New computer software, CD-Roms, and videodiscs in K-12 music education: What music educators and media specialists need to know: A selected annotated bibliography

Brent A. Andrews
University of Northern Iowa

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New Computer Software, CD-Roms, and Videodiscs in K-12 Music Education:  
What Music Educators and Media Specialists Need To Know  
A Selected Annotated Bibliography

A Graduate Research Paper  
Submitted to the  
Division of Library Science  
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in Partial Fulfillment  
for the Requirements for the Degree  
Master of Arts  

UNIVERSITY OF NORTHERN IOWA

by

Brent A. Andrews  

May 15, 1996
This Research Paper by: Brent A. Andrews


has been approved as meeting the research paper requirement for the Degree of Master of Arts

Date Approved

Barbara Safford
Graduate Faculty Reader

Date Approved

Marjorie L. Pappas
Graduate Faculty Reader

Date Approved

Peggy Ishler
Head, Department of Curriculum and Instruction
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Chapter 1

Introduction

For centuries music has been, in one way or another, at the heart of mankind's existence. As a tool, music expresses our deepest joys and sorrows, our fears and our dreams. Music is a central focus in many cultures, and where language often is a barrier, music is a bridge. From primitive civilizations to advanced societies, music is used as a primary source of communication. Music is a rudimentary part of human kind (Greenberg, 1979). Everywhere we go music is a part of our lives. Whether it's Muzak in the neighborhood grocery store, or the radio in your car, music can be and is anywhere we wish it to be. It is the one thing that can express any emotion we face and is not limited by boundaries of age, sex or race. Music is fun and functional. What other device can make a person want to dance and then the next moment sell them on the latest dishwashing liquid?

Historically, music was, and many believe still is, a primary component of a good education. Ancient philosophers believed a single pitch could mean the difference between aspiring a person to greatness or driving them to treachery. To a philosopher such as Plato, music represented the vehicle of purity. He advised that to "guard (yourself) against falling into the need of the justice of the courtroom," music must be employed in one's life (Strunk, 1965, p. 11). Although we may wish music would keep our society more at peace, suggestions such as Plato's are commonly dismissed. Despite this, the essence of Plato's intentions is still very applicable today.

For most of the entirety of music instruction in the United States, a student's musical experience merely amounted to singing in the choir or playing in a band.
Sometimes private instruction was offered, but it was not consistent across the country. The year 1870 saw the first modern graded series of music textbooks created by Luther Whiting Mason (Rose, 1988, p. 32). Although this series focused on rote repetition of music, it is a landmark in classroom music instruction. As time marched forward, the entire educational system was developing standardized criterion to allow unified instruction from one school to another. As with all disciplines, music instruction grew and regulated itself through groups such as Music Educators National Conference (MENC) and earlier the Music Supervisors National Conference. Now there are numerous text series and listening and sight-reading materials available. However, the largest revolution in the development of music instruction, the computer was still to come.

In education we now step into a new era of learning, the age of technology. Technological advance in all disciplines of education is stunning and quickly becoming an unstoppable and uncontainable force. As early as the mid-1980s scholars believed "microcomputer technology and the development of digital sound synthesis have provided the impetus for the development of music applications" (Bartle, 1987, p. v). Karl Glenn (1990) similarly concludes, "new technologies will thrust music into a period of change that may be comparable only to the invention of the printing press in its effects on the performance and teaching of music" (p. 23).

Despite the enthusiasm technological advances bring, a tempered sense of reality for music educators must be understood. In James Keene's conclusion to his book entitled A History of Music Education in the United States (1982), he writes "music continues to be taught in schools, most often under duress with a continuous need to defend and rationalize its existence" (p. 366). With the increasing number of arts programs being cut by school districts, instructional time periods for music within
a school day are becoming fewer and more competitive. There is less emphasis on the
music teacher instructing and more on a regular classroom teacher teaching music with
minimal background and qualifications to do so (Goodlad, 1984, p. 83). Day by day
resources are becoming available and flooding the market so as to confuse any
educator asking, "What is good, and what will best answer my classroom and our
school's curriculum goals?" As librarians, it is important that we strive to provide the
best available materials and insight to music educators on the use of music technology
in school programs. The focus of this study will identify technology resources in music
which should be represented in a comprehensive school curricula.

Cultural diversity in education has become very important in the construction
of any discipline's curriculum. Jaqueline Wasilewski begins a chapter on "Curriculum

Multicultural education and the acquisition of intercultural skills are a necessity
for everyone's maximum effective functioning, not just for the culturally
"deprived" or distinct, but for all children as cultural beings. (p. 63)

Because music is such a universal part of all cultures, educational music programs can
play an essential role in expanding children's understanding and appreciation of
diversity.

Purpose and problem statement
Truly excellent interactive technology will grab the student's attention. It will
require that the student become an active participant by connecting with them
mentally/cognitive, emotionally/affective, and physically/psychomotor (Rudolph, 1984,
p. 37). These items should be able to be used independently or at times in small groups
by student and teacher. Resources such as these are likely to interest children because
they appeal to a variety of learning styles and are often more effective in making music appear less as a discipline requiring just cognitive (theory lessons) or psychomotor (keyboard skills) interaction, and more a comprehensive sensory experience.

Those resources which do incorporate all three learning domains as well as expose children to music of other cultures are provided by a number of different media: primarily videodisc, software and CD-Rom items. Difficulty comes in identifying these resources, as there is no current comprehensive listing covering the past five years. The purpose of this study then is to (1) identify and list 30 or more K-12 level music technology resources which incorporate all three domains of learning; (2) identify items using only one domain of learning; and (3) further delineate between items which are multicultural in nature and those which display traditional western European musical traditions.

An annotated bibliography of this nature can be very beneficial in identifying the latest resources for purchase as well as providing a means to analyze a library's current collection for accuracy and value. There is no price limit variable set in this study; however, due to the number of small-budget libraries, every attempt was made to locate affordable items which fit the above described parameters.

Hypotheses

1. 10% or fewer of available resources will use all three learning domains (cognitive, psychomotor, and affective) within a single resource.

2. 25% or fewer of all resources located will effectively use the affective domain within a single resource.
3. 20% or fewer of all resources located will rate moderate (3) or excellent (4) in their ability to actively include ethnic or multicultural diversity within the program.

4. 15% or fewer of all the resources located will be given an overall rating of four on a scale of one to four in judging the item's overall usability, scope, function, and projected purpose based upon the professional experience and opinion of the researcher.

Significance

With the exception of Barton Bartle's work, *Computer Software in Music and Music Education: A Guide* (1987), which focuses on software that is outdated and no longer useful on hardware available today, a few specific reference items (*Only the Best* and *High/Scope Buyer's Guide to Children's Software* for example) and a few journal publications such as *Technology & Learning*, *Music Educator's Journal*, *Choice*, *Electronic Learning*, *Infoworld*, and *Media and Methods*, that infrequently provide small lists of resources, there are no comprehensive sources covering the length of time and number of media as will be attempted through this study.

With the rapidly evolving role of music educators and music curriculum in schools across the country, a study such as this is also necessary to help teachers choose resources which match students' abilities, talents, and interests. Specifically, a media specialist will benefit from the aid this study will supply toward planning a media center, assisting collection development, enhancing and developing curriculum, creating multicultural connections, and guiding teachers in shaping an integrated discipline approach in their classrooms.
Definitions

"Cognitive Domain" encompasses what is commonly referred to as "thinking." Cognition is that thinking which serves to make sense of the world. It is the realm of ideas, names, relationships, and intellect. Common cognitive tasks are to know, understand, comprehend, translate, interpret, extrapolate, apply, analyze, synthesize, and evaluate (Darling, 1990).

