stage of development or sequence of courses.

The earliest assessments designed by the NAEP were prepared to survey achievement of 9 year olds (fourth graders), 13 year olds (eighth graders), and 17 year olds (eleventh graders), and sometimes adults (though this age group is no longer being assessed), in ten subject areas including art, career and

occupation development, citizenship, literature, mathematics, music, reading, science, social studies, and writing. More than one million young Americans have participated in the NAEP's testing program.

In each area of the assessment program, educators, scholars, and lay persons from throughout the nation are consulted to design goals or standards in each designated subject area. Those standards articulate the expectations of what Americans should achieve in the course of their education.

The diversity of people involved in the NAEP process results in diverse opinions regarding values and goals of curricula in the United States. The breadth of involvement and the search for representation from diverse viewpoints results in differing approaches and methodologies. This divergence, although an impediment at times, creates a vision for instructional design and curriculum reform which may not have occurred otherwise.

Background of NAEP Music Assessments

Preparations for the first national music assessment were begun in the fall of 1965 when music education professionals, leaders from the Music Educators National Conference (MENC), convened a panel to develop objectives for the music assessment, including music notation, music history, music performance skills, and attitudes about music. In 1966 the panel created a set of assessment items designed to match the selected objectives. The United States Office of Education reviewed the music exercises by the fall of 1970, which enabled the first administration of a music assessment to take place during the following school year, 1971/72.

Approximately half of the exer-

cises were reassessed in a second assessment in 1978/79 under almost identical field testing and administrative conditions. Additional exercises were developed to satisfy increased interest in music education relative to emphasis on affective responses (Musical Technical Report, 1975). The panel later established criteria for making comparisons that could measure changes in performance between the music assessments administered in 1971/72 and 1978/79 respectively.

Currently, a national assessment in music, art, dance, and theater is scheduled for 1996. Information regarding the assessments is available from the national professional arts education associations associated with those disciplines, the Office of Education, the National Endowment for the Arts, and the Council of Chief State School Officers.

Minnesota's Adoption of the NAEP Model

The Minnesota Department of Education (MDE), when it initially established its assessment program, adopted NAEP's assessment model. This ensured a systematic, continuous, census-like survey of knowledge, skills, understanding, and attitudes of students across three age/grade levels and across each subject area.

The major purpose of the Minnesota Assessment Program is to provide a means for school districts to analyze program effectiveness and determine curricular strengths and needs. However, the MDE assessment plan was also created to minimize costs of developing and scoring assessment exercises while maximizing the quality of the product over time. The Minnesota model also provided a means for making comparisons of results within the state and to national and central states' students.

Originally, Minnesota was com-

mitted to conducting periodic and comprehensive assessments of statewide educational progress through a contract with the Research Triangle Institute. After a pilot program involving reading, mathematics, and music (affective domain areas) in 1971/72, the Department sought alternative assessment approaches to fulfill its objectives in the statewide assessment project:

1. To determine the level of performance of students in this state in the cognitive, affective, and psychomotor domains.
2. To identify the variables related to student performance.
3. To report the results of this investigation to educational decision makers in the executive and legislative branches of state government, the State Board of Education, other branches of the MDE, local school administrators and schoolboards, and interested citizens of the state, thus providing a guide for allocation and focus of school resources.
4. To longitudinally report the extent to which progress is being made in Minnesota schools toward improving student performance within the State of Minnesota (Pyecha, 1973).

The Department established an assessment section to develop, administer, evaluate, implement improvements, and report findings regarding student achievement in ten disciplines. The MDE developed a stratified random sampling plan by which schools could be identified in six groupings by size and type of districts. The sampling plan was created to assure gender balance and to enable staff to make relevant comparisons between national and central states' students as well as evaluate performance across disciplines in Minnesota.

Minnesota Arts Assessment

Description of Minnesota's State-wide Assessment Program

Minnesota statewide assessments were administered in the early 1970s and used voluntarily by most districts to assess programs. It was not until 1989 that the Minnesota legislature required school districts to use Minnesota's state assessment instruments in specified disciplines. The legislature's emphasis on the use of the state assessments evolved from a growing public demand for accountability in education at the district, building, and learner levels, which might be compared across the state with similar district samples.

Legislation from the Planning, Evaluation, and Reporting (PER) law specifies that each district must have in place a curriculum review/improvement cycle for all subject areas. It also requires schools to assess each subject at least once in a six year curriculum review cycle that includes evaluation, analysis, planning, implementing improvements, reevaluating, and reporting segments.

Each curriculum subject recognized by the State Board of Education has a collection of "essentials," which state what students know, do, create, or value at the time of graduation from high school. These essentials form the basis upon which assessment questions are created in each of the specified statewide assessment subject areas. They are developed from a set of objectives or criteria, the "essential" learner outcomes (ELOs). The "essential" learner outcomes may also be used for creating individualized and group learning plans and assessments in a given subject.

