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ABSTRACT

This guide is intended to provide resources for integrating technology into the K-12 music curriculum. The focus of the guide is on computer software and the use of MIDI (Musical Instrument Digital Interface) in the music classroom. The guide gives two examples of commercially available curricula that integrate technology as well as lesson plans that incorporate technology on the subjects of music fundamentals, aural literacy composition, and music history. The guide provides ERIC listings and literature concerning computer assisted instruction. Ten appendices containing information on music-related technology are provided, including lists of software, software publishers, books and videos, MIDI equipment manufacturers, and book and periodical publishers. (DB)

Integrating Technology

into the

K - 12 Music Classroom

Integrating Technology into the K-12 Music Classroom

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A Message from the Superintendent of Public Instruction

Washington State Curriculum Guidelines represent innovative ideas on what and how to teach students basic education concepts. Integrating Technology into the K-12 Music Classroom is no exception. The resource guide emphasizes the importance of not fragmenting the musical experience.

Technology can be a valuable tool in implementing this innovative approach toward music. The use of applications software, MIDI, interactive video, and CD-ROM all provide new avenues for the exploration of both new and old concepts. Today's trend toward the integration of technology throughout the entire curriculum not only opens a myriad of possibilities for new teaching and learning styles, but also helps ensure the equitable use of technologies by all the different student populations in our educational system.

The focus of this document is on computer software applications and the use of MIDI in the music classroom. It is a companion document to both Visual and Performing Arts Curriculum Guidelines for Washington Schools and the Computer Education Guidelines. The document was compiled by the Washington Music Educators Association (WMEA), the Educational Technology Center (ETC) staff, the Office of Superintendent of Public Instruction (OSPI), and a committee of K-12 music educators to aid Washington state school boards, administrators, curriculum specialists, and teachers in linking computer software and MIDI equipment with Visual and Performing Arts Curriculum Guidelines for Washington Schools.

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Judith A. Billings
State Superintendent of Public Instruction

Acknowledgements

A resource document such as this is always the work of many people. The material herein truly represents years of curiosity, research, and perseverance on the part of many music educators. The common thread is the genuine desire to guide students to a greater ability, understanding, and love of the musical arts.

The Resource Guide for Integrating Technology into the K-12 Music Classroom would not have become a reality without the vision of the grant writing team Diana Manning, Claudia Appell, Linda Gohlke, Neil Smith, and Dennis Small. Their hours of work on the grant proposal mixed with wisdom, sensitivity, and a dream have provided a valuable resource for the music teachers of this state. The team, in turn, thanks Wayne Timmerman for his endorsement of the vision. A special note of gratitude for the resource guide workshop participants for their time and creativity in planning lessons that integrate technology. Many of the workshop participants took extra time to provide software reviews, a large portion of which appear in this resource guide. Roger McRea generously donated time, equipment, software, and ideas to assist in the workshop. Diana Mickelson, Paul Wagner, Doug Sutton, Jim Iafrati, Bob Gorham and Ann Joseph volunteered extra time for data entry after the workshop for which I am thankful. Nancy Langlow at the Bellevue School District Professional Library and the National ERIC Resource Document staff were most helpful in providing up to date information and order forms for acquiring documents. Thanks to Kirk Kassner of the Portland Public Schools for donating his bibliography of literature concerning computer assisted instruction - a section representing years of reading and compilation. Tom Collier and Greg Boehme were instrumental in the creation of the MIDI Glossary by sharing their teaching resources. Thanks to Gina May for her gentle reminders that kept the content on the right track. A special note of gratitude to Dennis Small's optimistic persistence in making a grant become reality and his endurance through countless panic calls. Thank you to Neil Smith for his help with proofreading. John Ulett contributed hours of time and expertise to expedite this volume and a personal note of thanks to him for his listening ear, creative ideas, and endless support.

It is the hope of the Office of Superintendent of Public Instruction that this resource guide can provide a launch pad of inspiration and ideas to help the music teachers in Washington state teach even better. Any resource involving technology will necessarily need to be updated. Do not hesitate to call the Educational Technology Office for verbal updates between publications.

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The Educational Technology Center Program is a statewide program established to meet the needs of Washington educators in the use of educational technology. The program has been legislatively funded since 1983. It includes nine educational technology centers located in the Educational Service Districts (ESDs) in Spokane, Pasco, Yakima, and Wenatchee on the east side of the Cascades, and in Seattle, Mount Vernon, Olympia, Vancouver, and Bremerton on the west side. School districts are provided assistance by the centers in the instructional use of computers and other technologies.

The centers give school personnel ready access to educational technology specialists and resource people who:

- Provide the opportunity for preview of hardware, software, other technologies including interactive video and CD-ROM, as well as technology-related printed materials.
- Provide inservice classes and workshops on topics ranging from the introductory to the advanced, and from the general to the specific.
- Offer teachers the opportunity to develop classroom-specific materials.
- Assist in the development of K-12 curriculum plans for local districts.
- Provide technical assistance to local districts.

Staff from the centers work with program specialists from the Superintendent of Public Instruction's office to provide information and technical assistance to all Washington school districts.

During the first six and one half years of the program, the educational technology centers provided 5,227 teacher training sessions with 74,001 Washington educators receiving 384,848 hours of training. In addition, 13,093 individuals made use of the centers' preview service. All 296 school districts have requested and received program services.

All Washington educators and school districts are eligible to make use of the services of the educational technology centers.

The Music and Technology Demonstration Center

The Music and Technology Demonstration Center provides teachers an opportunity to preview (without cost) any of the items listed in Appendix A, Appendix C, and Appendix D. In addition, any of the software or equipment may be shipped upon request to any other ETC in the state for workshops or conferences.

The Music and Technology Demonstration Center is part of the Educational Technology Center (ETC) at the Educational Service District in Olympia (ESD 113). The Demonstration Center, directed by Dick Barnhart and assisted by Kim Hauss, is open for use 8 a.m. to 5 p.m. daily year-round.

The list of materials available for review will be constantly growing. The Demonstration Center will publish addenda to the lists as the need arises. Teachers may call to see if a piece of software or hardware has been added if there is a particular interest. All teachers are encouraged to come to the Demonstration Center and take advantage of this unique opportunity.

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Purpose

This guide is intended to provide resources for integrating technology into a K-12 balanced, comprehensive, and sequential music curriculum for all students.

Role of Technology:

Technology must remain in its rightful position as a tool. Just as the hammer is a tool for building, technology is a tool that can assist in teaching a more complete musicianship to a larger number of students. The technology, whether it be a computer, synthesizer, or a drum machine, cannot become the focus of the learning experience, or we will have failed. It is crucial to remember that excellent teaching occurs both with and without technology, and the use of technology is not a guarantee for better teaching results.

Curriculum Integration:

Washington state has a published set of curricular guidelines for the visual and performing arts. The guidelines are designed to provide direction when constructing or revising arts curriculum. The Visual and Performing Arts Curriculum Guidelines provide five goals to be considered when creating curricula and lessons for the arts. They are as follows:

Goals for the Visual and Performing Arts:

1. Students are able to use sensory experiences to comprehend the various art forms.
2. Students are able to use their skills to participate in the arts.
3. Students are able to apply their knowledge of concepts, elements, principle, theories, and processes in the arts.
4. Students are able to express themselves creatively through the arts.
5. Students are able to make informed judgments about the arts and the relationships of the arts to the histories, cultures, and environments of the world's people.

These goals are highlighted in each of the lesson plans presented later in this resource guide. There are five learning process components that correlate with the above goals.

Perceiving:	To attain an awareness of the arts through the senses.
Experiencing:	To have personal involvement with the arts through participation.
Understanding:	To comprehend and interpret the elements of the art forms and their relationships.
Creating:	To develop personal statements through problem solving in the arts.
Aesthetic Valuing:	To make evaluations, choices, and judgments about the arts based on personal criteria.

A balanced, comprehensive, and sequential music curriculum is difficult to create and maintain. The presence of technology actually gives opportunity to examine the goals, process, and sequence of the music curriculum. The above-mentioned goals and learning process components are important to consider when restructuring curriculum to incorporate technology.

This resource guide provides a reference list of general skills addressed in most music curricula. This is not intended to replace district or personal curricula, but rather to provide a platform from which to examine current teaching materials. Descriptions of two exemplary curricula that contain a thorough integration of technology have been included for reference.

In Summary:

A "literate" musician is one who possesses a sense of "inner hearing," a visual understanding of musical symbols, an internal sense of rhythm, and a confidence to use these skills to release his/her own musical creativity. The teaching job involves sequencing experiences so the student can be building a set of skills: aural, visual, cognitive, kinesthetic, and creative. Random presentation of basic material usually results in confusion. Transient population, large class loads, few contact hours, and performance pressures can be discouraging to teachers who wish they could be teaching musicianship. This resource guide provides some excellent resources and ideas by fellow music educators who value the development of "literate" musicians. Their ideas display a true integration of technology - not a forced, overlaid experience. Finally, each teacher must adopt and/or structure a personal teaching curriculum in order to effectively sequence material.

What is Computer Integration?

Integration of the computer into the curriculum refers to the process of planning and implementing lessons in which computers become a crucial part of the learning process. The goal of integration is to weave computers and other forms of educational technology so thoroughly into the school program that their presence becomes as transparent as the use of a pencil. The computer is used as a vehicle to introduce, expand, and reinforce concepts in a manner which is accomplished best using this particular technology.

In many schools, computer education falls under the heading of computer literacy/ computer science, a separate discipline predominantly concerned with programming. Examples of integration include using a word processor to write a research paper on a music topic, using a synthesizer to investigate sound, or using a videodisc to learn about music appreciation.