"Psychomotor Domain" is that domain through which we learn to receive and respond, through the senses, to the physical world around us. Common psychomotor tasks are to hear, perceive, perform, and respond (Darling, 1990). For the purposes of this study, simple psychomotor skills, such as typing the enter key to continue on the next page, are not included since most software programs require that as a primary function. However, a distinction will be made for programs that require mouse and keyboard manipulation to actively participate in the program; for example, clicking and dragging an item from one point on the page to another.

The "Affective Domain" helps us learn to appreciate, place value on music we hear or perform, and discriminate among items of varying quality. Common affective tasks include awareness, maintaining attention, forming values, forming preferences, and developing commitments (Darling, 1990).

"Multicultural diversity" deals with the number or amount of varying world, cultural, or personal aspects a single resource might embrace.

"Technology" in this study pertains to the system or vehicle by which a society provides its members with those things needed or desired. The specific vehicles dealt with in this study will be videodisc, CD-Roms, and software for both Apple Macintosh and IBM compatible hardware.
"Music technology materials" or "music technology resources" includes only items requiring a strong combination of historical, educational, visual, theoretical, aural, or tactile interaction specific to music.

"Users" for the purpose of this study are defined as children kindergarten through high school age (5 through 18).

Assumptions

Enough music technology resources which incorporate multiple domains of learning at once as well as a multicultural component, can be found to form a useful bibliography; 30 or more items are believed possible. This study also assumes that children benefit from the integrated experience of music when all three domains of learning are present in the material used. Finally, the researcher assumes that due to a lack of studies in this area, teachers and media specialists will find this study of use as a resource to assist in providing a successfully integrated musical experiences in any discipline.

Limitations

To assess accurately the value of the study, the following limitations were set:

1. The music technology resources focused upon in this study are from one of three media: videodisc, computer software, and CD-Roms. Technology related resources omitted from this paper include audio recordings, video reproductions of musical performances, synthesizers, and the Internet.

2. Resources chosen do not include any materials specifically for children younger than kindergarten age or older than high school graduates.
3. All resources chosen for this study were published no earlier than 1990.

4. Only materials located and reviewed by the researcher were included in the annotated bibliography.
Chapter 2

Review of Literature

Music and People

Music intrigues children of all ages. There is no age, race, or person that in some way has not been affected by music in their life. Research shows us that from the point of life prior to birth, a child can hear music in his mother's womb. According to Kathy Hirsh-Pasek, Mona Goldman Zakheim, and Kimberly Wright Cassidy, "Even before children are born, they are surrounded by the rhythms of the mother's heartbeat. These and other rhythms of nature form the backdrop for the child's early responses to music" (Nuba, 1994, p. 381). Look at a young child playing with friends or go to a preschool and see how often songs and music enter the daily activities of a growing child. This continues through adolescence with the likes of MTV and car stereos, and into adulthood when often as parents or community members an evening may include a night of concert music. Music is not merely a subject taught at school, but rather an activity that is personal and communicative. "Music civilizes us, humanizes us, harmonizes us with our world, and makes us whole, thereby fulfilling us" (Reimer, 1989, p. 25). The Carnegie foundation backed up this sentiment when they concluded that the arts not only give expression to the profound urgings of the human spirit; they also validate our feelings in a world that deadens feeling. Now, more than ever, all people need to see clearly, hear acutely, and feel sensitively through the arts. These skills are no longer just desirable. They are essential if we are to survive together with civility and joy (Boyer, 1983, p. 98).

Unfortunately, there is a growing sentiment that music and the other fine arts hold little or no value in the education of our children. Americans are turning their
throughout this country's history, music has done nothing more than open a window of possibility for all students no matter what their handicap or disability be (pp. 25-92).

Music education in public schools is sometimes seen as unessential. Paul Lehman (1985) best sums up this discussion in the following excerpt from The Class of 2001:

We certainly don't need to apologize for teaching a subject that doesn't help our students get better jobs; our subject helps them live better lives. The people who ought to apologize are those bureaucrats who think that every student should pursue a rigid, technologically oriented curriculum, and some day that will be obvious to everyone.

We don't need to be embarrassed because our subject doesn't lend itself easily to paper-and-pencil testing; our subject brings joy to the lives of our students. The people who ought to be embarrassed are those principals and superintendents who are willing to eliminate the arts and who don't care how students feel about coming to school as long as their SAT scores are acceptable.

We don't need to feel self-conscious because our subject isn't presently receiving as much popular attention as some others; much of this attention is the direct result of our colleagues in other disciplines doing a poor job. The people who ought to feel self-conscious are those state departments of education and legislatures who mandate every detail of education but omit the subjects that best reflect humanity itself.

The arts exalt the human spirit. They transform the human experience. They enhance the quality of life as nothing else can. They're the lifeblood that flows through the veins of civilization. To deny the arts a role in the schools is to deny a role for civilization itself (p. 14).

Technology: Resurrection of past errors?

The more sincerely musical ability is taken in a child's life, the more likely it will become a fully integrated portion of their existence. Encouragement and
development of basic music skills should be a fundamental focus of a young person's education. Distressing as the discussion above may be, there are hopes and numerous alternatives for the future of music education.

Before specific alternatives can be suggested, it is important to seize the vision of education's future. Since the 1960's, when computer technology was coming into its own, the United States had been overly concerned with being able to compete in the areas of science and technology. Computers, although still awkward and expensive, made their way into large community schools which could afford to promote such an educational endeavor. As much of a breakthrough as the new technology-assisted approach to education may have been for the hard sciences, the fine and liberal arts took quite a blow. Around 1975, the first microcomputers came onto the scene. Although they were slower and smaller, these computers represented the future in computing and technology. From the mid-1980's until now, we have entered a new period labeled the Technological Revolution. Everything done today seems to have technology involved in some way, whether at school, work, or home (Doerr, 1979, p. 3). The final phase of this integration of technology is predicted to arrive around the turn of century. David Lillie, Wallace Hannum, and Gary Stuck (1989), believe one of three futures will exist for instruction by technology:

1) Instruction will continue as usual.

2) Technological developments are a passing fad and will be abandoned.

3) Technology will be the catalyst for major change in how instruction and learning take place in the school (p. 175).

To many, the inevitability of future number three becoming reality is a fearful proposition. This is not to say that change is bad or that new breakthroughs cannot be
stimulating to the whole of humanity. The crisis at the moment is that Americans appear single-minded, or monodimensional; they are not integrating their insight in technology across the entire educational process. Americans are stranded in learning future number one, or expectant of future number two. Today technology is changing so rapidly that schools do struggle to keep up. Despite this it remains essential that school boards and teachers keep perspective on new technology and use it as a tool rather than allowing themselves to be used by technology.