When a subject comes up for evaluation in the curriculum review cycle, testing for essential outcome reporting purposes is required once an assessment instrument in that subject is developed at the state level.

For example, state art assessments were administered in the spring of 1992. From that time on or until new assessments are developed, a district must use that assessment as one evaluation tool during the evaluation cycle. Districts may also design and administer their own evaluations or purchase tests as a secondary assessment when evaluation appears on their cycles.

State assessments, however, target selected learner outcomes taken from the pool of those learner outcomes for which all students must demonstrate knowledge, skills, and understanding at the time of graduation. The essentials are also used for purposes of evaluating programs and facilitating general accountability at local and state levels. Essentials are also administered to a statewide sample on the following schedule:

Mathematics, 1989
 Language Arts, 1990
 Science and Health, 1991
 Visual Art, 1992
 Music and Math, 1993
 Language Arts 1994
 Science, Health, Physical Education, 1995
 Social Studies and Visual Arts, 1996

The latest versions of criterion-referenced state assessments correspond to essential learner outcomes for the following subject areas and grades:

Editing - 6, 9, 11
 Health - 4, 8, 11
 Mathematics - 6, 9, 11
 Music - 3, 7, 11
 Reading - 6, 9, 11
 Science - 6, 9, 11
 Social Studies - 6, 9, 11
 Visual Art - 5, 8, 11
 Writing - 6, 9, 11

Music and art are included among the subjects requiring state and local evaluation. Two music assessments

were administered in 1980/81 and 1984/85, and another state assessment in music began as a sample in November 1992, for final assessment in spring 1993. Assessments in art education were administered in 1985/86 and 1991/92 respectively.

In any given year, approximately 18,000 to 20,000 students are involved in state sample testing, about five percent of the students at any given grade. The numbers of students tested locally each year vary, but approximately one-third of the districts are administered each assessment per discipline on the cycle. Thus, approximately 300 districts are involved yearly with an average of 200 students tested per district.

Purposes for State Assessments in Minnesota

State assessments create standards which assign levels of excellence and bring consistency to teaching across the state. Once tests are administered, the results are reported at the district level to enable school personnel to compare performance of their students with those in districts of similar size or type and with the state as a whole.

Comparisons show what students know, value, or do at a given point in time. This is particularly beneficial as districts compare and justify needs from varying resources and strategies.

State assessments enable educators and administrators to make rational decisions about offerings in subject areas based on student knowledge and need. For example, students who were administered the state art assessment demonstrated a lack of knowledge about art from diverse cultures. This information creates a basis upon which districts may determine where staff development opportunities should be focused, the need for and role of teaming across

disciplines, where and the extent to which resources shall be shared across regions, and the need for raising parent awareness about learning across cultures and societies.

District personnel may also use assessment data to establish student expectations at a building level and may compare actual performance to those expectations. Whatever method of analysis is used, staff involvement in assessments provides an excellent opportunity for personnel to discuss and evaluate goals and outcomes of their curricula as well as determine the scope and sequence in which they are presented.

Performance Based Assessments

To date, performance-based assessments are included in writing, reading, science, and art assessments. They are planned for all areas of assessments including music, which will be assessed in 1993. Performance-based items in music are scheduled for inclusion in the state assessment packages for questions requiring short answers, essays, and written descriptions of aural stimuli.

Music assessments requiring local level evaluations and locally created standards will be used to assess skills of singing, playing, composing, arranging, improvising, and conducting. These performance assessments will not be used at the state level nor will their criteria be published statewide for local district use.

Adoption of the NAEP for Minnesota Statewide Assessments: Art

During the 1985/86 school year, a statewide assessment in art was conducted. It included more than 8,000 Minnesota public school students at grades 4, 8, and 11. It was the second such assessment in art, with a previ-

ous one conducted in 1981/82. Both assessments used identical tests.

The art assessments primarily covered student knowledge and attitudes about art although a few questions dealt with techniques for producing art. Students were not asked to produce art because of the difficulties and costs of administering and scoring those outcomes at a state level.

Major Findings

1. Overall performance remained virtually unchanged over four years from the first to the second art assessment.
2. The performance of boys and girls was virtually identical, although girls displayed a very slight performance advantage at all three grade levels.
3. The greatest performance deviations within the state average were Minneapolis, St. Paul, and Duluth where average student scores were below the state average at all grade levels.
4. Art specialists established criteria for acceptable minimum performance for the 1981/82 assessment. Performance was deemed below an acceptable level on the same sixteen objectives on both the 1981/82 and 1985/86 assessments.