There are several difficulties encountered in using the computer as an integrated part of the curriculum. One is the lack of a definitive method/model for integration. Another is the fact that most teachers have not studied basic education subjects with the aid of computers and, therefore, do not have an experiential model to follow in including computers in their classrooms. A computer in your classroom does introduce interpersonal and methodological changes into the environment. The extent of the changes depends on your own personal teaching style, subject area and grade level. Computers in the classroom seem to encourage an atmosphere of cooperative learning. Teachers report spending more time developing learning centers, being more likely to use small group instruction, and increased cooperation among teachers.

How to Integrate Computers into the Classroom
Some Guidelines

Listed below are some questions and statements to consider as educators begin to integrate technology into the curriculum.

- What student learning objective(s) will be addressed in the lesson?

- Is the computer the most effective way to teach the objective(s)?

- Have you identified several pieces of software which address the objective(s)?

- Have you previewed each piece of software to determine appropriateness?

- Does the software present the concept in a method which is synchronous with previous and/or subsequent presentations of the concept?

- Will the lesson involve small group or large group instruction?
  Some software lends itself more readily to small group instruction. If only one machine is available, then such software may be inappropriate for the given situation.

- How much computer time is available to students?
  Be sure to schedule enough computer time during the school day and check the possibility of before- and after-school accessibility to equipment.

Curriculum

with

Technology

A Basic Music Concepts Outline

The student should be able to perceive, experience, understand, create, and aesthetically evaluate with the following elements:

Rhythm

- Steady beat
- Same/different
- Strong - weak in 2,3,4,6
- Values: s, e, q, h, w notes and rests
- Meter signature
- Dots, syncopation
- Compound meter
- Mixed Meter

Pitch/Melody

- Up/down/same
- Same/different
- Skips/steps
- Note names/clefs
- Scale patterns
- Sing on pitch/play in tune
- Error detection

Harmony

- Intervals
- Triads
- Basic Harmonic progression
- Harmonize melody

Form/Dynamics/Articulation/Vocabulary

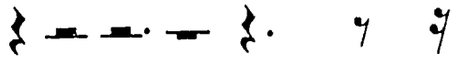
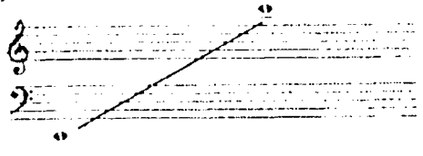
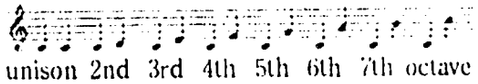
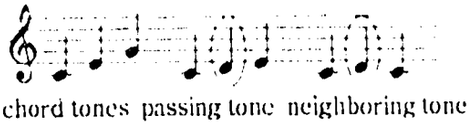
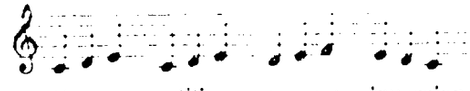
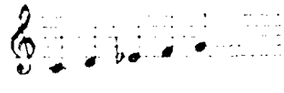
- Dynamic markings and symbols: p,f,mf,mp,ff,pp
  crescendo/diminuendo etc.
- Repeat
- D.C.
- D.S.

Examples of Curricula that Integrate Technology

I. Yamaha Music In Education (MIE) Technology Assisted Music Program:

The MIE program is a thorough, technology-assisted system developed to teach general music in the classroom environment. A team of nationally recognized music educators have develope l a total package of curriculum and technology. Each student is interacting with a synthesizer keyboard developed specifically for the American music education classroom. The synthesizer becomes a unifying aspect of the student experience. The teacher controls song accompaniment, listening, lesson planning and can obtain student feedback from a Macintosh computer. The teacher may use remote control to operate the Macintosh from anywhere in the room. The program includes an extensive instructional and management software package. Yamaha includes a week of training for new installations of the program.

Attention has been given to all aspects of the curriculum. Yamaha has generously given permission to reprint the scope and sequence portion of their information kit in this resource guide. This provides a concise examination of the material addressed by the program. The excellent information kit describes the program in detail and comes with an instructional video tape. Teachers are encouraged to integrate their own materials to the sequence. Contact information may be located in Appendix B.

Concept Area	Terms	Symbols
Conceptual Statement		
Duration; Rhythm	**Beat:** steady downbeat; upbeat	**Meter signatures:**
Music may move to an underlying beat or pulse which is steady. Music may move with a fast, a moderate or a slow tempo. The tempo of music may gradually get faster or slower. Sounds or silences may be longer than, shorter than or the same as the beat. Music may combine long and short durations of sound and silence. Rhythmic values may be symbolized. Individual beats in a group of beats may be strong or weak. Rhythm may be organized into consistent groups of beats. Music may be organized into rhythmic patterns that are the same or different. Music may be organized into rhythmic patterns that are even or uneven. The regular order of strong and weak beats in a rhythmic pattern may be temporarily displaced.	**Meter:** duple triple combined changing **Tempo:** fast; moderate; slow accelerando; ritardando **Tempo markings:** largo; andante; moderato; allegro; presto **Duration:** short; long sound/silence **Rhythmic Patterns:** even/uneven repetition/contrast varied syncopated	C ¢ 2/4 3/4 4/4 5/4 6/8 3/8 5/8 7/8 **Accelerando (Accel.)** **Ritardando (Ritard.)** **Rhythmic Values:** 
Pitch; Melody	**Pitch:** register: high; middle; low range up; down; same half step; whole step intervals: unison, second, third, fourth, fifth, sixth, seventh, octave chord tones: root, third, fifth; home tone; tonal center non-chord tones: passing tone; neighboring tone transposition **Melodic Contour:** skip; step; same direction: up, down, same ascend/descend **Melodic Patterns:** imitation; repetition; sequence; inversion; varied riff call and response **Melodic Phrases:** same/different call and response question and answer cadence **Pitch Sets:** major; minor pentachord key signatures scales chromatic triadic modes: dorian, mixolydian other scales: pentatonic, whole tone 12-tone row; chance **Tonality/Atonality**	**Range:**  **Melodic Intervals:**  unison 2nd 3rd 4th 5th 6th 7th octave **Sharp, flat, natural:** ♯ ♭ ♮ **Chord tones:** **Non-chord tones:**  chord tones passing tone neighboring tone **Melodic patterns:**  pattern repetition sequence inversion **Major pentachord:**  **Minor pentachord:** 

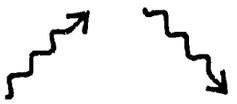
Representative Experiences	Keyboard Functions and Keyboard Skills
Listening: Imitate rhythmic patterns. Discriminate between same or different values, patterns or tempi. Distinguish meter aurally. Demonstrate steady beat and meter. Write rhythmic patterns in different meters. Illustrate meter by conducting patterns. **Discussing:** Move to describe tempos rhythmic duration and meter. Identify and describe durations used in rhythmic patterns. Discuss meter signatures. Identify, describe, compare and discuss rhythmic patterns. Describe keyboard rhythm presets. **Making:** Demonstrate a steady beat by moving, singing or playing. Play or clap an accompaniment with a steady beat in different tempi. Read, play or sing rhythmic notation accurately at various tempi. Perform rhythmically as part of an ensemble. **Creating:** Improvise accompaniments with a steady beat. Create variations of rhythmic patterns for playing or singing. Create accompaniments using keyboard percussion. Improvise questions and answers using a variety of rhythmic patterns and meters. Create (compose) songs using rhythmic concepts expressively.	**Functions:** • Use keyboard percussion. • Select and perform with preset rhythms. • Use tempo function. **Skills:** • Play rhythmic accompaniments with one hand or alternating hands. • Read rhythmic notation while playing with either hand. • Use all five fingers of either hand to accurately play rhythmic patterns in different tempi. • Play two simple rhythmic patterns with hands together.
Listening: Distinguish whether pitches are in high, middle or low registers. Identify or shape melodic contour of musical examples. Imitate melodic patterns and phrases. Write melodic patterns. Identify melodic intervals. Identify the tonal center of musical examples. Discriminate the difference between major and minor. **Discussing:** Describe the contour of melodies by moving. Identify and describe melodic patterns that are the same, similar or different. Describe melodies that move up or down by chord tones and/or scale tones. Identify major or minor pentachords or scales by reading notation and key signatures. **Making:** Sing melody with accurate pitch. Play melody and sing note names, rhythmic values, skip/step/same or finger numbers. Read, play or sing melodic notation accurately. Play or sing accurately in different tonalities. Perform a melody as part of an ensemble. **Creating:** Create variations of simple melodic patterns. Improvise and compose melodic phrases using a variety of patterns and contours. Improvise questions and answers using the same or different melodic patterns. Improvise questions and answers in a variety of modes. Create melodic variations of simple melodies. Compose original melodies in a variety of tonalities.	**Skills:** • Find and play two or three black keys. • Identify high, low and direction on keyboard. • Identify and use all keys and ranges of keyboard. • Play major and minor pentachords with each hand. • Use five fingers of either hand to play a melody. • Read melodic notation while playing with either hand. • Extend hand to a sixth in playing simple melodies. • Play simple melodies using a finger crossover. • Play the tetrachords of scales and modes using two hands. • Play two simple melodic patterns with hands together.