Recently, in a staff assembly at a private college an anonymous instructional consultant wrote "technology is the toilet that never stops flushing." As primitive as the statement may first appear, the concept is valid. Millions of dollars and hopes are placed into every new upgrade or edition. Will there ever be enough, and what should be done when the funds run low? The Carnegie Foundation offers discretion by warning that "the first obligation of the school is to put the technological revolution in perspective. Buying computers before [a] core educational program is solidly in place is to turn school priorities upside down" (Boyer, 1983, p. 195). Schools are going after new technology as they did audiovisuals in the 1960's, manufacturers were promoting language masters, TV sets, and 8mm projectors heavily and putting pressure on schools to purchase these items with the assurance that they would progress more slowly behind other schools in the country if they did not have these technologies. The consequences of this absurd situation; millions of dollars were spent with only a fraction of this equipment ever effectively being used. This is fundamentally due to the reason that it "wasn't conceived for educational purposes and it never fit into any broad educational scheme" (Lehman, 1985, pp. 11-12). Sadly, this cycle has come full circle and unless we learn from the past and plan effectively for integrating new technology into school curriculum in the future, those 8mm projectors
in schools' AV closets will be joined by LCD displays, scanners and network
connection machines.

Learning and how it will be affected by technological advances

Technology is forcing educators to take a deeper look at how students learn. There are battles being waged on all sides with technology being the central issue. A case in point is the battle between behaviorism and constructivism. Behaviorism tends to look at the end product; a person must learn one piece of information after another in regard to specific stimuli. Producing accepted behavior patterns has been the primary focus of music education for years. All those drill and practice sequences, and theory exercises are examples of this brick-by-brick method. Today, more and more music educators are turning toward constructivism which allows for more individual creativity and personal discovery. This theory has, at its heart, Piaget's insight that people cannot directly transmit knowledge to one another. His focus was for each individual to actively construct their own understanding by synthesizing new concepts into their already existent body of knowledge. Personal discovery, intrinsic motivation, and curiosity should drive the learning process. Each person has his own unique approach to learning, and will require a special mixture of intelligences to learn effectively (Reese, 1994, p. 12).

Take this discussion one step further. The primary premise of this study focuses on understanding three specific types of learning: cognitive, psychomotor, and affective. Benjamin Bloom is famous for his taxonomy on learning in which he focused on affective learning, which involves feelings and attitudes; and cognitive learning, which focuses on comprehension and interpretation. Elizabeth Simpson is responsible
for creating an accepted taxonomy for psychomotor learning, the primary function of
which is to identify the importance of physical skills in connection with learning
(Hoffer, 1983, pp. 156-8). When Bloom's and Simpson's taxonomies are combined,
the foundation of the interactive experience is created. This new buzzword is merely a
revisiting of tested concepts.

The beauty of technology today is that with a single program educators can
now produce a fully interactive experience for any student. Many programs available
today can also be manipulated to accommodate each individual child's learning style.
However, it seems that music educators have let this technology slip through their
hands. Why is it that so many music educators are without computers and are using
standard learning aids (such as the Silver-Burdett series) as they have for years? It may
truly be because of budget restraints, but how often would administrators deny use of
shared facilities, for example school computer labs, if educators wanted to try?

Uses for technology are limitless, but to save ourselves from past mistakes
educators must now be involved. Educators must be empowered to develop uses for
new technology and supplied with the means and the knowledge to make it happen. A
recent survey by the Center for Technology in Education showed that it takes "at least
five years of exposure to and hands-on experience with computer technology before a
teacher will consistently use computer applications creatively and effectively in the
classroom" (Williams, 1992, p. 26). If it does take that long to have teachers
effectively using software, then they must not continually be bombarded with demands to
change what they are using every year. Instead, encourage teachers to develop uses for
technology as often as possible, whether it's one program or full integration of a
multimedia suite. By patiently supporting our educators we will become more
integrated with technology. Technology use by demand does not a good curriculum make.

Computers alone can be useful in education. They have and will revolutionize the way educators teach and students learn. Yet this will not happen the way computers are currently being used. To rewrite textbooks as series of exercises on disk is merely a "parody of educational computing." At the least programs must be genuinely interactive and individualized (Lehman, 1985, p. 12). According to the Center for Social Organization of Schools, computers are able to:

1) increase student motivation.
2) increase cooperation and independence.
3) increase learning opportunities for high-ability students.
4) increase opportunities for low-ability students to master basic skills.

(Lillie, 1989, p. 5).

Do not forget as well the increased opportunity to share different cultures and ways of life. If music truly is a language shared by all, let the world grow in understanding one another through sharing its history, its lives. Read between the lines, interaction is the key, not only for the students but also the educators. To make technology-based education work, more time and more flexibility are needed for students to interact with other students and teachers. Technological advances must be adapted into the current learning process as smoothly as if it were a pencil or a piece of paper. (Reese, 1994, p. 90).

**Future Direction**

As with any other discipline, change is difficult. However, proper perspective on the changes technology will bring to the field of music education must be
maintained. As long as people like Karl Glenn (1990) are warning that "new technologies will thrust music into a period of change that may be compared only to the invention of the printing press in its effects on ... music," educators will always be faced with an uphill battle (p. 23). As mentioned previously, preparation will be the key to success. There must be resources available to assist in the purchasing and integration of technology into music education. Training will be essential. If administrators and educators falter in the preparation of our future and current teachers, frustration and failure will almost certainly be guaranteed. Most importantly, take to heart the suggestion of Sandy Feldstein, the past-president of the Music Industry Conference, who stated:

Technology, like the record player, ...is not the savior of music education. We must not throw out what we are now doing, but add technology to it as another tool (Kassner, 1988, p. 20).

People must keep themselves from falling into the trap that has entangled school boards and administrators: putting too much dependency on technology for success. Success is not based upon what a school has, but upon their attitude and their desire to see students excel and learn.

One of the greatest challenges ahead will be to get away from identifying music technology purely as keyboard work, drill & practice, and music printing. Educators must demand technology that fully challenges and expands a student's mind and that integrates the three domains of learning. To be apathetic and preoccupied with performance skills will stunt the growth of music education (Dillon, 1982, p. 28). Get away from the single outcome games and tutorials, and move toward interactive programs.
This study hopes to provide a resource to identify items which provide fully interactive educational experiences. Educators and library media specialists alike should make it a priority to supply their students with the best resources available. It is time to be prepared and aware as we remain demanding and critical consumers of the technology industry.
Chapter 3

Methodology

The purpose of this study is to identify and analyze technology resources (primarily videodisc, software and CD-Rom items) in music education that are likely to interest children because of their appeal to a variety of learning styles. The ability to incorporate all three learning domains as well as expose children to music of other cultures are this study’s primary points of focus.

An annotated bibliography was decided to be the most beneficial means of identifying the latest resources for purchase as well as providing a means to analyze a library's current collection for accuracy and value. Each item included in the annotated bibliography was viewed and evaluated by the researcher. To be included in this bibliography each item met the following criteria:

1. Music history/theory and or music education must be the primary focus of the item reviewed.

2. Using grade level given in review sources, or by determination of the researcher, all items must be appropriate for students kindergarten through high school.

3. The following are not included: sound recordings, video performances of specific musical works, synthesizer based programs, and the Internet.

4. The researcher must have accessed the item.

5. Only items produced on videodisc, CD-Rom or 3 1/2 inch diskette will be evaluated in this study.

An adapted citation was created for every item that met the study's criteria for inclusion. Each citation consists of title, producer, price, suggested audience,
copyright date, media format, number of disks, and system specifications. There are two ratings listed, one for multicultural content rating and an overall study rating both of which are based upon the study's criteria and the researcher's professional experience. Included also for each item is a descriptive/evaluative annotation. See Appendix C for an example of the tool the researcher used to evaluate all items viewed. The disclosure of the information received from the study is reproduced in graphs, lists and tables at the end of the study. The format of the annotated bibliography will be alphabetical by title. Titles within a series will be viewed individually, but reported as a series.