1992 State Assessment in Art

Art assessment instruments were administered in the spring of 1992 for grades 5, 8, and 11. The assessments measured perceiving and understanding of art; knowledge and understanding of cultural and historical contexts of art; problem finding through solution stages in art; development and transformation of ideas through art; art production and skills development; and spatial representation, visual sensitivity, and commu-

nication through art.

The 1992 art assessments were divided into two types of questions delivered through two packages of assessment each of which included colored visual images. One package of multiple choice questions and one package of performance-based, or open-ended, items were prepared for each of three grades. The visual assessments were designed to introduce a breadth of cultures and historical periods and to strive for gender balance.

Art assessments administered in the spring of 1992 were initially created by a group of K-12 and higher education art educators and were later edited by a team of state arts education and assessment staff members and several key art educators from the item development group. The individuals who prepared the assessments strived to represent a balance across packages of numbers and types of outcomes, of types of questions, and of levels of understanding among the targeted groups including emphasis on balance across gender and periods/styles/cultures of art.

Two packages of multiple choice items were created so that more items and hence more outcomes could be utilized. This assumption is based upon the idea that each package will have the same level of difficulty, that is they will be parallel. This enables the statewide assessment committee to review results based on the assumption that students in the same district perform at nearly the same level across packages on like outcomes.

In 1992 art assessments were prepared in six packages with items clustered into the following groupings and grade levels:

Numbers of multiple choice and interest survey items:

ELO Visual Arts Assessment - Grade 5, Packages 1 and 2
(N=39 multiple choice, 9 survey)

ELO Visual Art Assessment - Grade 8, Packages 1 and 2
(N=36 multiple choice, 11 survey)

ELO Visual Art Assessment - Grade 11, Packages 1 and 2
(N=37 multiple choice, 12 survey)

Numbers of performance-based items:

ELO Visual Art Assessment Performance-Based - Grade 5, 1 package
(N = 16)

ELO Visual Art Assessment Performance-Based - Grade 8, 1 package
(N = 13)

ELO Visual Art Assessment Performance-Based - Grade 11, 1 package
(N = 14)

The process of developing, administering, evaluating, and reporting results takes approximately eighteen to twenty-four months for each assessment. The 1992 art assessment was administered to about 5 percent of Minnesota school age students in the grades being assessed. The assessments are administered in about one third of the districts randomly chosen to participate in the assessments. They are administered in classes which do not correspond with the subject being assessed, to avoid bias. For example, the art assessment may be administered in a junior high math class rather than a music class.

A report about the results of the statewide art assessment in grades five, eight, and eleven will be released in the winter 1992/93. It will include comparisons of data from diverse sizes and types of districts and from diverse groupings by age, gender, and essential learner outcomes. The

report will include suggestions for strengthening future art assessments at state/local levels and instructional practices at local levels.

A Sample of Findings: Gender Differences

The formal report of student achievement in art will be published in the winter of 1993. The final art assessment report will include analyses of data across types of assessments (multiple choice and performance-based), between grades, across the state, and between outcomes. Here is a sample of the findings which were discovered in those assessments:

Female students performed above male students in each outcome at each grade level. Gender differences regarding performance were greatest for outcome two at grade 5, outcomes two and three at grades 8 and 11, and outcome four at grade 11. Males achieved an average overall assessment score of 65.6 percent at grade 5, 61.8 percent at grade 8, and 66.6 percent at grade 11. This compares to female achievement averages of 70.1 percent at grade 5, 67.9 percent at grade 8, and 72.3 percent at grade 11. Average performance scores were lower at grade 8 than at grades 5 and 11 for males and females. Students performed below levels of anticipated performance in outcomes two and three at grades 5, all outcomes except IA in grade 8, and all outcomes at grade 11.

Use of Color Images in Statewide Assessments

The use of high-quality colored images in the state assessments greatly increased the costs of the project in 1992. However, the assessment design team was convinced that without such quality, visual images could not be adequately as-

sessed. Each multiple choice assessment package, consisting of two assessments, cost more than three dollars.

The art assessment, in multiple choice and performance formats, is available to schools in Minnesota by contacting the Minnesota Educational Assessment Program, 732 Capitol Square Building, 550 Cedar Street, St. Paul, MN 55101, or by calling 612/296-2970. The assessment materials supplied by the MDE include answer sheets and standard setting packets for making comparisons of student results in performance-based items. Materials and scoring for one multiple choice test per subject area are provided without cost to any district. The cost for additional testing materials is \$1.20 per student. Performance-based assessments are available at no cost, but are limited to 100 students or 25 percent of the total number of students at any grade level, whichever is greater.

The 1992 art assessment has a grade change from previous art assessments. The change was from grade 4 to grade 5. The committee that created the assessments had two primary reasons for changing grades: more students by grade 5 have had exposure to art classes by an art specialist, and reading capabilities of fifth grade students are strong enough to warrant higher levels of thinking and problem solving for items to be assessed.