Concept Area Conceptual Statement	Terms	Symbols
Harmony Two or more pitches may be combined to create harmony. Pitches which occur together may be consonant or dissonant. A melody may be accompanied by single pitches, intervals or chords. Harmony may be created by patterns of single pitches, intervals or chords. Harmonic patterns may be the same, similar or different. Pitches may be symbolized. Two or more melodies may be combined to create harmony. Harmonic patterns may or may not have tonic chord. The end of an harmonic pattern may be complete or incomplete.	**Accompaniment:** cluster ostinato harmonic intervals triadic chord progressions **Consonance; dissonance** **Chords:** major triads (C,G,D,A,E,F,B♭,E♭) minor triads (c,g,d,a,f) diatonic triads single finger chords: major, minor, dominant sevenths root, third, fifth tonic, dominant seventh lead sheet: chord symbols inversions: root position, first and second inversions (C) added-note chords augmented triads (f,g) **Chord Progressions:** I-V^7: major (C,G,D,F) major and minor triads I-IV-V^7-I: major (C,G,D,F,E$^\flat$,B$^\flat$) minor (C,G,D) 12-bar blues ii-V^7-I: major **Cadence:** complete/incomplete **Polychords** **Countermelody** **Tonality; Atonality**	**Harmonic Intervals:** 2nd 3rd 4th 5th 6th 7th octave **Triads:** Major minor augmented **Diatonic Triads:** **Triad Inversions:** Root first second **Lead sheet (chord symbols):** C G^7 **Chord progressions:** I V^7 I I IV I I IV V^7 I ii V^7 I **Polychords:**
Texture Texture may consist of a melody, a melody and accompaniment, or two or more melodies. Expressive qualities and style are influenced by the number of parts occurring at once and how they relate to each other.	**Monophony;** melody **Homophony;** melody and accompaniment accompaniment styles: block, broken, Alberti, waltz **Polyphony;** two or more melodies melodic ostinato countermelody round, canon fugue **Ensemble:** small; large duet trio quartet	**Monophony** (melody): **Homophony** (melody and accompaniment): block broken or waltz Alberti **Polyphony:** (two or more melodies)

Representative Experiences	Keyboard Functions and Keyboard Skills
Listening: Distinguish between melody and accompaniment. Describe accompaniments. Identify major and minor tonalities. Identify chord changes. Imitate chord progressions. Write dictated patterns of intervals or chord progressions. Identify complete and incomplete cadences. Distinguish between tonal and atonal music. **Discussing:** Identify and describe accompaniments heard or played. Sing the tonal center of a song. Describe how triads are created. Discuss the appropriate choice of chords for harmonizing a melody. Discuss the affect of harmony upon style and context. **Making:** Play accompaniments using ostinati, clusters, intervals, triads or chord progressions. Play or sing a countermelody. Play a simple accompaniment for a two- or three-part round. Play one part in a two- or three-part round or canon. Play chords using a variety of accompaniment styles. Play or sing an accompaniment by reading chord symbols. **Creating:** Improvise accompaniments or variations of accompaniments. Create accompaniments and countermelodies for questions and answers. Harmonize a melody with the appropriate chords or a countermelody. Improvise a melody harmonized by the twelve-bar blues chord pattern. Create and compose simple melodies and accompaniments in a variety of tonalities and styles.	**Functions:** • Use entire range of keyboard to play an accompaniment. • Play harmonic intervals with either hand. • Use major and minor pentachords in either hand to accompany melodies. • Use Auto Bass Chord functions on keyboard. **Skills:** • Play major and minor triads in root position with either hand. • Play simple progressions using major triads, diatonic triads or I-V^7, I-IV-V^7-I or ii-IV-V^7 with either hand. • Invert selected major and minor triads. • Use both hands to play a simple melody and accompaniment or a melody and countermelody.
Listening: Identify melody and melody with accompaniment. Identify round or canon. Distinguish between monophony, homophony or polyphony. Identify the number of musical parts. **Discussing:** Describe different textures. Describe textural changes in songs. Describe the affect of texture on style and context. **Making:** Play or sing a melody. Play a variety of accompaniment styles with a melody. Play or sing simple countermelodies with melodies. Play or sing a melody in round or canon. Play or sing two-, three- or four-part ensembles. **Creating:** Improvise a variety of accompaniments. Improvise countermelodies. Improvise questions and answers that illustrate monophony, homophony and polyphony. Create arrangements using different textures.	**Functions:** • Use Auto Bass Chord function to play an accompaniment. **Skills:** • Play simple melodies. • Play accompaniments with a single hand or alternating hands. • Play simple countermelodies using either hand. • Perform as part of an ensemble of two, three or four parts. • Use both hands to play a simple melody and accompaniment or a melody and countermelody.

Concept Area	Terms	Symbols
Conceptual Statement		
Form The structure of a composition may be a combination of smaller sections. Sections of a composition may be the same, similar or different.	**Motive; pattern** imitation repetition/contrast same/different **Phrase** **Call and response** **Question and answer** **Introduction; coda; transition** **Binary form:** verse and refrain AB **Ternary form:** ABA **Round; canon** **Theme and variations** **ABC** **Rondo** **12-bar blues** **32-bar song form**	**Repeat Signs:** ‖: :‖ **D.C. al Fine** **Endings:** 1st : 2nd
Timbre (Tone Color) The quality of sound is determined by the instrument or voice which produces that sound. The timbre of music may vary by the number and type of instruments, including voice, combined in a composition. The timbre of music is affected by the way the sound is produced.	**Keyboard timbres** **Keyboard rhythm presets** **Environmental sound** **Instrumental classifications:** Strings (chordophones) Brass (aerophones) Woodwinds Percussion (membranophones and idiophones) Electronic (electrophones); synthesizer Voice: soprano; alto; tenor; bass **Ensembles**	
Dynamics Music may vary in the degree of loudness or softness. Music may become louder or softer. Loudness or softness may vary by the number of voices or the timbres used.	**Loud/soft:** forte/piano; mezzo forte/mezzo piano; fortissimo/pianissimo **Louder/softer:** crescendo/decrescendo; diminuendo **Dynamic balance**	*f/p* *mf/mp* *ff/pp* **crescendo:** < **decrescendo (diminuendo):** >

Representative Experiences	Keyboard Functions and Keyboard Skills
Listening: Identify repeated, varied and contrasting phrases or sections. Identify the form of musical examples. **Discussing:** Describe the form of musical examples. Describe the symbols of form. Determine how melody, rhythm and harmony affect form. **Making:** Facilitate reading music by recognizing same, similar or different phrases or sections. Perform a variety of musical forms. **Creating:** Improvise repeated or contrasting patterns. Improvise questions and answers. Improvise variations of keyboard parts or songs. Compose phrases or complete musical forms.	**Skills:** • Play sections or the complete song using a five-finger or extended hand position. • Play sections of a song in ensemble with the class.
Listening: Distinguish between different timbres. Recognize timbres when combined. Identify and discern individual timbres in an ensemble. Track a single timbre in an ensemble performance. **Discussing:** Categorize timbres by method of sound production and type and by use in an ensemble. Describe the affect of articulation, dynamics and number of voices upon timbre. Describe how timbre is used in different styles of music. **Making:** Perform melodies or accompaniments using keyboard presets. Produce a variety of timbres using instruments, voices and environmenal sounds. Perform ensemble arrangements with appropriate selection of timbre for style and context. **Creating:** Improvise sound effects using a variety of timbres. Improvise accompaniments using a variety of timbres. Create arrangements by selecting instrumental timbres.	**Functions:** • Use all timbre presets on keyboard. • Use all rhythm presets on keyboard. • Group preset timbres by tone production and use in ensembles.
Listening: Identify dynamic changes in musical examples. **Discussing:** Describe dynamic changes in musical examples. Identify dynamic symbols and describe differences. Discuss dynamic changes resulting from the use of different timbres or number of voices. Describe use of dynamics in a variety of styles and contexts. **Making:** Play or sing with appropriate dynamic contrasts. Play or sing with dynamics indicated. Choose and perform appropriate dynamics for a song. Determine and perform dynamics appropriate for a balanced ensemble. **Creating:** Create musical characters or stories using dynamic changes. Play a musical phrase with different dynamics. Improvise questions and answers using dynamic changes. Create phrases or musical form with appropriate dynamic changes.	**Functions:** • Use volume control to produce different dynamic levels while partner plays. • Select combinations of preset timbres to change dynamic levels. **Skills:** • Play a simple, repetitive melody or accompaniment and use volume control. • Change the number of performers per part to alter the dynamic level.

Concept Area		
Conceptual Statement	Terms	Symbols
Articulation Music may be smooth or detached. The attack (beginning), and the decay (ending) of the sound may vary.	Legato Staccato Accent Sustained Phrase marking Slur	Staccato: Accent: Phrase (slur):
Ornamentation Music may be embellished by adding to or varying the melody, rhythm or harmony.	Tremolo Glissando Grace note; crushed note Passing tone; neighboring tone	Tremolo: or  Glissando:  Grace note and crushed note: Passing tone: Neighboring tone:

Representative Experiences	Keyboard Functions and Keyboard Skills
Listening: Imitate a musical phrase using articulation. Identify articulation used in musical examples. **Discussing:** Describe use of articulation in a variety of styles. Identify symbols for articulation and describe appropriate sound. Discuss how timbre affects articulation. **Making:** Play or sing using articulation indicated. Play or sing with articulation appropriate to style. **Creating:** Use appropriate articulation to express a musical idea. Improvise using a variety of articulations. Use articulation to reflect style.	**Functions:** • Use timbre presets to alter articulation. • Perform an accent using the volume control. **Skills:** • Play with legato or staccato touch.
Listening: Identify ornamentation used in musical examples. **Discussing:** Discuss the effects of ornamentation in music. Determine style from ornamentation. **Making:** Play or sing using ornamentation. Utilize symbols for ornamentation. Perform using ornamentation appropriate to style. **Creating:** Add simple ornamentation to a melody. Improvise variations of a melody using ornamentation.	**Skills:** • Use adjacent or alternate fingers of either hand to play tremolos and grace, or crushed, notes. • Use all five fingers of either hand in performing passing and neighboring tones.

II. Temporal Acuity Products Master Musician Music Literacy Curriculum

The Master Musician Curriculum provides a structure and sequence integrating the Tap Master II, the Pitch Master, and software published by Temporal Acuity Products for the Apple II series computer. The curriculum comes with a master flowchart of the curriculum scope and sequence, ten camera-ready level packets to reproduce for student use, lesson cards to guide students into appropriate menu choices in the software, achievement reports, and level certificates. The program is easily adapted to both the public and private music teaching environments.

The curriculum gives special focus to aural literacy skills ("seeing with the ears and hearing with the eyes"). The lessons are carefully sequenced and provide the student with an excellent foundation in basic musicianship and, also, in areas of musicianship that are frequently ignored.