The population to which this study is applied had to meet many different criteria. The years from 1990 to 1995 were chosen as the main period of focus for this study for a number of reasons. Around the year 1990 the nation saw the emergence of two personal computing powers, Apple Macintosh and PC (Windows/DOS format). Most items after 1990 have been created with these systems in mind, and most schools in the nation have either one or both of the formats. To go back any earlier would tend to make this study more historical in nature, which is not its primary intention.

The programs in this bibliography were chosen from the resources listed in Appendix A. Then the initial list of choices were matched against available resources from the institutions listed in Appendix B. Again, a primary criterion for inclusion into this bibliography was the researcher's ability to evaluate the resources firsthand.
Chapter 4

Annotated Bibliography

The following bibliography includes 22 music education technology titles for Kindergarten through twelfth grade. The citations and summaries are arranged in alphabetical order by title.

Each entry has been formatted to fit on a single page, where possible, to offer quick and efficient access. Entries contain a description/evaluation and citation given in the following order: title, producer, price, suggested audience, copyright date, media format, number of disks, system specifications, multicultural rating, and study rating.

The rating system for the multicultural rating and the study rating are based on a 1 to 4 scale with 1 being a poor score and 4 the highest. In the multicultural rating the researcher was looking for items that provided a non-biased and comprehensive introduction to different cultural practices and traditions. This score is not based upon quantity, but rather the quality and accuracy of the information dispersed. The study score is based upon the researcher's professional opinion of how well a given resource met the study's proposals. Tied into this rating also is the overall effectiveness and user-friendliness of the program.

Table 1 lists the items viewed and their corresponding domain(s) of learning used by the program. The items are arranged on the table in the same order as in the bibliography, with the exception of the two series So I've Heard Series and Microsoft Illustrated Interactive Composer Series, which are split into their individual program titles. See also List 1 for a listing of titles by grade division arranged by media format.
**Bachdisc**

**Producer:** Voyager Company  
**Price:** $49.95  
**Grades:** 5-8, 9-12  
**Copyright:** 1990  
**Format:** Videodisc  
**Number of Disks:** 1  
**System Specifications:** Videodisc player, Monitor  
**Multicultural Rating:** 1  
**Study Rating:** 2  

**Description/Evaluation:** As with many of the videodiscs viewed, this program might have been better served if it had stayed in a print form. The first side of the disc focuses on the construction and formation of one of Bach's greatest conventions, the fugue. The program is run as a private tutorial in fugue construction, which in music theory classes is a very common composition technique taught. This part, itself, is worth suggesting this resource.

The second side overviews Bach's life. As with many new music education programs, this side of the disk is primarily text that can be hyper-linked to cross-referenced information. These types of programs are all too familiar in new music education technologies. It appears that this style of space filler is a transitional tool used to accompany the more useful tutorial. In many ways, this is the part of the program that takes away the joy of reading or researching about Bach's life from traditional print resources. This side of the disk would be most valuable as a supplement to standard print materials.
**Composer Quest**

**Producer:** Dr. T's Music Software  
**Price:** $99.00

**Grades:** 5-8  
**Copyright:** 1991  
**Discontinued**

**Format:** CD-Rom  
**Number of Disks:** 1

**System Specifications:**
- **PC:** 386 or higher  
  - Win 3.1 or DOS 3.X  
  - 4MB RAM  
  - 2MB Hard Disk space  
  - VGA Display  
  - Sound Card  
  - Headphones or speakers  
  - Mouse
- **MAC:** Not Applicable

**Multicultural Rating:** 2  
**Study Rating:** 2

**Description/Evaluation:** This program focuses on travel to places and times to discover exciting facts and information on great composers throughout time. Great pains were taken to integrate history and art into this product. Not only does the student travel to the time of Bach, but the student is then able to view events that were happening at that time.

Beautiful prints of great artists help make Composer Quest a more complete fine arts package than most music appreciation based CD-Rom products, although it may lack the overall depth that a more powerful humanities tutorials may have. Included also are music trivia questions, on-line help (which is a little weak), and terminology assistance. This item may be a good choice as an introduction that can peak a child's interest in music.
**Finale**

**Producer:** Coda Music Software

**Grades:** 8-12

**Format:** High Density Disk

**Price:** $250.00

**Copyright:** 1990

**Number of Disks:** 3

**System Specifications:**

- **PC:**
  - 386 or higher
  - Win 3.1 or DOS 3.X
  - 8MB RAM preferred
  - 2MB Hard Disk space
  - 20" Monitor + (Double page)
  - Sound Card
  - Headphones or speakers
  - MIDI Keyboard

- **MAC:**
  - LCII or higher
  - 20" Monitor +
  - 4MB RAM preferred
  - 4MB Hard Disk space
  - Sound Card
  - Headphones or speakers
  - MIDI Keyboard

**Multicultural Rating:** 1

**Study Rating:** 4

**Description/Evaluation:** This program contains a number of tools to assist in constructing musical scores. The many tools at the disposal of the creator include staff builders, transposition tools, and MIDI interfaces to import or export works. A full tutorial makes learning Finale fairly simple with some prior knowledge of music terminology and theory. The score explosion and reduction tools make Finale an easy way to condense full score into piano accompaniment or to explode piano score into full orchestral arrangement.

Finale is an outstanding tool for orchestration work. By far it has the most construction functions of any software of its type on the market. However, some minor problems inherent in this program include a multilevel tool bar that is difficult to master and memorize. The user must note that the MIDI connections are not as easy to perform as the manual would have one believe. A "double size" screen (over 20") is a necessity to effectively view and manipulate any score. Otherwise the score is cut into quarters in the page view option.

Finale is rather expensive and more likely to be used by late high school or college level students. There are other programs available with less power and ability, which might be better considering price, usability, and function. Many schools are not likely to have funds and facilities to support additional sequencing modules, synthesizers, DAT tape decks, or keyboard connections that make Finale the fully integrated music construction powerhouse it is.
The Floating World

Producer: Lumivision
Grades: 5-8, 9-12
Format: Videodisc

System Specifications: Videodisc player
Monitor

Price: $30.00
Copyright: 1990
Number of Disks: 1

Multicultural Rating: 1
Study Rating: 2

Description/Evaluation: The Floating World, although listed as a music education program, has very little connection with teaching concepts and music principles. The goal of this program is to introduce students to life under water. All the footage is dubbed with "appropriate" classical tunes. As Nature's Serenade or Nature's Symphony, this program does more to assist in teaching natural sciences than it does helping students appreciate or learn about music.
**Jazz: A Multimedia History**

**Producer:** Compton's New Media

**Grades:** 9-12

**Format:** High Density Disk

**System Specifications:**

**PC:** 386+ or better
Windows 3.1 or DOS 3.X
4MB RAM
30MB Hard Disk space
Multimedia Extensions 2.2+
SVGA Display
Sound Card
Headphones or speakers
Mouse

**MAC:** Not Applicable

**Price:** $69.95

**Copyright:** 1992

**Number of Disks:** 5

**Description/Evaluation:** This is a program that addresses the importance of jazz to the development of music. Not only are classic artists, such as Duke Ellington, and Louis Armstrong included, but also current artists such as Herbie Hancock. Major focus is put into identification and instruction in how to interpret and listen to jazz. Often this is the most difficult of tasks to explain, but the program does an adequate job.