Two groups of art educators were convened after the assessments were administered. The first group examined each question in the multiple choice and survey packages and determined an average percent correct for each item below which concern would exist. They also reviewed the accuracy of the item. Where consensus existed regarding the inaccuracy of any item, the item was removed from the analysis and report-

ing portions of the assessment process.

A standards setting process was also established for three performance-based assessments at grades 5, 8, and 11. The standards were created by a group of art educators who were recognized as effective teachers and leaders of art education. This group examined each performance item and determined a range of appropriate responses and points for each item. This group used the standards which were later published to help other educators with the assessments in the future.

The actual correcting of performance-based assessments using the prescribed standards was conducted by a broad grouping of educators, not necessarily all of whom were trained in art education

Adoption of the NAEP Assessments for the Minnesota Statewide Educational Assessment of Music

The process used for the first Minnesota music assessment (1980/81) replicated the NAEP process. The only other state at that time that reported administering the NAEP process was Connecticut.

Minnesota included in its program:

1. Defining measurable, criterion-referenced learner outcomes from the category of Describing Sounds, from the curriculum document, *Some Essential Learner Outcomes (SELO)* in music;

2. Matching the NAEP objectives to Minnesota objectives to ensure that at least one third of the Minnesota items originated from the NAEP exercises;

3. Selecting those NAEP exercises that were relevant to Minnesota objectives from the SELOs in music to allow for later comparisons of data;

4. Identifying gaps in Minnesota objectives not adequately measured by the NAEP exercises;

5. Selecting items from the pilot music assessment or developing new items; and

6. Grouping items into two packages of exercises designed for test administration in approximately forty-five minutes. To minimize reading as a factor and to standardize testing situations wherever possible, audio pace tapes were developed to accompany each package (Results of Minnesota Statewide Educational Assessment in Music, 1980-1981. 1982).

Minnesota piloted a series of exercises at the fourth grade level in 1975/76, which were considered together with the NAEP objectives for the first Statewide Educational Assessment of Music, 1980/81. The 1980/81 music assessment determined student performance at the fourth, eighth, and eleventh grades in a pattern corresponding with that established by the NAEP.

Eighth graders were tested in November 1980; fourth graders in February 1981; and eleventh graders in May 1981. This allowed for comparisons to be made between Minnesota, national, and central states students. The second statewide assessment for music education was created in 1985 for the same grade levels as the first assessment, 4, 8, and 11. During the 1985/86 school year, another statewide music assessment was administered with fewer items from the 1978 NAEP assessment. Again, the music assessment was administered in grades 4, 8, and 11.

Major Findings

1. In comparing performance across six school district categories with the state average, students in Minne-

apolis, St. Paul, and Duluth collectively performed lower than all other standards of the state at all three grade levels.

2. Girls have maintained a consistent performance advantage over boys at all grade levels on both assessments. The advantage in favor of girls increased at all grade levels on the 1984/85 assessment.

3. Minnesota students in 1984/85 outscored students in the nation and central United States at all grade levels and the advantage in favor of Minnesota students increased at each level from grade 4 to grade 11. Minnesota eleventh graders in the 1980/81 assessment also displayed a sizable advantage over the national group. The advantage at grade four was slightly greater in 1980/81, while the advantage at grade eight was somewhat less. In general, Minnesota students outperformed their national counterparts on the 1980/81 music assessment and improved their performance slightly in 1984/85.

4. On items carried over from the 1980/81 assessment, fourth graders improved their performance somewhat, eighth graders displayed a slight decline, and eleventh grade performance remained essentially the same.

1993 State Assessments in Music

In the summer of 1992, K-12 and higher education music educators developed the 1993 state music assessments in multiple choice and performance-based formats. A sample music assessment was administered in a small sampling of districts at the third, seventh, and eleventh grade levels. The final statewide music assessments will be administered in the spring of 1993 in one third of the school districts in Minnesota to about 5 percent of the students in those grades.

The music assessment instrument, piloted in November and December 1992 for grades 3, 7, and 11, is designed to measure student knowledge and values about music history and theory, listening, reading and writing, cultural analysis, and the making of musical judgments. The assessments will also include attitudes and opinions about music. Both open-ended and closed-ended items will be included. Both performance-based assessment items and affective items will be used.

The music assessments administered in the spring of 1993 will be formatted on compact discs. They will include a voice reading the directions and test items integrated with music. The sound stimuli are sourced from two Minnesota compact discs developed for the MIDEBank® of music as well as a new compact disc of diverse cultures. The final statewide music assessments will be made available for use in districts that have evaluation on their PER cycle or as needed and upon request.

Production demand was very small for the fall 1992 pilot assessments in music, because only one contractor traveled throughout the state to administer the state sample in grades three, seven, and eleven. Therefore, a digital analog tape (DAT) format was selected, providing the quality of a compact disc at a fraction of the price.