Temporal Acuity Products has generously given permission to print the curriculum outline for the first three levels of the Master Musician Music Literacy Curriculum. This provides a sample of what the curriculum includes. Contact information may be located in Appendix B.

Curriculum Outline

Sequence for students age 9 and above

Level 1A	Level 2A	Level 3A
	Pitch Master	
Tune-Up Tape 1 Tune-Up Tape 2 Tune-Up Tape 3 Tune-Up Tape 4	Tune-Up Tape 5 Tune-Up Tape 6 Tune-Up Tape 7 Tune-Up Tape 8	Tune-Up Tape 9 Tune-Up Tape 10 Tune-Up Tape 11 Tune-Up Tape 12
	Tap Master	
Placement Tape to pg. xi Elementary Tape 9 Elementary Tape 10 Intermediate Tape 1	Intermediate Tape 2	Intermediate Tape 3 Intermediate Tape 4 Intermediate Tape 5
	Computer - Core Curriculum	
(No computer at this level)	**Magic Musical Balloon** Game - 3 **Pick the Pitch** (using "Help" chart) No Accid./No Ledger lines/Tutor Treble clef/Bass clef **Sebastian--Special Disk #1** Lesson #1 - Pitch errors Lesson #2 - Pitch Lesson #3 - Pitch Lesson #5 - Rhythm **Music Symbols** Unit 1 - #1-10 - untimed Unit 3 - #11-20 - untimed	**Sebastian--Special Disk #1** Lesson #6-rhythm errors Lesson #4-pitch Lesson #7-pitch Lesson #8-rhythm Master Level 1 **DoReMi** - Level 1 **Pick the Pitch** ("Help" chart if necessary) No Accid./No Ledger lines/Tutor Treble clef/Bass clef **A Decent Interval** M2, M3 - visual P4, P5 - visual **Music Symbols** Unit 1 - #11-20 - untimed Unit 2 - #11-20 - untimed Unit 1 - #1-20 - untimed Unit 3 - #1-10 - untimed Unit 3 - #11-20 - timed
	Extended Activities	
	Toney Listens to Music Level 7 Level 8 Level 9 Level 10 **Note Blaster** Pitch Names - level 1 Treble/bass	**Interval Mania** 2nds & 3rds - Major - Visual 4ths & 5ths - Perfect - Visual **Note Blaster** Pitch Names - level 2 Treble/bass

Curriculum Cross-Reference Table
Software Titles Listed by Concept Area, Hardware Requirements, and Target Age Range

The following pages provide a ready reference to the software titles in the collection of preview materials at the Music and Technology Demonstration Center in Olympia. The chart provides access to information regarding the stated concept objectives of a piece of software (in many cases, a title will appear in several categories), the hardware on which the software will run, and the ages for which the software was designed.

The table has been provided to assist teachers in selecting appropriate software for integrating into the curriculum. If a title appears to cover the desired curricular areas with the appropriate target age range, teachers may then use the Music and Technology Demonstration Center to preview the material. This can be most helpful when writing grants, making hardware decisions, and comparing software packages.

Music Education Software by Concept and Age

All titles listed are available for review at the Music and Technology Demonstration Center in Olympia

Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
Pitch						
Up/Down/Same	Magic Musical Balloon Game	A	•	•		
	Theory Readiness A	A	•	•		
	Early Music Skills	A,IBM,At,C,	•	•	•	
Same/Different	*Toney Listens to Music	M	•	•		
Skips/Steps	Early Music Skills (MIDI)	A,IBM,At,C,	•			
	Piano Partners (MIDI)	IBM		•	•	
	Silver Burdett (I)	A		•	•	
	Theory Readiness B	A	•	•		
Note Names/Clefs	Alfred's Piano Theory Software 1A-2			•	•	
	Clef Notes	A,IBM, At		•	•	
	Clef Practicing	A		•	•	•
	DiscCovering Rudiments	IBM		•	•	•
	Early Music Skills (MIDI)	A, IBM, At	•	•	•	
	Keyboard Kapers (MIDI)	A, IBM, At		•	•	
	Keyboard NameGame (MIDI)	A, IBM, At		•	•	
	Keyboard Speed Reading	A, IBM, At		•	•	•
	Keyboard Tutor (MIDI)	A, IBM, At		•	•	•
	Maestroscopic Ear Training	A			•	•
	Maestroscopic Music Literacy Drills	A		•	•	
	Maestroscope Theory Level 1	A		•	•	
	Music Class: Fundamentals	A		•	•	
	Music Class: Note Reading	A		•	•	
	Music Flash Cards	A, IBM, At		•	•	•
	* Music Made Easy	A, IBM, At			•	•
	Notable Phantom	A		•		
	Note Blaster	A		•	•	•

* Indicates that this title was reviewed or used in a lesson plan in this resource guide

Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
	Note Detective	C-64		•	•	
Pitch Continued	Note Name Drills	A		•	•	
Note Names/clefs (cont.)	Note Trespassing	A			•	•
	Piano Partners	IBM		•	•	
	Pick the Pitch	A		•	•	•
	Pitch Drills	A		•	•	•
	Pitch Duel	C-64		•	•	
	Pitch-u-lation	C-64		•	•	
	* Practica Musica				•	•
	* Practical Music Theory	A/IBM/At/M /C-64				•
	The 21st Century Music Series	A/IBM/At/ C-64		•	•	•
	The Bare Facts on Notes/Rh/Terms	A			•	•
	Theory Readiness A/B	A	•	•		
Scales/Modes	Alfred's Piano Theory Lev. 3-5	A/IBM/At/M /C-64		•	•	•
	DiscCovering Rudiments	IBM		•	•	•
	Maestroscope Theory Level 2 &3	A			•	•
	MacGAMUT	M				•
	Perceive	M			•	•
	Practical Music Theory	A/IBM/At/M /C-64				•
	Theory Sampler: Building Scales/ Modes	A			•	•
	Theory Sampler: Identifying Scales	A			•	•

* Indicates that this title was reviewed or used in a lesson plan in this resource guide

Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
Melody/ Melodic Dictation						
	Arnold	A			•	•
	DiscCovering Rudiments	IBM		•	•	•
	Doremi	A		•	•	•
	Hearing Melodic Patterns					
	Hear Today -- Play Tomorrow: Ear Training Skills	A, IBM, C-64			•	•
	Hear Today -- Play Tomorrow: Find That Tune	A, IBM, C-64			•	•
	Kids Time	M	•	•		
	Listen 2.0	M				•
	Magic Piano	A		•	•	•
	Melodious Dictator	A			•	•
	Melody Race	C-64		•	•	
	Music Class: Ear Training	A			•	•
	* Music Made Easy	A, IBM, C-64			•	•
	Name it: Kids Classic	A		•	•	
	Patterns in Pitch Level 1 and 2	A, IBM, At			•	•
	Piano Partners (MIDI)	IBM		•	•	•
	* Practica Musica	M			•	•
	* Practical Music Theory	A/IBM/At/M /C-64				•
	Scale Lab	A				•
Sightsinging						
	* Pitch Master Tune-Up Series	Pitch Master	•	•	•	•
	Pitch Master First Read Series	Pitch Master		•	•	•
	Pitch Master Diatonic Series	Pitch Master			•	•

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Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
Rhythm/Rhythmic Dictation						
	Alfred's Piano Theory Lev. 1A - 2	A/IBM/At/M /C-64		•	•	
	Alfred's Piano Theory Lev. 3 - 5	A/IBM/At/M /C-64		•	•	
	Count Me Out	A			•	•
	DiscCovering Rudiments	IBM		•	•	•
	Maestroscope Music Literacy drills	A		•	•	
	Maestroscope Theory Level 1	A		•	•	
	Maestroscope Theory Level 2 & 3	A			•	•
	Music Class: Rhythm	A		•	•	
	* Music Made Easy	A, IBM, C-64			•	•
	Patterns in Rhythm Level 1 and 2	A, IBM, At			•	•
	Piano Partners (MIDI)	IBM		•	•	•
	* Practica Musica	M			•	•
	* Practical Music Theory	A/IBM/At/M /C-64				•
	Rhythmaticity	C-64		•	•	
	Rhythmic Dictator	A				•
	Rhythm Machine	A			•	•
	Rhythm Master	A			•	•
	Rhythm Write	A				•
	Silver Burdette II & III	A		•	•	
	The Bare Facts on Notes, Rhythm, & Terms	A			•	•
	The 21st Century Music Series	A/IBM/At/ C-64		•	•	•

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Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
Rhythmic Sightreading (real time)						
	Rhythm Drills	A			•	•
	* TAP Master II Elementary Series	Tap Master	•	•		
	TAP Master II Intermediate Series	Tap Master			•	•
	TAP Master II Advanced Series	Tap Master				•
	Tap-It	A, IBM			•	•
Harmony						
Triads	Alfred's Piano Theory Lev. 3 - 5	A/IBM/At/M/C -64		•	•	
	Chordelia	A			•	•
	DiscCovering Rudiments	IBM		•	•	•
	Keyboard Chords (MIDI)					
	Listen	M			•	•
	MacGAMUT	M				•
	Maestroscopic Ear Training	A		•	•	•
	Maestroscope Theory Level 2 &3	A			•	•
	Perceive	M				
	* Practica Musica	M			•	•
	* Practical Music Theory	A/IBM/At/M/C -64				•
	Theory Sampler: Building Chords	A			•	•
	The Bare Facts on Intervals & Chords	A			•	•

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Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
4 - voices and Harmonic Dictation						
	Aural Skills Trainer - Basic Chords	A, IBM, At			•	•
	Aural Skills Trainer - 7th Chords	A				•
	Chord Mania	A				•
	Diatonic Chords	A				•
	Functional Harmony - Borrowed and Altered Chords	A, IBM, At				•
	Functional Harmony - Diatonic Seventh Chords	A, IBM, At				•
	Functional Harmony - Secondary Dominants	A, IBM, At				•
	Harmonious Dictator	A				•
	Harmony Drills	A			•	•
	Jazz Dictator	A				•
	Piano Partners (MIDI)	IBM		•	•	•
	Theory Sampler: Chord Identification	A			•	•
	Theory Sampler: Building Sevenths	A				•