Unfortunately, the text is entirely assembled from the book *Jazz From Its Origins to the Present* by Lewis Porter. A major disappointment with this program is that some audio clips are not complete. This program still would be a good purchase for the mere convenience over traditional text/recording curriculum sets.
Microsoft Illustrated Interactive Composer Series

*Multimedia Beethoven: The Ninth Symphony*
*Multimedia Mozart: The Dissonant Quartet*
*Multimedia Schubert: The Trout Quintet*
*Multimedia Strauss: 3 Tone Poems*
*Multimedia Stravinsky: The Rite of Spring*

**NOTE:** (Information below applies to each title separately as listed above)

**Producer:** Microsoft Corporation  
**Grades:** 9-12  
**Format:** CD-Rom  
**Price:** $34.95-59.95  
**Copyright:** 1992-1994  
**Number of Disks:** 1

**System Specifications:**

**PC:**
- 386 or higher
- Windows 3.1 or DOS 3.X
- 2MB RAM
- 3MB Hard Disk space
- VGA Display
- Sound Card
- Multimedia Extensions 2.2+
- Headphones or speakers
- Mouse

**MAC:**
- LC III or higher
- System 6.0.7 or higher
- 4MB RAM
- Hypercard Program
- VGA Display
- Sound Card
- Headphones or speakers
- Mouse

**Multicultural Rating:** 2  
**Study Rating:** 4

**Description/Evaluation:** This series is an excellent grouping of specific styles of works with special compositional techniques and different time periods. Each CD has a standard menu focusing on aspects of the individual piece. A pocket guide is provided as an overview of the work in its entirety on a single page. There is the opportunity to compare themes in the work and better understand visually each work's specific construction. The composer's world section is an illustrated essay on the historical significance of the work and its specific relationship to other events in history. A section on instruments highlights the specific use of instruments in the piece and how the arrangement of the orchestra affected the sound and performance of each work. Probably the most helpful part is the art of listening section. Here each piece is broken down into components of a specific music device or structure. Often the architecture of the piece is analyzed and examples played to lend support to these concepts. Finally, each CD has a game produced specifically to support the learning that occurred while viewing the CD.
Each program has specific aspects that are unique to that program. Stravinsky's *Rite of Spring*, for example, has a section that shows line dance sketches used during specific parts of the work. Since it was a ballet, this addition adds a tremendous amount in better educating the user on this work. Other special points include: study of the chamber ensemble in the Schubert CD, conducting and orchestration analysis in Strauss, composition techniques in Mozart, and orchestral evolution in Beethoven.

Unlike many other items viewed, the essay format does not bore the viewer. There are ample exercises and moving interaction between annotated concert guides and form and theme comparison with just a mere click of the mouse. Despite their similar structures, each program is as interesting and exciting as the next.
Musical Instruments

Producer: Microsoft Corporation

Grades: 5-8, 9-12

Format: CD-Rom

Price: $34.95

Copyright: 1993

Number of Disks: 1

System Specifications:

PC:
- 386 or higher
- Windows 3.1 or DOS 3.X
- 2MB RAM
- 3MB Hard Disk space
- VGA Display

MAC:
- LC II or higher
- System 6.0.7 or higher
- 4MB RAM
- 1MB Hard Disk space

Multicultural Rating: 4

Study Rating: 4

Description/Evaluation: Microsoft's Musical Instruments by far was one of the most comprehensive and complete programs viewed in this study. This program introduces instruments to the user in many possible ways. Some interesting components of each instrument's history includes an A-Z listing with cross-references to similar instruments, a World Tour of the instrument's origin, and ensembles in which the instrument may be found, the instrument's components, sounds, styles of play and even pronunciation guides for instruments not often heard of. The multiple levels of entry into the program allow the user to explore as their interests allow. Pictures are clearly marked and well organized.

For instructors, this program allows printing of instrument pages to disk or printer for later handouts or other instructional aids. The quick retrieval of information is better than most, which makes the interactive nature of the program truly exciting.
**Nature's Serenade**  
**Nature's Symphony**

**Producer:** Lumivision  
**Price:** $35.00  

**Grades:** 5-8, 9-12  
**Copyright:** 1992  

**Format:** Videodisc  
**Number of Disks:** 1

**System Specifications:** Videodisc player  
Monitor

**Multicultural Rating:** 1  
**Study Rating:** 1

**Description/Evaluation:** It is simpler to group these two programs together due to their content and presentation. Although each has a minor shift in focus, they are truly the same style program marketed under two different names. *Nature's Serenade* is a series of National Park footage put to the music of Vivaldi's *Four Seasons*. *Nature's Symphony* is a collage of natural footage combined with various classical pieces that match mood and content.

It is difficult to see the overall music value of these items, because it seems their focus is toward science, rather than music. As a science tool these items might have a real use. These items fall short as a way to teach or influence students to listen or explore classical music.
The Orchestra: The Instruments Revealed

Producer: Time-Warner Interactive Media
Grades: 5-8, 9-12
Format: CD

Price: $79.98
Copyright: 1992
Number of Disks: 1

System Specifications:
PC: Not Applicable
MAC: Classic or higher
System 6.0.x+
1MB RAM
5MB Hard Disk space
Hypercard program
VGA Display
Sound Card
Headphones or speakers
Mouse

Multicultural Rating: 1
Study Rating: 4

Description/Evaluation: Based upon a piece by Benjamin Britten, The Orchestra not only uses this piece to assist in helping students discover specific instruments of the orchestra, but also shows students how they are played and illustrates their specific sounds. The program offers analysis of Britten's work, The Young Person's Guide to the Orchestra; but more interesting are the support programs such as the Music Guide, a term glossary with pronunciation assistance, and two special sections: "A Conducting Lesson" and "The Orchestration Lab."

The "Conducting Lab" introduces an aspect often overlooked in other programs: the history and method of conducting. In the "Orchestration Lab" students have an opportunity to combine a variety of instruments in the playing of the melody Greensleeves. The computer assists in making suggestions and educating the user in matters of pitch range, blend and accompanying instruments. The game is an exciting way to distill the broad amount of knowledge introduced in the CD.
**Peter and the Wolf**

**Producer:** Time-Warner Interactive Group  
**Grades:** K-4  
**Format:** CD-Rom  
**Price:** $49.95-$42.95  
**Copyright:** 1995  
**Number of Disks:** 1

**System Specifications:**

- **PC:** 486 or higher  
  - Windows 3.1  
  - 4MB RAM  
  - 2MB Hard Disk space  
  - 2x CD ROM  
  - Monitor supporting SVGA  
  - Sound Card

- **MAC:** LC III or higher  
  - System 7 suggested

**Multicultural Rating:** 1  
**Study Rating:** 3

**Description/Evaluation:** This program represents one of the few programs that focuses toward a younger age group. In this program packed with illustrations, students can play matching games and explore instruments of the orchestra. Unfortunately, even though there are good illustrations and games, this CD looses sight of its primary goal: the performance of the story and music of *Peter and the Wolf*. The idea of passive learning (having students play an educational game while the music is in the background) may have merit, but its overall value to improve learning is questionable. This program, despite its flaws, does provide an example of an integrated musical experience the researcher was seeking.
**Rock, Rap and Roll**

<table>
<thead>
<tr>
<th><strong>Producer:</strong> Paramount Interactive</th>
<th><strong>Price:</strong> $39.95</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grades:</strong> 5-8</td>
<td><strong>Copyright:</strong> 1993</td>
</tr>
<tr>
<td><strong>Format:</strong> High Density Disk</td>
<td><strong>Number of Disks:</strong> 4</td>
</tr>
</tbody>
</table>

**System Specifications:**
- **PC:** 486 or higher
- Windows 3.1
- **MAC:** LC II or higher
- System 6.0.7 or higher
- 4MB RAM
- 12MB Hard Disk space
- Microphone

**Multicultural Rating:** 3

**Study Rating:** 4

**Description/Evaluation:** *Rock, Rap and Roll* is an interesting experiment in discovering different types of rhythms and sounds. This program allows the student to have a kind of directed freedom in creating his own musical works. The premise of the program is that the child first picks a style to compose within. They choose a series of rhythmic phrases to link together. Then over the top of that pattern they can add canned guitar rifs and drum interludes. There is even freedom for the student to enter in live vocals and recorded sounds using a microphone.