The music assessment will be available to schools in Minnesota after they are administered statewide in the schools. Currently materials and scoring for one multiple choice subject are provided without cost. Cost for additional testing in 1992/93 was \$1.20 per student. Performance-based assessments are available at no cost and limited to 100 students or 25 percent of the total number of students, whichever is greater.

Once produced in the spring of 1993, the music assessments will be presented in the following formats:

ELO Music Assessment - Grade 3, Packages 1 and 2 on two separate discs

ELO Music Assessment - Grade 7, Packages 1 and 2 on two separate discs

ELO Music Assessment - Grade 11, Packages 1 and 2 on two separate discs

ELO Music Assessment Performance-Based - Grade 3, 1 package

ELO Music Assessment Performance-Based - Grade 7, 1 package

ELO Music Assessment Performance-Based - Grade 11, 1 package

Use of Compact Discs In Music Assessments

Prior to the development of Minnesota's test itembank, referred to as the MIDEBank®, national and statewide assessments relied on cassette tapes of aural stimuli for testing student achievement. The cassette tapes included directions to students for taking the assessment, a written text of the assessment questions, and music excerpts used in the examples. Sound production of the tapes was generally of poor quality because of inferior reproduction and playback equipment, inaccurate counters, slow rewind and fast forward capabilities, and the short life of magnetic cassette tapes.

Until the 1990s, the Minnesota arts assessments were designed in multiple choice and survey formats. The music assessments utilized audio tapes for low cost production of aurally administered assessments. But the overall design of the assessments did not allow for affective or perfor-

mance-based questions to be included in each assessment package. Additionally, production, improvisation, performance, and composition could not be used in these formats. Thus, knowledge and attitudes (opinion surveys) were assessed at the state level in music, but what students did in music (play, sing, move, improvise, compose, conduct, and the like.), their personal expression and affective response to music, and demonstrated abilities to create were not included in early Minnesota music assessments.

Audio pace tapes used in the 1980s offer limited production functions. Their quality and the machines that play them seldom ensure uniform sound. The ability to move from one test item to another is very limited with audio tapes. And, the technology does not allow for local district modifications. Because of their uniform and high-quality sound production capabilities, compact discs were chosen for statewide administration of 1993 music assessments. Several additional factors influenced the decision to select this level of technology. Compact discs:

1. may be accessed by CD-ROM drives and speakers and compact disc players. Thus, CD-ROM drives operate CD-ROM and compact discs;
2. are the highest standard of sound quality available in the music industry;
3. have low production costs and are highly versatile in format;
4. allow for random generation of tests and immediate access to tracks, and
5. allow for local district creation of assessments for specified essentials used for local options for testing.

Selecting a recording studio with high quality, affordable, professional capabilities was critical to consistent production of the compact discs. The project received support from Minnesota Public Radio which provided

the studio technicians with access to sound studio time.

The MIDEBank® Test Itembank

The Minnesota Assessment Section developed the MIDEBank® test itembank to assist in local evaluation processes. The MIDEBank®, a computerized collection of more than 120,000 test items, is presented in CD-ROM format for MS-DOS based computers or SE or later model Macintosh computers. It is also accessible through a state-sustained mainframe computer. The system requires a CD-ROM drive, speakers (used for music excerpts), and a laser printer. The software necessary to operate the CD-ROM system is available to all Minnesota school districts without charge. A majority of the districts in Minnesota have MIDEBank® systems in place.

Test items in the MIDEBank® are developed in eleven subject areas and are updated regularly or when new subject areas are added. The subject areas include mathematics, science, social studies, language arts (including reading), agriculture, visual art, health, home economics, media, music, and physical education.

Schools have several ways in which to use the Bank. The MIDEBank® allows test developers to create tests from existing items, design tests by modifying existing items, and print tests at teaching locations where equipment is available.

The test items in the MIDEBank® are organized and indexed to match Minnesota's learner outcomes with a special focus on the essentials. The bank is designed to help educators, curriculum experts, and school district administrators build objective referenced tests to measure the extent to which essential outcomes have been learned. In this way, districts may study results of student

achievement to determine which outcomes merit emphasis in teaching for identified future improvements in curriculum and instruction. The match created between local district curricular objectives and student test achievement results makes it particularly easy for educators to select learning objectives, teach to those objectives in units and lessons, and evaluate student performance based on those lessons.

The MIDEBank® includes open-ended and closed-ended test items. Open-ended items are those for which there is no specified response; they include such formats as essay questions, portfolios, interviews, observations, and problem-solving exercises. In Minnesota, open-ended items are also referred to as performance-based items. Performance-based items are being added to the itembank to accommodate critical thinking and problem-solving processes, diverse learning styles, and differing measurement techniques of students.