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Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
Intervals						
	* A Decent Interval	A			•	•
	Alfred's Piano Theory Lev. 1A - 2	A, IBM, At, M, C-64		•	•	
	Alfred's Piano Theory Lev. 3 - 5	A, IBM, At, M, C-64		•	•	
	Aural Skills Trainer - Intervals	A, IBM, At			•	•
	DiscCovering Rudiments	IBM		•	•	•
	Early Music Skills	A, IBM, At, C-64		•	•	
	Hear Today--Play Tomorrow: Descending & Ascending Intervals	A, IBM			•	•
	Interval Mania	A				•
	Just Between Notes	A			•	•
	Keyboard Intervals (MIDI)	A, IBM, At, C-64				•
	Listen	M			•	•
	MacGAMUT	M				•
	Maestroscopic Ear Training	A		•	•	•
	Maestroscopic Music Literacy Drills	A		•	•	
	Maestroscope Theory Level 2 & 3	A			•	•
	Musical Stairs (MIDI)	A, IBM, At		•	•	
	Note Detective - (MIDI) Disk 2	A, IBM		•	•	
	* Practica Musica	M			•	•
	* Practical Music Theory	A, IBM, At, M, C-64				•
	The Bare Facts on Intervals and Chords	A			•	•

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Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
Key Signatures						
	Alfred'd Piano Theory Lev. 3 - 5	A, IBM, At, M, C-64		•	•	
	Catch the Key	A			•	•
	DiscCovering Rudiments	IBM		•	•	•
	Key Signatures	A			•	•
	Maestroscope Theory Level 2 & 3	A			•	•
	* Music Made Easy	A, IBM, C-64			•	•
	* Practical Music Theory	A IBM, At, M, C-64				•
	Silver Burdette III	A		•	•	
Music Symbols & Terms						
	Alfred's Piano Theory Lev 1A - 2	A, IBM, At, M, C-64		•	•	
	Alfred's Piano Theory Lev. 3 - 5	A, IBM, At, M, C-64		•	•	
	Conducting Terms	A			•	•
	Maestroscopic Music Literacy Drills	A		•	•	
	Music Class: Symbols	A		•	•	
	Music Symbols	A			•	•
	Music Term-inator	A			•	•
	Music Terminology	A, IBM, At			•	•
	* Practical Music Theory	A, IBM, At, M, C-64				•
	Silver Burdett III	A		•	•	
	The Bare Facts on Notes, Rhythm & Terms	A			•	•
Error Detection Tuning						
	Ear Challenger	A			•	•
	Listen! A Musical Skills Program	A, IBM, At			•	•
	* Music Room	C-64			•	•
	* Sebastian II	A		•	•	•

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Error Detection Tuning Continued						
	Silver Burdett III	A		•	•	
	Sir William Wrong Note	A				•
	The Music Detective	C-64		•	•	
Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
Beginning Keyboard Skills						
	Alfred's Piano Theory Lev. 1A - 2	A, IBM, At, M, C-64		•	•	
	Alfred's Piano Theory Lev. 3 - 5	A, IBM, At, M, C-64		•	•	
	Early Music Skills (MIDI)	A, IBM, At, C-64		•	•	
	Instant Keyboard Fun	A, IBM, At		•	•	•
	Keyboard Kapers (MIDI)	A, IBM, At, C-64		•	•	
	Keyboard NameGame (MIDI)	A, IBM, At, C-64		•	•	
	Keyboard Note Drill (MIDI)	A, IBM, At		•	•	
	Keyboard Tutor (MIDI)	A, IBM, At, C-64		•	•	
	Note Detective (MIDI)	A, IBM		•	•	
	Piano Partners	IBM		•	•	
	* Practica Musica	M			•	•
	The 21st Century Music Series	A, IBM, At, C-64		•	•	•
Intermediate and Advanced Keyboard Skills						
	Keyboard Chords (MIDI)	A, IBM, At, C-64				•
	Keyboard Fingerings (MIDI)	A, IBM, At, C-64				•
	Keyboard Jazz Harmonies	A, IBM, At				•
	MIDI-Jazz Improvisation I and II	A, IBM, At				•

* Indicates that this title was reviewed or used in a lesson plan in this resource guide

Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
Composition						
	Concertware/Concertware+MIDI	M				•
	* Delux Music Construction Set	M			•	•
	Encore	M				•
	Finale	M				•
	Jam Session	A, M			•	•
	Mac Drums	M				•
	Magic Piano	A			•	•
	* Music Printer Plus	IBM			•	•
	Music Shapes	A		•	•	•
	Music Prose	M				•
	Music Ware					
	Notator	At				•
	Piano Partners	IBM		•	•	
	Professional Composer	M				•
	SongWright IV Music Processor	IBM				•
	Sticky Bear	A		•	•	
	Super Studio Session	M			•	•
Music Editing/Printing						
	Delux Music Construction Set	M			•	•
	Encore	M				•
	Finale	M				•
	Music Printer Plus	IBM			•	•
	Music Prose	M				•
	Music Ware					
	Notator	At				•
	SongWright IV Music Publisher	IBM				•
	Professional Composer	M				•
	Pyware Music Writer	A, M				•

* Indicates that this title was reviewed or used in a lesson plan in this resource guide

Concept	Programs	Comp. Type	Pr. Sch	K - 3	4 - 6	7 - 12
Sequencing						
	Cakewalk	IBM				•
	Casio CZ Series Editor/Librarian	M			•	•
	Encore	M				•
	Master Tracks Pro4	M				•
	Notator	At				•
	Professional Performer	M				•
	Trax	M				•
Electronic Music						
	Instant Synthesizer	AIIGS			•	•
	3001 Sound Odyssey	C-64			•	•
Fingerings						
	Brass Fingerings				•	•
	Brass Teachers Assistant	A			•	•
	Double Reed Fingerings	A, IBM, At			•	•
	Guitar and Bass Fingerings	A			•	•
	Guitar Wizard	M				•
	Micro Brass Fingerings	A			•	•
	Orchestral Strings Teachers Assist.	A				•
	String Fingerings I, II, and III	A			•	•
	Woodwind Fingerings	A			•	•
	Woodwind Teachers Assistant	A				•
	Woodwind Fingerings					
	Keyboard Fingerings					

• Indicates that this title was reviewed or used in a lesson plan in this resource guide

MusicHistory/ Composers/ Appreciation						
	Beethoven's 9th	CD-ROM		•	•	•
	Composers and Their Works	A			•	•
	Foreign Instrument Names	A				•
	Music History	A, IBM, At				•
	Music History Review: Composers	A,IBM,At				•
	Perspectives in Music History	A, IBM, At				•
	Standard Instrument Names	A				•
	The Magic Flute	LVD/CD-ROM		•	•	•
	* Univ. of Del. Music Apprec.	LVD		•	•	•
Transposition						
	Pick the Pitch	A			•	•
	Transposition Drills	A			•	•
Testing						
	Music Achievement Series	A, IBM, At		•	•	•
	Music Composers Quiz	A, IBM,AT			•	•
Band						
	Charting Aid	A				

* Indicates that this title was reviewed or used in a lesson plan in this resource guide

Lesson Plans

with

Technology

Introduction to Lesson Plans

The Visual and Performing Arts Curriculum Guidelines for Washington Schools have been used extensively in the development of the lesson plans presented in this resource guide. The five curriculum goals are binding to all of the arts, and the integration of technology should bring us closer to those goals.

Goals for the Visual and Performing Arts

1. Students are able to use sensory experiences to comprehend the various art forms.
2. Students are able to use their skills to participate in the arts.
3. Students are able to apply their knowledge of concepts, elements, principles, theories, and processes in the arts.
4. Students are able to express themselves creatively through the arts.
5. Students are able to make informed judgments about the arts and the relationships of the arts to the histories, cultures, and environments of the world's people.

In each lesson plan, there is a section that highlights which of the state curricular goal(s) the lesson addresses. It is not assumed that each lesson can teach to all five goals but, rather, throughout the year, there will remain a balance among the goals to create a thorough learning experience. A well-balanced lesson will include all five of the learning process components (perceiving, experiencing, understanding, creating, and aesthetic valuing). The emphasis will shift according to the material being taught, but keeping these components in mind will assure a total learning experience. Teaching with all five learning components will supersede the teacher's own personal learning style and provide material to nurture all learning styles.

Lesson plans are titled by the material to be learned in the lesson. Lesson plans were selected for thorough integration of technology, well-balanced approach, and follow-through. Lessons may be taught exactly as they appear. However, they also provide a model for teaching with technology, regardless of equipment. Excellent teaching software is now available for many types of computers.

Model Lesson Plan

Identifying Note Names

Length of lesson: 30 minutes.

Target Age Range: 2nd through 7th grade. (This lesson targeted for a 4th grade class.)

Lesson Objective: The student will be able to identify the note names of the basic notes in the treble and bass clefs.

State curricular guideline goals:
Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.

Learning Activities:

- "Pitch Names" program to be used with the entire class on an overhead PC viewer. Use with individuals naming the notes different notes are displayed on the screen. (Caps lock must be on.)
- Students receive immediate feedback from the computer. Students have the opportunity for cooperative learning and working on teams.

Evaluation/Review: Points are kept for teams or entire classes competing against each other. When a certain amount of points are earned, the next lesson may be introduced.

Closure: Students will recite together as a class the note names as they are presented. Additional closure may include individual testing or use of worksheets.

Possible Follow-up Lessons:
Continuation of lessons in this program including keyboard names exercises, pitch name exercises with accidentals and whole and half steps to follow the sequence of musical skills.