Despite the barriers of choices and the number of measures (10) which can be linked together, this program is outstanding when used as a means to teach constructions such as phrases and orchestration of sound. As well, the mixture of Reggae with Rap and Rock shows a broad concern with ethnic musical styles that are rather common in our American culture. Children will love this item and be provided with many hours of new discoveries driven purely by their own imaginations.
So I've Heard Series

Bach and Before
The Classical Ideal
Beethoven & Beyond

**NOTE: (Information below applies to each title separately as listed above)

Producer: Voyager Company
Grades: 8-12
Format: CD

System Specifications:
PC: Not Applicable
MAC: LC III or higher
System 7 preferred
8MB RAM preferred
6MB Hard Disk space
Hypercard program
VGA Display
Sound Card
Headphones or speakers
Mouse

Multicultural Rating: 1
Study Rating: 2

Description/Evaluation: This series is in various stages of new editions and revisions, but each title shares the same characteristics. The information in this series is primarily presented in an essay form. Each CD in the series focuses on a specific musical period and group of composers. There are a few listening examples with some interesting illustrations and scanned images. The programs have their own individual search engines that allow the user to look up specific terms or names. Also included is a catalog of musical examples highlighted in the essay portion.

Alan Rich, the individual responsible for the creation of this project, is an America music critic in California. As with many music education programs, it seems that Rich merely has digitized text and called it interactive. There seemingly is little to keep the interest of a student no matter what level of interest. This is primarily due to the hundred plus pages of text which compose each essay. As a music historian, the researcher finds Rich's interjected opinions in the essay portions unnecessary and potentially detrimental to a person with little musical background.
**The String Quartet**

**Producer:** Time-Warner Interactive Media  
**Grades:** 9-12  
**Format:** CD

**System Specifications:**  
**PC:** Not Applicable  
**MAC:** Plus or higher  
- System 6.0.x+  
- 1MB RAM  
- 7MB Hard Disk space  
- Hypercard 1.2.2+  
- VGA Display  
- Sound Card  
- Headphones or speakers  
- Mouse

**Price:** $66.00  
**Copyright:** 1990  
**Number of Disks:** 1

**Multicultural Rating:** 1  
**Study Rating:** 3

**Description/Evaluation:** This program, which is based upon Beethoven's *String Quartet No. 14*, has many of the features that other *composition* driven CD-Roms have. Contained within the CD is the entire recording of the piece plus histories and commentaries on the work. One of the exciting features of this program is the scrolling commentary that follows throughout the entire work. This feature helps to produce good correlation between theory and active listening skills, which often is a connection not easily made.

Other features of interest include the "Timeline of Music," which spans from medieval times to the present, and the "Musical Workshop" that allows students to experiment with rhythm and meter. Unfortunately, one of the weaknesses of the program is its dependence on Hypercard. At times, as with other Hypercard programs, the viewer may get lost within the program and find it difficult to return to menu.
The University of Delaware Videodisc Series

Producer: The University of Delaware  
Grades: 9-12  
Format: Videodisc  
Price: $120.00  
Copyright: 1992  
Number of Disks: 5

System Specifications:
PC: 386 or higher  
Win 3.1 or DOS 3.X  
4MB RAM  
2MB Hard Disk space  
VGA Display  
Sound Card  
Headphones or speakers  
Mouse

MAC: Not Applicable

Multicultural Rating: 1  
Study Rating: 3

Description/Evaluation: This videodisc series focuses on major works in the classical repertoire. There are good varieties of time periods represented; however there is little overall substantive value to the entire series. The greatest feature of this series is the scrolling score which follows the audio recording of the work being observed. The score is fully notated with chordal analysis as well. At the main menu there is also the option to explore the background to the piece.

It appears that a series of this nature has, unfortunately, merely combined the audio and visual reading components of a traditional music appreciation text with listening materials. In other words, this program has merely digitized a textbook. If the teacher's goal is to cover basic musical concepts while introducing basic theoretical beliefs, this would be an excellent yet expensive resource. As for considering this program series a fully integrated multimedia learning experience, the makers should introduce other components such as learning games to round out a rather two dimensional learning program.
**World Beat**

**Producer:** Medio Multimedia  
**Price:** $29.95

**Grades:** 5-8, 9-12  
**Copyright:** 1994

**Format:** CD-Rom  
**Number of Disks:** 1

**System Specifications:**

<table>
<thead>
<tr>
<th>PC:</th>
<th>486/25 or higher</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Windows 3.1</td>
</tr>
<tr>
<td></td>
<td>4MB RAM</td>
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<tr>
<td></td>
<td>2MB Hard Disk space</td>
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<td>VGA Display</td>
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<td>Sound Card</td>
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<td></td>
<td>Multimedia Extensions 2.2+</td>
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<td>Headphones or speakers</td>
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<td></td>
<td>Mouse</td>
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</table>

**MAC:** Not Applicable

**Multicultural Rating:** 4  
**Study Rating:** 3

**Description/Evaluation:** This program is one of the only true multicultural music programs viewed and available. *World Beat* explores not only music of the world through sound bites, but also full motion video clips as well. There are narrated documentaries with interactive hypertext (words that link the user to information on the term chosen), and authoritative articles written by experts in the ethnomusicological field such as Bruno Nettl. One of the more exciting functions available is the "jam session," in which the student can view a scrolling score while controlling mix and tempo of the piece being played. There also is included a 7,000+ album discography with annotations representing thousands of different artists. Despite the value of this discography, one should question its value in relation to the program as a whole. Why is it included? It is not comprehensive in nature, and is based upon Medio's choices, not authorities in the field.

Student will love the variations of activities, and the excitement of being introduced to musical styles that many have never heard before.
Analysis and Conclusions

Analysis

Of the 22 items listed in this study's bibliography, none were perceived as using all three learning domains (see Table 1). Hypothesis number one stated that ten percent or less of all available resources would use the three domains of learning; therefore hypothesis one is accepted.