In Minnesota, closed-ended items are those for which there are specified or correct responses, including items in multiple choice, true/false, or matching formats. Closed-ended formats dominated the itembank until two years ago when authentic, performance-based items and exercises gained emphasis.

Reasons for Using the MIDEBank®

Districts must report to the state the results of their students' performance at the local level on state tests but not for MIDEBank® items. They may compare local achievement to actual state scores and to state performance criteria. An alternative to use of the state-developed computerized test itembank is the creation and administration of a locally designed test. However, few districts have sufficient time available in current teacher contracts to hire staff to

develop assessments. Thus, benefits of the itembank in cost effectiveness may outweigh the use of personally designed assessments.

MIDEBank® Supplemental Resources for Music and Art

Music and art test items are included in the most current version of the MIDEBank®. Art items, provided in multiple choice and performance-based formats, include graphics and images of high-resolution quality from laser printers. Art test items correspond with visual art images in black and white only. Music test items are also provided in multiple choice and performance-based formats including graphics and professional quality music notation and scores.

There are currently two companion resource materials in the arts available to Minnesota schools: a set of 100 slides from Minnesota gallery and arts commission collections, and a set of two compact discs of aural stimuli: music excerpts of Minnesota sources, and standard, representative repertoire.

Set of Select Artworks Produced for the MIDEBank®

The MDE compiled a series of 100 slides representing diverse cultures and which were gender balanced from artworks in Minnesota galleries including the Walker Art Center, the Minnesota Museum of Art, the Minneapolis Arts Commission, the Plains Museum, and the Minneapolis Institute of Arts. These slides, reproduced and distributed free of charge to Minnesota schools, are distributed to local districts which develop test items for the MIDEBank®. These color slides provide the impact lacking in the output of most laser printers.

The slides, produced for the MIDEBank®, will have corresponding test questions in the next CD-ROM.

Many of the test items were completed by art educators, higher education instructors, and museum staff who are very familiar with these artworks. In each case, contributors to the itembank were trained in advance of writing test items. Small groups of educators convene from time to time and discuss questions as a means of improving the quality of items submitted for the itembank. Additionally, the assessment section and the arts specialist team review questions prior to their submission in the MIDEBank®.

MIDEBank® and Local District Item Development

When creating their own tests, school districts may choose test items from a state developed computerized test itembank using an on-line system or a CD-ROM disc. The CD-ROM discs of test items are updated on a regular basis, about once a year. When using the state itembank, schools need equipment including IBM and Macintosh systems with CD-ROM drives and laser quality printers.

When the MIDEBank® system is used for developing assessments, test items may be selected from an itembank according to classifications that correspond to the state learner outcomes. The test items may be left as they were designed or modified to meet the needs of a school. The itembank includes questions with music scores, art images, or graphics supported by two compact discs of music excerpts and a set of 100 art slides.

Currently, the state is in the process of creating another compact disc of music stimuli which target several learner outcomes pertaining to music from diverse cultures. The compact disc, projected for release in early January 1993, will include music from regions throughout the world representing diverse music styles and cul-

tural traditions.

A unique aspect of the MIDEBank® system is that it is available without charge to school districts in Minnesota. Other states must buy the system. The CD-ROMs, the compact discs, the sets of 100 art slides, and the statewide assessments may be secured by districts without charge. Districts may order the statewide art assessment instruments, administer them with district personnel, and return the assessments for scoring and analysis by the MDE for just \$1.20 per student.

The MDE does provide a limited number of arts grants which districts may access to fund the development of test items corresponding to the art and music essential outcomes. Districts may acquire up to \$2000 for the creation of test items which use the compact discs and art slides distributed by the MDE and the essential outcomes of the art and music curriculum documents.

Districts must report the results of their students' performance at the local level and to the state. They may compare local achievement against actual state scores and against "state performance criteria," which were generated by a statewide group of subject-matter people for performance-based assessment items.

Performance-based assessments are now included in components of writing, reading, science, and art assessments. They are planned for all areas for future assessments including music in 1993. Performance-based items in music are scheduled for distribution in statewide and local testing formats.

Compact Discs of Music for Evaluation with the Test Itembank

The MDE has been charged with

developing test itembanks within each subject area. Music testing requires the use of aural stimuli, however there are no known models that use music examples with CD-ROM technology for assessing student achievement in music education.

It is anticipated that music educators and students will benefit from the use of the CD for purposes of instruction and testing. Students will use the CD to gain immediate access to accurately performed and quality produced music examples.

In the spring of 1989 a feasibility group explored options for testing using aural stimuli. The group confirmed that technology warranted sound production using a compact digital disc rather than vinyl recordings or cassette disks. They also confirmed that CD-ROM technology was not sufficiently advanced for use with sound and text on one disk.