Materials needed:

Hardware:	Apple II Plus or Apple IIe
Software:	Basic Musicianship Program by Raynold L. Allvin.
Other Equipment:	P.C. Viewer, Headphones (optional)

Model Lesson Plan

Basic Symbols and Note Names

Length of lesson: Individual student on computer : 15 minutes.

Target Age Range: Intermediate (grades 4-6).

Lesson Objectives: The student will be able to identify various music signs and symbols.
The student will be able to name notes in treble and bass clef.

State curricular guideline goals:
Goal #2 - The student will be able to use his/her skills to participate in the arts.
Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.

Anticipatory Set: Have the class brainstorm why someone might want to know how to read the musical staff (i.e. writing a rock song, playing an instrument, singing).

Individual Tutorial:
A. Menu choices for software:
Section 1

B. How is success measured?
On screen feedback.

Evaluation/Review:
- Check for completion by seeing final screen.
- Review with worksheets, discussion, student demonstrations, or games.
- Other software: The Music Class - Note Reading Disk 1.

Closure: Ask the class, "What did you learn about the musical staff? List five things."

Possible follow-up lessons:
Play games: Musical Hangman, Musical Shuffleboard, or use other software such as Note Blaster (TAP) or Pick the Pitch (TAP)

Materials needed :
Hardware: Apple II Series (Also available for Commodore 64 and IBM XT)
Software: "Music Made Easy" by Alfred Publishing Co.

Model Lesson Plan

Basic Duration and Stems

Length of lesson: Individual student (or groups of two) on computer for 15-20 minutes.

Target Age Range: Beginning students - 2nd grade and above.

Lesson Objective: The student will be able to identify basic note and rest values (quarter, half, and whole), and stem direction.

State curricular guideline goals:

Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.

Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.

Anticipatory Set:

- Review of basic rhythmic values, and placement of stems on quarter notes:
- 1. Four examples with wrong number of beats per measure; students must come up and fix.
- 2. Ten stemless half notes on music staff; students must indicate correct stem direction (based on staff position).

Individual Tutorial:

A. Menu choices for software:
Select B for Unit 2, then A for Whole/Half/Quarter Notes.

B. How is success measured?
Student will correctly answer 10 questions in a row and will record this on a chart.

Evaluation/Review: Students will be tested using Music Achievement Series Test B.

Closure: Students fill in missing note values and stems for examples on board or handout.

Possible Follow-up Lessons:

- Lesson 8 in Alfred's Practical Theory Workbook provides review of material covered.
- Students could use Patterns in Rhythm (Level 1 by ECS) to practice hearing basic rhythmic patterns.

Materials needed:

Hardware: Apple II/IIe/IIgs (also runs on Commodore, IBM)
Software: Alfred's Practical Theory

Model Lesson Plan

Intervals of the Major Scale

Length of Lesson: Individual student on computer 10 minutes plus.

Target Age Range: Fifth grade and above (because of necessary reading level).

Lesson Objective: The student will be able to aurally and visually identify basic major ascending intervals.

State curricular guideline goals:
Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.

Anticipatory Set: The teacher will present the concept of intervals using specific examples played on the piano. Students then write their answers to the intervals being played.

Individual Tutorial: Note: The "Interval Mania" portion of this program is superior to the introductory portion.

A. Menu choices for software:
- sound source
- instrument choice
- number of players (up to two) or against computer
- visual or aural identification
- staff selection
- interval sizes (includes majors and minors)
- level of difficulty

B. How is success measured?
Computer will keep track, give a bar graph, and print the results.

Evaluation/Review: Computer tells you what you did not do correctly and gives points and bonus points.

Closure: Class review of concepts explored through the individual lessons presented on the computer program.

Materials needed:

Hardware: Apple II family (including "C") or Laser 128 Computer (Min 64 K memory)

Software: "A Decent Interval" by Temporal Acuity Products

Other Equipment: Headphones are optional but they improve the quality of sound.

Model Lesson Plan

Spelling Major and Minor Triads

Length of lesson: Individual student on computer 20 - 30 minutes.

Target Age Range: Grades 5 - 12.

Lesson Objective: The student will be able to spell 16 major and minor chords.

State curricular guideline goals:
Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.

Anticipatory Set:
1. Show examples of chord structure from a variety of musical styles.
2. Show the relationship between jazz improvisation and knowledge of chord structure using a sample jazz chart.

Individual Tutorial:

A. Menu choices for software:
Chord Spelling from "Activities" menu.

B. How is success measured?
Computer awards one point for each correct answer. Hard copy score of the lesson is available on printer. Note: Program does not keep ongoing class record.

Evaluation/Review: Program provides correct answer after each incorrect response. Program subtracts one point for each incorrect answer. When score of 16 is attained, program produces applause and allows student to advance to the next level.

Closure: Teacher reviews score and student's overall progress.

Possible Follow - up Lessons:
Mastery of this material may take several sessions.

Materials needed:

Hardware:	Macintosh+, SE, or II; optional MIDI interface and MIDI keyboard, optional printer
Software:	Practica Musica by Ars Nova
Other Equipment:	Amplifier or headphones

Model Lesson Plan

Harmonizing a Simple Melody

Length of lesson: Individual student on computer 20 minutes.

Target Age Range: Grades 7 - 12.

Lesson Objective: The student will be able to name, spell, and label chords suggested by a given melody.

State curricular guideline goals:

Goal #2 - The student will be able to use his/her skills to participate in the arts.

Goal #3 - The student will be able to apply their knowledge of concepts, elements, principles, theories, and processes in the arts.

Anticipatory Set: Teacher plays a familiar melody with two different harmonizations. Discuss how musicians use a variety of methods to harmonize melodies. This program introduces a basic method.

Individual Tutorial:

A. Menu choices for software:
   Follow menu choices to UNIT 20 LESSON .
   Select (A) "Harmonizing a melody."

B. How is success measured?
   Visual feedback from the computer.

Evaluation/Review: Review worksheet from lesson book "Practical Theory Complete" pg. 79.

Closure: Teacher asks whole class to harmonize "Mary Had A Little Lamb" (Key of C).

Possible follow-up lessons:
Harmonization of other simple melodies. Explore alternate harmonies with same melodies. Move from simple to more complex harmonies.

Materials needed:

Hardware:	Apple IIE, Apple II+, Apple II, Apple IIGS
Software:	Practical Theory
Other Equipment:	Optional MIDI Keyboard Preliminary written instructions on note entry would be helpful.

Model Lesson Plan

Aural Recognition of Same and Different Melodies

Length of lesson: 20 - 25 minutes.

Target Age Range: Preschool through 1st grade.

Lesson Objective: The student will be able to aurally discriminate whether a phrase of a familiar tune is the same or different than another given phrase of similar length.

State curricular guideline goals:

Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.

Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.

Anticipatory Set: Some choices:

1. Play game - "Name that Tune," guess what I'm whistling.
2. Teach songs used on the disk. Teacher models phrase with hand motions.
3. Use same and different pattern blocks.

Learning Activities:

1. Shape phrase by using hands with the program.
2. Decide answer by holding up one or two fingers to match which box is chosen.
3. Continue until most of class is correct.

Optional Activities:

1. Draw contour of melody with pencils/crayons on paper.
2. Use math pattern blocks. Each student receives three pattern blocks, two the same and one different. Working with a partner, students put together matching blocks if first tune is the same, opposite if it is not the same.

Evaluation/Review: Teacher evaluates mastery of skill by observation of student responses.

Closure: Divide the class into two groups.
Play a tune.
Group one makes up a motion and lines up.
Group two must do the same motion of tune is the same or a new motion if it is different.

Possible follow-up lessons:
Use lesson to introduce high/low and form (same/different).

Materials needed:

Hardware: Apple II Plus, Apple IIE, and DAC board
Software: Toney Listens to Music, Level I
Other Equipment: Amplifier

Model Lesson Plan

Steady Beat

Note: This lesson demonstrates the use of the Tap Master in a classroom environment. These tapes are also designed for individual student use with headphones. In the individual setting, feedback is given for each correct beat placement, and scores are collected on a counter.

Length of lesson: One 30 minute session - 10 minutes with Tap Master.

Target Age Range: Kindergarten.

Lesson Objective: The student will be able to recognize and perform a steady beat.

State curricular guideline goals:

Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.
Goal #2 - The student will be able to use his/her skills to participate in the arts.
Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.
Goal #4 - The student will be able to express him/herself creatively through the arts.

Anticipatory Set: Meeting friends on tape (The Elementary Series includes an aural cartoon character named "Joshua") moving to a steady beat, tapping/clapping to a steady beat and include body movement.

Learning Activities:

10 min.	1. Tape 1 of Tap Master Elementary Series Class participates
3-5 min.	2. Locomotor movement to any kind of steady beat.
5 min.	3. Echo larger body movements on steady beat with teacher as leader
5 min.	4. Mirror large steady rhythmic motions (Teacher can be leader or students can partner up). Incorporate a song with a steady beat while large body movement is happening.

Evaluation/Review:

Have students describe something in life that has a steady beat : (i.e. heart, clock, breathing, blinking traffic lights, etc.)

Closure: Teacher presents examples of steady beats and non-steady beats and children respond with a hand signal.

Continued on next page

Possible follow-up lessons:

- Incorporate instruments to perform steady beat.
- Continue similar sequences incorporating the first 10 elementary tapes when appropriate.
- Let children be introduced to individual experience on the Tap Master.

Materials needed :

Hardware:	Tap Master II by Temporal Acuity Products
Software:	Elementary Series Tapes by Temporal Acuity Products
Other Equipment:	Stereo cassette player with external speaker

Model Lesson Plan

Melodic Error Detection

Note: This program provides a valuable option for the teacher. New examples with errors of the teacher's choice may be added quite easily. This offers the flexibility of nurturing error detection in literature being learned and taught at any point in the curriculum.

Length of Lesson: 10 - 15 minutes with an individual student on computer.