Table 1. Characteristics of Items Viewed for Study

<table>
<thead>
<tr>
<th>Title</th>
<th>Domains of Learning Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bach and Before</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Beethoven &amp; Beyond</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Composer Quest</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Multimedia Beethoven: The Ninth Symphony</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Multimedia Mozart: The Dissonant Quartet</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Multimedia Schubert: The Trout Quintet</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Multimedia Strauss: 3 Tone Poems</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Multimedia Stravinsky: The Rite of Spring</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Musical Instruments</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Peter and the Wolf</td>
<td>Cognitive, Psychomotor</td>
</tr>
<tr>
<td>The Classical Ideal</td>
<td>Cognitive</td>
</tr>
<tr>
<td>The Orchestra: The Instruments Revealed</td>
<td>Cognitive</td>
</tr>
<tr>
<td>The String Quartet</td>
<td>Cognitive</td>
</tr>
<tr>
<td>World Beat</td>
<td>Cognitive, Affective</td>
</tr>
<tr>
<td>Finale</td>
<td>Cognitive, Psychomotor</td>
</tr>
<tr>
<td>Jazz: A Multimedia History</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Rock, Rap and Roll</td>
<td>Affective, Psychomotor</td>
</tr>
<tr>
<td>Bachdisc</td>
<td>Cognitive</td>
</tr>
<tr>
<td>Nature's Serenade</td>
<td>Affective</td>
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<tr>
<td>Nature's Symphony</td>
<td>Affective</td>
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<tr>
<td>The Floating World</td>
<td>Affective</td>
</tr>
<tr>
<td>The University of Delaware Videodisc Series</td>
<td>Cognitive</td>
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</tbody>
</table>
Hypothesis two stated that 25 percent or fewer of all the resources located would effectively use the affective domain. Five out of 22, or 23 percent of the items viewed effectively used the affective domain. Hypothesis two is accepted.

Hypothesis three stated that 20 percent or fewer of all resources located would rate moderate or excellent in their ability to include ethnic or multicultural diversity as a component of the program. Only 18 percent of the items viewed had either a moderate or strong ethnic or multicultural diversity present. Tied to the traditional method of how music education is taught, most of these programs focused primarily on western European music history. With the exception of programs as World Beat and Musical Instruments, which attempt to broaden a user's perspective, there was very little mentioned or shown in regards to other cultures. Hypothesis three is therefore accepted.

The purpose of hypothesis four was to evaluate each program for user-friendliness, education effectiveness, and ability to meet the demands of the study. By rating on a one to four scale with one representing a overall poor program and four identifying an excellent program, ten items (five from one series) were rated as excellent. This amount equals 45 percent of the items viewed. Despite shortcomings, most programs were found to deliver their projected claims. Hypothesis number four suggested that only 25 percent of items would meet this criteria; hypothesis four is then rejected. The unfortunate discovery was that despite the overall score of 45 percent for all items, the videodisc programs measured zero percent according to the standards of hypothesis four.
Conclusions

This study has been successful in identifying resources in K-12 music technology which emphasize multicultural themes. As well, it was proposed that very few music technology programs emphasize the three domains of learning: affective, cognitive, and psychomotor. Surprisingly, not a single source viewed met this criteria.

One of the goals of the study was to locate at least 30 items using area libraries and university resources. Unfortunately, only 22 sources were found. The positive side of this shortcoming is that the items listed are those most commonly available to teachers in the Eastern Iowa, Western Wisconsin, Southern Minnesota area. Most music educators and media specialists should still find this study helpful then in evaluating music resources before they are purchased or used in curriculum planning.

Three out of the four hypotheses were accepted. The acceptance of hypotheses one, two and three, however, highlights the lack of technological resources in music education. Despite all the changes that technology brings, there need to be more efforts in creating programs that stimulate students to integrate music into their lives. In most of these programs much of the emphasis was placed on historical music, and very little on today's music. One of the faults in music education has been the inability to use music of today to teach concepts in music. Granted historical analysis must not be forgotten, but a greater effort should emphasize making music education appear as more than studying dead guys with powdered wigs. The one program that struck me as extremely important in supporting this belief was Rock, Rap and Roll. In this program the student mandates the outcome even with set parameters. There were only so many rhythms, and riffs available, but by allowing the user to choose the order, method and style in which they would be added opened an appreciation not found in the other programs that required answering questions at the end of the program. Couple that
with the addition of a microphone for personalized lyrics and a more complete and true affective experience is possible. This is why analyzing programs for an affective component is so important. Unfortunately, affective learning can also be an inappropriate tool when not properly supported by cognitive or psychomotor tasks. 

Nature's Serenade and the other videodiscs such as it that were viewed are good examples of this problem. The appearance of these programs was almost a distracting approach to learning, as if the purpose was to mesmerize the viewer by flashing images on the screen while a piece of music played in the background. This subliminal suggestion approach may work in advertising and seem to work to some in education, but the researcher found that there is little hint of musical appreciation to be gained from this picture/music partnership.

The acceptance of hypothesis three further defines how far behind our education system is in its ability to teach and integrate multicultural themes into educational programs. It is encouraging to see more products of this type available than ever before, but we must maintain high quality and demand more of companies producing these products.

The rejection of hypothesis number four was encouraging to the researcher. The excellent rating given to 45 percent of all these items shows that the products being produced are living up to their projected standards. Not too many years ago it was common to find products that were incomplete and did not deliver the projected outcome suggested. Often items were made specifically with educators in mind, as was the case with the flood of Minnesota Educational Computer Consortium (MECC) software in the 1980s. This is also why bibliographies, such as this one, are so important in helping educators and library media specialists with tight budgets choose effective products. Technology products, in general, cost too much so it is important
to evaluate and research prior to purchase in order to make the selection the best possible.

One of the final conclusions of this study was not based upon a hypothesis. In the early chapters, discussion regarding the importance of moving away from strictly keyboard programs and drill and practice items was introduced. In locating the items for this study, the researcher encountered at least twice the number of these types of programs. Some, such as Finale, are very effective in using the integration of keyboard entry with drill oriented assignments. The difference between Finale and these other resources, is its ability to allow the user to create using their own thoughts and feelings. Traditional programs will always remain important for attempting to measure a student's ability to master accepted concepts. A pity it would seem, since if Wolfgang Amadeus Mozart had been required to only study accepted theory and musical construction the world may have never been introduced to the wonders of The Magic Flute, Symphony No. 40, or The Dissonant Quartet.

Recommendations

One suggestion for another study would be the ability to more clearly define the parameters of what is an affective task and what is a cognitive task. Perhaps focusing on the types of cognitive tasks in specific programs alone would be a rather interesting study in itself.

The next study would also benefit from a wider scope in focus. Unfortunately, to fully evaluate every item produced from 1990-1995 a specific acquisitions budget would be necessary in order to evaluate the items more effectively. To just use demonstration modules often does not give the researcher an overall view of a
program's components and inner workings. Demos are constructed to sell and to cover any potential flaws the program may have.

It is entirely possible that the time period might be altered as well. The concern in doing this is that because technology resources are so volatile, to expand the time period would need to be considered carefully. In doing so keep in mind the hardware resources that would need to be added, such as the Apple series II, Commodore, and possibly Texas Instruments just in the area of computers alone. Different media would need to be considered such as videotape and film. If these changes are chosen, the focus will become more historical in nature rather than progressive.

One of the unexpected results of this study was the discovery that there are few technology programs for younger children. Even in viewing software reviews and looking at trade catalogs, there is little available for the young child prior to third or fourth grade. In this study only one resource, Peter and the Wolf, qualified by this researcher's standards. Odd it seems that when a child most needs interactive input, music education has a lack of resources available. Above all, this should encourage and motivate educators to demand better. There should be a call to create more interactive software for younger children. The market is wide open for some new and innovative products.