Once the decision to proceed was made, four steps were addressed: 1) an advisory committee was convened to discuss the obstacles, threats, and opportunities inherent in the project; 2) costs of producing and distributing discs were determined, budgeted, and contracted; 3) music examples were selected; and 4) the discs, once produced and distributed, were used to train music educators at special events beginning in the fall of 1990.

Relative to obstacles, the MDE recognized that there were no previous compact discs available for use with testing instruments. Thus it lacked the experience necessary to know whether copyright restrictions would create an insurmountable obstacle and there was no assurance that the discs would be effectively used once they were developed.

Complex marketing and training of music education clients, considerable difficulty with distribution of discs

within Minnesota only, and overall project coordination difficulties were realized with this innovative project. Additionally, there was an overall lack of statewide and national testing models using compact disc technologies; and no previously designed compact digital disc examples from which to work.

The marketing, distribution, and training complexities for new products are immense, especially when legal implications are mounting when working with a state and corporate project. It was decided that the project would be paid for by the MIDEBank® funding source and that distribution of compact discs of music would be connected to distribution of CD-ROM of the itembank. Many corporations and foundations, which provided free access to the excerpts for this one product, did so based on the assumption that it would be created for Minnesota instructional and evaluation uses only and that production would, in this way, be contained on a limited basis.

An advisory committee, consisting of music composers, editors, performers, conductors, and producers, determined the appropriate music repertoire for the compact disc. They found the body of music literature was too immense to represent on one compact disc. Thus, by the time the selections were made and excerpts recorded, it was essential to produce two compact discs. The advisory committee determined that there would likely be a need to create a third compact disc in the future, one which represented diverse cultures, life celebrations, geographic dimensions, and social/religious groupings of people.

The state received permission to produce excerpts of most of the repertoire selected by the advisory committee that was not listed as public domain literature. However, test items

were created for the repertoire list to represent the breadth of music chosen by the committee.

Selections on the compact discs were chosen by Steven Barnett, J. Michael Barone (Minnesota Public Radio), Philip Brunelle, Christine Dahl, Thomas Rossin, Dale Warland, James Olson, and Susan Vaughan. The music represented significant music compositions appropriate for instructional purposes in K-12 schools. Composers selected for the works include Minnesota composers Libby Larsen and Dominic Argento, as well as jazz composer and performer Duke Ellington. The list of music examples was acknowledged as a starting resource and in no way was designed to represent any inclusive list of repertoire that must be used in Minnesota schools.

The excerpts on the two compact discs were produced by Steven Barnett with Preston Smith, digital engineer, through the assistance of Minnesota Public Radio. Barnett and Smith are internationally recognized for their production and engineering efforts with *Paul Bunyon*, the Gramophone award winning production from Virgin Classics, and Dominic Argento's *Te Deum*, nominated for a Grammy Award.

Compact Disc of Diverse Cultures Excerpts

A third source, a compact disc of diverse cultures examples, was produced in the fall of 1992, and will be released in 1993 along with the next MIDEBank® CD-ROM disc. This compact disc includes music from regions around the world representing diverse music styles and cultural traditions. It also includes samples of music from various eras of American history including jazz and contemporary literature.

The diverse cultures compact disc

designed for use with the statewide music assessment and the MIDEBank® was created from excerpts selected from a team of experts in contemporary, stylized, and ethnic music chaired by Jeanie Brindley Barnett with Miriam Gerberg, Sowah Mensah, Roman Gomaz, and Cliff Sloane. The production, like the first set of compact discs released for evaluation, was produced by Steven Barnett and Preston Smith. The selected excerpts match diverse cultures outcomes from the ELO music document of the Minnesota Department of Education including:

1. *Aural recognition of cultures by sampling of global regions:* Recognize that every culture has indigenous music and aurally identify music from the following cultures: African, Asian, South Asian, and East Asian, Native American, and Hispanic.

2. *Use of music in societies from diverse cultures:* Describe some of the reasons for music making (such as work, celebration, and religion).

3. *Identification of sound characteristics:* Define and identify those characteristics which bring quality to popular and world music throughout time.

4. *Effects that societies and cultures have on music:* Explain the effects that society and cultures have when a composer or performer produces a live or recorded musical performance.

5. *Contrasting style:* Accept that an interpretation of music may be perceived and influenced by the listener's previous experiences. Listen to live or recorded music and describe when the timbre changes, how it changes, and how it may be used to evoke emotional responses. Express ideas and feeling through music. Describe personal feelings evoked through music. Identify contributions that women, minorities, handicapped persons, and persons from diverse

socioeconomic groups have made to composing, improvising, arranging, conducting, producing, and performing music. Respect diverse values which are communicated by musicians in their work.