Target Age Range: Grades 3 - 12.

Lesson Objective: The student will be able to detect errors in pitch, rhythm, and tempo from given and created melodies.

State curricular guideline goals:

Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.

Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theorie[illegible]id processes in the arts.

Goal #4 - The student will be able to express him/herself creatively through the arts.

Pre-requisite Skills: Basic ability to use a sequencing program. (Ex. Recording, playback, assigning tracks to MIDI channels etc.)

Preliminary Activities:

Play or sing a familiar melody incorrectly, using errors in pitch, rhythm, or tempo. Ask students what was wrong with the melody.

Individual Tutorial:

A.Menu choices:

1.Select program
2. Speaker (sound)
3. Sound Effect Option
4. Ability Level 1 - 5
5. Create Your Own Melody

B. How will success be measured?

Sebastian II offers aural and visual responses. Students final scores are given in percentages.The software includes computer record keeping so students can record their progress and the teacher can print out a report.

Closure: After students master the basic program, they can write their own melodies and use that material for error detection. Students could work in pairs or teams to test each other's skills in error detection with their own melodies.

Materials needed :

Hardware:	Apple II series with 64K
Software:	Sebastian II by Temporal Acuity Products
Other Equipment:	Headphones for silent individual use or amplifier for group use

Model Lesson Plan

Pitch Matching

Length of Lesson: 10 - 15 minutes . (Please note - this lesson and the introduction would vary depending on the abilities of the student. You must progress through the entire lesson before you can exit the program.)

Target Age Range: Grades 4 - 12.

Lesson Objective: The student will be able to match a variable pitch to a given pitch. The student will understand the relationship between the physics of sound as applied to the length of instrument or tension of the strings. The student will be able to recognize register and timbre as it relates to various instruments.

State curricular guideline goals:

Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.

Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.

Preliminary Activities:

Provide a model of in tune/out of tune playing using a wind, brass or string instrument. Play a familiar melody out of tune/in tune and ask students which was correctly in tune. Play an interval out of tune adjusting slightly sharp or flat each time you play it. Ask students to raise their hands when the interval is played in tune.

Individual Tutorial:

A.Menu choices:

Instruction/Introduction if necessary or directly to the program.

B. How will success be measured?

Immediate feedback is given and student may not progress until three correct answers are given.

Evaluation: Completion of the program signifies success.

Closure: This program helps students refine their listening skills. This skill should transfer to tuning their own instrument. After students have progressed to a satisfactory level, select a few students to tune their instruments with a given pitch. Ask students in the class if the pitch is in tune/out of tune and have them decide what adjustments need to be made to correct the information.

Materials needed :

Hardware:	Apple II Series or Commodore
Software:	Music Room Software
Other Equipment:	External Speaker - optional

Model Lesson Plan

Singing in Tune

Length of lesson: Individual student on computer 15 minutes.

Target Age Range: Junior High – post voice change.

Lesson Objective: The student will be able to match pitch with confidence in or out of his/her own register.

State curricular guideline goals:

Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.
Goal #2 - The student will be able to use his/her skills to participate in the arts.
Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.
Goal #4 - The student will be able to express him/herself creatively through the arts.

Anticipatory Set:

- Sing a familiar song out of tune.
- Introduce the Pitch Master and how it will be used.
- Make certain that each student can successfully operate the equipment.

Individual Tutorial:

A. Menu choices for software:
Begin with "Tune-up Series" Tape 1.
Select appropriate tapes sequentially.

B. How is success measured?

- When the student is singing correctly into the microphone, the counter will move ahead, giving the student one point every 1/4 second that they produce an "in-tune" note.
- It is suggested that students keep track of their scores in a journal.
- A minimum score determined by the teacher must be achieved before the student can move to the next tape.

Evaluation/Review: Have students sing a simple tune together and work to listen to each other and create a corporate "in-tune" sound.
Make certain that students are producing the sound in their natural register.

Possible Follow-up Lessons:

- Further pitch development with other tape series.
- Active participation in a performing group.

Materials needed:

Hardware: Pitch Master by Temporal Acuity Products (includes, headphones, microphone, and cords)
Software: Tune-up Series by Temporal Acuity Products
Other Equipment: Stereo cassette player

Model Lesson Plan

Designing Sounds

Length of lesson: 10 - 30 minutes.

Target Age Range: Grades 6 -12.

Lesson Objective: Students will be able to name waveforms (sine, sawtooth, sampled, etc.) and create new sounds using these waveforms.

State curricular guideline goals:

Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.

Goal #2 - The student will be able to use his/her skills to participate in the arts.

Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.

Anticipatory Set: Instructor will demonstrate sounds and provide students with a worksheet summary of the editor manual.

Individual Tutorial:

A. Menu choices for software:
Edit features, system functions, load and save functions, copy and swap parameter functions, etc.

B. How is success measured?
Success is achieved when a student can successfully create a sound.

Evaluation/Review: Play sound for class and describe components of the sound. (Possibly record sound to tape and use as future reference.)

Possible follow-up lessons:

- Take sound created and use in a short composition.
- Group of students uses individual waveforms in a composition.
- Demonstrate acoustic instruments and try to match with synthesizer.
- Encourage further manipulation of waveforms.

Materials needed :

Hardware: Amiga 500 computer with MIDI Interface. Kawai K1-II Synthesizer (with two MIDI cables)

Software: Dr. T's Caged Artist Editor for K1 Synthesizer

Model Lesson Plan

Composing a Simple Melody

Length of lesson: Individual student on computer: 5-15 minutes.
Entire class – full class period – 30-45 minutes.

Target Age Range: Grades K - 6.

Lesson Objective: The student will be able to: compose a two measure melody in quarter notes using the five fingers of the right hand, starting on Middle C, using Middle C, D, E, F, and G in any sequence.

State curricular guideline goals:
Goal #4: The students will be able to express themselves creatively through the arts.

Anticipatory Set: How many different melodies do you think you could make using these five notes?
(The teacher will demonstrate a sample melody on the computer.)

Individual Tutorial:
A. Menu choices for software:
Highlight Sounds Menu and select MIDI Channel 1 (This causes the program to change "Sounds" into "MIDI").
Highlight MIDI Menu -- Select MIDI Active and MIDI Input Enabled.
B. How is success measured?
Success is measured by each student completing a five finger melody according to the objectives stated.

Evaluation/Review:
- The computer will display the completed melody
- The printer (if available) will print out the melody for the student to take home, color, display, etc.

Closure:
- Melodies can be combined into a class composition.
- Students will compare their print outs with others, looking for similar and contrasting patterns.

Possible follow-up lessons:
Study music form by combining individual melodies into a predetermined form. (i.e. Rondo, ABA, AAB, AABA, etc.)

Materials needed:

Hardware:	Macintosh, Commodore 64, Commodore Amiga, or Apple IIe and Printer (optional)
Optional Hardware:	MIDI Keyboard with MIDI Interface with two MIDI cables Imagewriter or Laserwriter Printers
Software:	Deluxe Music Construction Set by Electronic Arts

Model Lesson Plan

Improvising a Solo Over a Blues Progression

Note: It is advantageous that a large screen monitor or PC viewer be used for large group instruction. This would facilitate use of individual keyboard use by all students in a group setting through the use of one computer. This lesson may also incorporate Orff instruments in learning the blues sequence as presented in this program.

Length of lesson: 30 minutes.

Target Age Range: Grades 5 - 12.

Lesson Objective: The student will be able to improvise a solo line on a keyboard over a 12 bar blues progression.

State curricular guideline goals:

Goal #2 - The student will be able to use his/her skills to participate in the arts.
Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.
Goal #4 - The student will be able to express him/herself creatively through the arts.

Anticipatory Set: Listening to music with easily identifiable blues chord progressions. Discussion of blues progressions: history, theory, background.

Learning Activities:

(Using Section 4/"Solo Line" of the program.)

1. Students plays solo lines as presented in the program.
   (a) sequence of presented chords
   (b) students perform chords as teacher plays designated melodies
   (c) improvisation of additional melodies
2. Student plays blues chord sequences.
3. Student plays solo lines to blues progressions.

Evaluation/Review: Possibilities: individual and group performance of 12 bar blues and improvisation of solo lines. This performance may be done on the large MIDI keyboard, individual keyboards or other melodic instruments.

Closure: Performance of 12 bar blues.

Materials needed :

Hardware: Apple II plus, IIe, GS with 48 K, Passport or Roland MPU-401 MIDI Interface Card, MIDI compatible keyboard.

Software: Keyboard Blues (ECS), written by G. David Peters

Other Equipment: Optional PC-Viewer for class setting

Model Lesson Plan

Improvising with a Given Part

Length of lesson: Individual student on computer 15 minutes.

Target Age Range: Late elementary and junior high.

Lesson Objective: The student will be able to enter a variation (improvisation) part on the keyboard while hearing a familiar tune on a pre-recorded track. The music will also be printed out.

State curricular guideline goals:

Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.
Goal #2 - The student will be able to use his/her skills to participate in the arts.
Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.
Goal #4 - The student will be able to express him/herself creatively through the arts.

Anticipatory Set: Demonstrate an example to the class.

Individual Tutorial:

A. Directions for use:

Each student will call the file by a unique name so they can call it up to play for the whole class while hearing a familiar tune on a pre-recorded track. The music will also be printed out.

B. How is success measured?

Completing the file and playing it back for the class. (This represents an aural success.) Printed version will be available for each student to keep.

Evaluation/Review:

Discussion, feedback, comments, and suggestions by class and teacher.

Possible Follow-up Lessons:

- Create a cassette of their variation/improvisation to take home.
- Re-orchestrate the voices.
- Use the variation/improvisation format to introduce counterpoint harmony.

Materials needed :

Hardware:	IBM or clone computer, MIDI interface, MIDI keyboard, printer.(Optional stereo cassette recorder)
Software:	Music Printer Plus by Temporal Acuity Products or equivalent composition/editing/sequencing software
Other Equipment.	Headphones or external speaker

Model Lesson Plan

Creating a Drum Machine Pattern

Length of Lesson: 20 - 30 minutes.