The bibliography was formatted to resemble the Software Reviews In Print from Facts on File. This format is the most user friendly and allows for easy reproduction and access. In looking at the intended audience of this study, it would be appropriate to include parents in the list along with librarians and educators. With the explosion of home computer use, these types of bibliographies can be helpful in supplementing a child's education from home.
Summary

The purpose of this study was to locate and compile an annotated bibliography of 30 or more music education technology resources and evaluate the titles found on its multicultural connections, identify its use of the three primary domains of learning (affective, cognitive, and psychomotor), and rate each source on its ability to accomplish the proposed function as proposed by the manufacturer. Possible titles were taken from reference bibliographies, obtained from colleagues of the researcher, and evaluated in trade reviews. Each item chosen had to be viewed directly by the researcher and must be available through local and area libraries, Area Education Agencies, and College/Universities. Criteria that each source had to meet for inclusion were 1) the music technology resources must be in the form of one of three following media: Videodisc, Computer Software, or CD-Rom, 2) the resource is appropriate for Pre-Kindergarten through twelfth grade students, 3) all resources chosen for this study were published no earlier than 1990, 4) items that are merely audio recordings or video reproductions of musical performances (i.e. symphony concerts, solo concerts, and operas) were not to be included, and 5) the researcher had to have access to the item.

A summary and citation were recorded on a worksheet (see Appendix C), and each item was rated according to multicultural incorporation and overall usability, scope, and interactive functions. An annotated bibliography was then compiled accompanied by charts and tables displaying the various connections and ratings proposed by the study's hypotheses.

Three hypotheses from the study were accepted and one rejected. The hypothesis that 15 percent or fewer of all the resources would be given an overall rating of four (excellent) on a one to four scale was rejected by 30 percent. The
hypothesis that 10 percent or less of available resources would use all three learning domains (cognitive, psychomotor, and affective) within a single resource was accepted by 10 percent. The second hypothesis that 25 percent or fewer of all resources located would effectively use the affective domain within a single resource was accepted by three percent. The hypothesis that 20 percent or fewer of all resources located would rate moderate or excellent (3 or 4) in their ability to actively include ethnic or multicultural diversity within its program was accepted by two percent.

The researcher was satisfied by the results of this study. Not only did this study suggest that music education technology is improving, but that it is diverse in its content. Unfortunately, it should be noted that there is a notable lack of music education technology resources for younger children from third or fourth grade down. It is imperative that this problem be addressed.

The researcher's hope is that technology will be embraced as a resource in music education. However, it must never act as an all inclusive, isolated technological experience barren of the spirit of human creativity that truly defines the essence of music.
Bibliography


Darling, Dennis. "Bloom's Taxonomy and the Other Domains of Learning." Lecture delivered at Luther College, Decorah, Iowa, February 20, 1990.


Appendix A

Sources

An initial inventory of titles suitable for this study was gathered from both selective and non-selective resources. The sources listed below are not all inclusive of available resource literature, but do comprise a core of appropriate resources for use in this study based on their content and scope.


**CD-Roms In Print.** Detroit, MI: Gale Research, Inc., 1996.


In addition to the above resources, the following magazines and journals will be used in searching for reviews, and grade level appropriateness: Library Journal, School Library Journal, Music Educators' Journal, Technology & Learning, Byte, Choice, Electronic Learning, Infoworld, Media and Methods, School Arts, and Technology Teacher.
Appendix B

Locations Accessed for Study

The following centers, and collections were used to view and evaluate copies of the materials that would meet the criteria set for this study:

AEA 7, Cedar Falls, IA
AEA 10, Cedar Rapids, IA
Cedar Rapids Public Library, Cedar Rapids, IA
Coe College, Cedar Rapids, IA
La Crosse Public Library, La Crosse, WI
La Crosse Public School System, La Crosse, WI
Mount Mercy Library, Cedar Rapids, IA
St. Mary's College, Winona, MN
University of Wisconsin-La Crosse, La Crosse, WI
University of Northern Iowa, Cedar Falls, IA
Viterbo College Library, La Crosse, WI
Winding Rivers Library System, La Crosse, WI
Winona State University, Winona, MN
Appendix C

Worksheet

Title _________________________ 
Producer _______________________ 
Copyright Date ________________ Price: ________________

<table>
<thead>
<tr>
<th>Videodisc: Playing time</th>
<th>Number of Discs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-ROM: Format: PC Mac</td>
<td>Number of Disks</td>
</tr>
<tr>
<td>Software: Format: PC Mac</td>
<td>Number of Disks</td>
</tr>
</tbody>
</table>

Hardware Minimums:
RAM: ________________ Memory: ________________
CD ROM speed: ______ Sound Card: ________________
Video card: __________ CPU speed: ________________
Special Supports |

Miscellaneous Information |

Annotation _________________________ 

Multicultural connections represented in item:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>Moderate</td>
<td>Below Average</td>
<td>Poor</td>
<td></td>
</tr>
</tbody>
</table>

Example: _________________________
Domain(s) of learning utilized by item: (Circle)

Cognitive | Psychomotor | Affective

Example: _______________________________________________________

Grade Level: K-4  5-8  9-12

Overall Rating:

 Excellent | Good | Below Average | Poor
Graph 1

Amount of Multicultural Diversity in Programs Viewed

None  Slight  Moderate  Excellent

Number of Items
Graph 2

Percentages of Media Viewed

- Videodisc (25.0%)
- HD 3.5 Disk (15.0%)
- CD-Rom (60.0%)

Graph 3

Percentages of Items Viewed By Suggested Grade Level

- K-4 (4.5%)
- 5-8 (9.1%)
- 9-12 (54.5%)
- 5-8, 9-12 (31.8%)
List 1

List of Items Viewed Arranged By Age Division and Media Format

<table>
<thead>
<tr>
<th>PK - 4 CD ROM</th>
<th>Title</th>
<th>Multicultural Score</th>
<th>Study Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peter and the Wolf</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5 - 8 CD ROM</th>
<th>Title</th>
<th>Multicultural Score</th>
<th>Study Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composer Quest</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Musical Instruments</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Orchestra: The Instruments Revealed, The</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>World Beat</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Videodisc</th>
<th>Title</th>
<th>Score Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachdisc</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Floating World, The</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Nature’s Serenade</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nature’s Symphony</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High Density 3.5</th>
<th>Title</th>
<th>Score Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock, Rap and Roll</td>
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<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9 - 12 CD ROM</th>
<th>Title</th>
<th>Multicultural Score</th>
<th>Study Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bach and Before</td>
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<td>2</td>
<td></td>
</tr>
<tr>
<td>Beethoven &amp; Beyond</td>
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<td>2</td>
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</tr>
<tr>
<td>Classical Ideal, The</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Multimedia Beethoven: The Ninth Symphony</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Multimedia Mozart: The Dissonant Quartet</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Multimedia Schubert: The Trout Quintet</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Multimedia Strauss: 3 Tone Poems</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Multimedia Stravinsky: The Rite of Spring</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>String Quartet, The</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Musical Instruments</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Orchestra: The Instruments Revealed, The</td>
<td>1</td>
<td>4</td>
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<tr>
<td>World Beat</td>
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<td>3</td>
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<tr>
<th>Videodisc</th>
<th>Title</th>
<th>Score Score</th>
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<tbody>
<tr>
<td>Bachdisc</td>
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<td>2</td>
</tr>
<tr>
<td>Floating World, The</td>
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<tr>
<td>Nature’s Serenade</td>
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<tr>
<td>Nature’s Symphony</td>
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<table>
<thead>
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<th>High Density 3.5</th>
<th>Title</th>
<th>Score Score</th>
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</thead>
<tbody>
<tr>
<td>Finale</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Jazz: A Multimedia History</td>
<td>3</td>
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