Minnesota's Current Training Model Using the MIDEBank®

The PER Regional Facilitators have been trained in the use of all MIDEBank® systems. They provide computer hardware for demonstration purposes and for purposes of assisting districts when conducting short on-site tests. The services of the PER Regional Facilitators are available at no cost to all Minnesota school districts for consultation on use of the Bank. Staff from the Assessment Office is also available to give information and technical assistance.

In putting the evaluation instruments together in the arts, the MDE realized that there were many obstacles that threatened successful adoption of innovations in arts programs throughout Minnesota. Those obstacles included district development of sequential, written music and art curricula; familiarity with efforts used to evaluate student achievement in the arts; access to and skills in using computer technology of the MIDEBank®, knowledge of and access to compact disc technologies at school building levels, and overall lack of motivation to change at each of the aforementioned levels of innovation.

Given such obstacles, a plan was carefully devised to offer inservice training to educators on learner outcome documents, compact disc technologies, CD-ROM technologies, development of affective and performance-based evaluation instruments, and the value of assessments in the arts as tools for recognizing successful learning. This is especially true for

performance classes such as band, orchestra, and chorus, which have long-standing practices of using productions as evaluation devices.

Access to the MIDEBank®

The CD-ROM itembank disc, two music compact discs of excerpts, one set of 100 art slides, and the statewide assessment in music and art may be secured by Minnesota districts without charge. Other states must buy the CD-ROM system and state music assessments. At this time, the slides and compact discs of music excerpts are available for distribution in Minnesota only.

References

Mark, Michael. *Contemporary Music Education*. Schirmer Books, New York, 1978.

Music technical report: Exercise volume. Report 03-Mu-20. National Assessment of Education Progress. Education Commission of the States. Denver, December 1975.

Procedural handbook, 1978-1979. Music Assessment. Report 10-Mu-40. National Assessment of Education Progress. Education Commission of the States, Denver, 1981.

Pyecha, John, et al. *Minnesota educational assessment: A comprehensive planning study*. Executive Summary. Center for Educational Research and Evaluation. Research Triangle Park, N.C., 1973.

Results of Minnesota Statewide Educational Assessment in Music 1980-81. Minnesota Department of Education. St. Paul, 1982.

Editor's Desk

Richard Colwell

All of us who have been interested in measurement and evaluation applaud the interest in supporting a national assessment program in music. Our teaching efforts can be improved if we possess valid diagnostic information on students and programs. Students will receive feedback on their personal effort to learn, the most meaningful step in the teaching-learning process. We can imagine how frustrating it must be for students who wish to master the intricacies of the music class and are evaluated only as a class or an ensemble. No one, however, can fault the teacher whose schedules make it impossible to provide individualized feedback. The proposed national assessment will be a stunning teaching tool to our arsenal of proven teaching techniques. Perhaps we will be able to raise our expectations of individuals and groups, a practice that has met with such success in other basic subjects.

Data from the national assessment will keep curriculum writers busy for years if these data are taken seriously. The results from the two previ-

ous assessments were apparently so negative that curriculum writers elected to ignore the results rather than wrestling with the meaning of the puzzling data. It was thought better to add objectives and experiences in defense of programs perennially endangered than to spend class time mastering objectives the value of which was unknown. Perhaps unknown is not the right word but there were few music objectives so highly valued by the professional community that one needed to fall on his sword to accomplish.

We would, however, like to add a word of caution to those individuals working on assessment. We find it troubling that the assessment may be voluntary. If the standards are voluntary, it follows that the assessment should be. Meaningful assessments in core subjects can never be voluntary. They can be random or stratified but a voluntary assessment can provide data only at the local level. Local evaluations are context specific and based on local objectives and expectations. In a voluntary arrangement teachers should develop their own assessments and have the options of selecting appropriate evaluation tools developed by individuals and companies with the expertise and resources needed for such an endeavor.

The best match between a volun-

tary national assessment would be a voluntary national curriculum and perhaps that is the intent of these individuals working on the national standards project.

Caution is advised because music educators have no history of conducting systematic evaluations. Aptitude testing has had bursts of acceptance in connection with instrumental music programs but there has been no regular use of achievement testing (except with performance) for more than half a century. Students and teachers will need to learn how to integrate evaluation into the instructional program and how to interpret and use the data obtained. Graduate students and interested faculty could have been expected to have had evaluation as a "hot topic" for their research but unfortunately that has not been the case. The work of Edwin Gordon and his students remains the exception and their research matches only a small portion of the proposed standards. Arts Propel can enlighten us on their procedures, successes, and failures, but here again the match between the work in Pittsburgh and the proposed standards is minimal.

In our next newsletter, two additional cautions will be addressed, the championing of arts assessment and the risks of evaluating untaught standards.

Boston University
School for the Arts
Department of Music Education
855 Commonwealth Avenue
Boston, MA 02215

*Address Correction
 Requested*



Attention: Richard J. Colwell & Robert J. Ambrose, Editors