Target Age Range: Grades 4 - 12.

Lesson Objective: Students will become familiar with drum machines and typical drum machine operations.
Students will be able to program a drum pattern.

State curricular guideline goals:

- Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.
- Goal #2 - The students will be able to use his/her skills to participate in the arts.
- Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.
- Goal #4 - The students are able to express themselves creatively through the arts. (If a world music rhythm is selected then Goal #5 would apply)
- Goal #5 - The student will be able to make informed judgments about the arts and the relationship of the arts to the histories, cultures, and environments of the world's people.

Preliminary Activities:

Teacher demonstrates real-time drum machine programming.

Learning Activities:

1. Explore drum sounds manually.
2. Listen to pre-existing patterns.
3. Create your own drum pattern in real time.

Evaluation: Students should offer critiques of their own pattern. Class may critique the work of each student.

Closure: Student patterns could be taped and used to create a rhythm "collage." The patterns could also be used to refine listening skills by having students echo portions of each other's patterns.

Materials needed :

Hardware:	Drum Machine – built into a workstation or stand-alone
Software:	N/A
Other Equipment:	Amplifier and speakers

Model Lesson Plan

Rhythm Ensemble

Length of lesson: Two class periods.

Target Age Range: Grades 7 - 12.

Lesson Objective:
1. The student will be able to play a designated part from an Afro-Cuban ritmo (rhythm) by inputting via a MIDI recording device set to appropriate instrument sound.
2. The student will improve his/her ability to play evenly and with a steady tempo.

State curricular guideline goals:

Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.

Goal #2 - The student will be able to use his/her skills to participate in the arts.

Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.

Goal #5 - The student will be able to make informed judgments about the arts and the relationship of the arts to the histories, cultures, and environments of the world's people.

Anticipatory Set: Play an example of this type of rhythm (an excerpt from a Ray Barretto record would be excellent) and relate this recording to the activity they are going to do. ("We're going to create this, and you are going to be the recorders!")

Learning Activities:
- Play the full tracked sequence for the ritmo for the class.
- Remove the given part/instrument from the track and ask students to identify which part is missing.
- Have the whole group practice the rhythm for the missing instrument together several times.
- Invite the students to individually play that part at the keyboard or drum machine.
- They will first play non-recorded for practice and then record when they have mastered the rhythm for that instrument.
- The other students can be at listening and practicing stations. If each part is on a cassette tape, the students can learn the different types of rhythm patterns needed to record all of the instrument tracks.

Evaluation/Review: Student/teacher will receive aural feedback from the finished recording. The student will hear his/her success on the sequencer.

Continued on next page

Closure: The class could play together the designated part with the recorded part minus that instrument.

Possible follow-up lessons:
This lesson should be repeated for other parts/instruments.
For a final project, each student can record the entire rhythm (all parts/instruments) via MIDI and play the recording for the class.
Further activities using other ethnic or original rhythms could be used.
Students can branch into other areas such as performing vocal music and/or authentic dance steps to match the given rhythm.

Materials needed:

Hardware:	Computer and multi-timbral keyboard or sound module/drum machine with the following voices: claves, low and high conga drum, maracas, cowbell, bass guitar, and piano
Software:	Software-based sequencer (if there is not a hardware-based sequencer provided from the list above)
Other Equipment:	Amplifier/speaker combination for MIDI set-up; also need a complete pre-recorded track on the sequencer of the Afro-Cuban ritmo (rhythm)

Model Lesson Plan

Keyboards - Synthesized and Acoustic
A Comparison

Length of lesson: Two class periods (or more if needed).

Target Age Range: Grades 7 - 12.

Lesson Objective: Student will be able to compare and contrast Western European keyboards and modern synthesizers.

State curricular guideline goals:

Goal #1 - The student will be able to use sensory experiences to comprehend various art forms.
Goal #2 - The student will be able to use his/her skills to participate in the arts.
Goal #3 - The student will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.
Goal #4 - The student will be able to express him/herself creatively through the arts.
Goal #5 - The student will be able to make informed judgments about the arts and the relationship of the arts to the histories, cultures, and environments of the world's people.

Anticipatory Set: Have pictures or posters of the instruments being discussed, and have music playing that illustrates the instruments visually and aurally when the students come into the class.

Learning Activities:

- The teacher introduces the concept of comparison and contrast. Start with the pictures or actual instruments and ask what is alike and what is different about the appearance of the instruments. Ask the students to think about what kinds of sounds will be produced based on the appearance of the instruments.
- Play the videodisc, section by section, as you go through each instrument. Discuss the differences and similarities of the instruments after you listen to them.
- Assign the students to bring in recordings, pictures, examples, etc. of modern keyboard instruments for the next day's lesson.
- 2nd day: If possible, have a demonstration from a music store or professional keyboard player to begin with. If you can't get that, try to find an older student who plays to come in and demonstrate.
- Discuss and, if possible, demonstrate how each instrument produces the sound or sounds it makes.
- Discuss how the Western European instrument's sounds and shapes tend to correlate whereas the modern keyboard's shapes may have very little to with the sounds produced.
- Brainstorm why this is true. (This could possibly lead to bringing in an "expert" from other subject areas [i.e. science teachers].)

Continued on next page

Evaluation/Review:

- The students will take a paper and pencil test on specific concepts they've learned about the instruments covered.
- Have the students write reports on the specific instrument of their choice and do a match-up with a corresponding modern instrument.

Closure: Point out how music has changed in the last few years and ask the students to visualize/brainstorm what will be happening in their future.

Possible Follow-up Lessons:

- Have each student produce a stringed instrument that has a unique shape and compare the differences in the sounds.
- Examine other instruments from other cultures and see how the shapes and sounds differ from culture to culture.

Materials needed:

Hardware:	Laser disk player, monitor, cables for hooking the two machines together, and a synthesizer
Software:	University of Delaware Videodisc Music Series Disks 1, 2, and 4, and Volume 1, page 99-104 of the Videodisc Music Series Manual
Other Equipment:	Access to appropriate acoustic instruments for the lesson (see lesson objectives)

Model Lesson Plan

Creating Practice Tapes for Students
Music Minus One

(A Lesson Plan for the Teacher!!)

Length of Time to Produce:
Time will depend on familiarity with sequencing. Expect first attempt to take longer but, do not despair, it WILL get easier!

Target Age Range: This lesson is written for the teacher!!

Lesson Objective: The teacher will be able to create a "music minus one" very quickly.

State curricular guideline goals:

Goal #1 - The teacher will be able to use sensory experiences to comprehend various art forms.

Goal #2 - The teacher will be able to use his/her skills to encourage participation in the arts.

Goal #3 - The teacher will be able to apply his/her knowledge of concepts, elements, principles, theories, and processes in the arts.

Goal #4 - The teacher will be able to express him/herself creatively through the arts. (If the teacher chooses to use a world music example then Goal #5 would also be addressed)

Goal #5 - The teacher will be able to make informed judgments about the arts and the relationship of the arts to the histories, cultures, and environments of the world's people.

Prerequisite Skills: Basic ability to use a sequencing program. (Ex. Recording, playback, assigning tracks to MIDI channels, etc.)

Preparation Techniques:

- Select the piece (i.e. "Long, Long Ago" solo for Elementary Band)
- Record a rhythmic reference track (drum machine or otherwise with a one or two measure lead-in)
- Record desired combination of tracks (i.e. melody, drums, chords, bass, etc.)
- Individual tracks can be turned on or off as desired.(i.e. the student part)
- Include one recording with the student part.
- Record this sequence onto cassette tape.
- Make a "music minus one" version.
- Record this sequence onto the cassette tape.
- Recordings can be made with different tempi and key signatures. Many of these can be included on one student tape.

Continued on next page

Closure: SAVE IT !!!

Possible Follow-up: Keep a library of tapes for future use.

Materials needed :

Hardware:	Computer, MIDI keyboard, headphones or amplifying system.
Software:	Any Sequencing software.
Other Equipment:	Stereo system, dubbing cassette deck or regular stereo cassette recorder.


Software
Evaluation
Purchase

Effective Music Software Evaluation

The published status of a piece of software does not guarantee any particular quality. It is critical that software be thoroughly examined by the teacher prior to curricular placement.

The Music and Technology Resource Guide provides two evaluating instruments, the Music Literacy Evaluation Form and the Composing, Editing, and Sequencing Evaluation Form. The purpose is to provide tools to evaluate music software from a music education viewpoint, not a general education viewpoint. Music software evaluated from another frame of reference will overlook many critical pedagogical issues.

The term "Music Literacy" refers to building aural and visual musical skills. The Music Literacy Evaluation form is designed to assist in a true evaluation of a piece of software that is dedicated to one or more of the tasks in the area of building musical skills. The Composing, Editing, and Sequencing Evaluation Form is designed to evaluate software devoted to the production of music. Software for the production of music may or may not include printing and/or MIDI capabilities.The strategy for dividing the software into these categories lies in the desire to examine them clearly based on their actual function. The curricular implementation of all software is limited only to the imagination of the teacher. Keep an open mind to creative uses for all fine pieces of software, regardless of category!

There are literally hundreds of software titles for teaching music. Space does not permit an evaluation of such a vast library. The completed evaluations included herein provide examples of software currently being used by teachers in the state. Exclusion from the Resource Guide does not imply a poor rating for software. Entire volumes of music software reviews are available for borrow and purchase. Some resources are listed below. Blank copies of both evaluation forms are provided in Appendix H and Appendix I for teachers to reproduce and use in their own software exploration. Remember, all evaluations are subjective, but they were done by fellow music educators and should exemplify a thoughtful examination of the software.

The Educational Technology Center in Olympia houses the Music and Technology Demonstration Center for teachers in the state of Washington. There is an extensive collection of software, hardware, and electronic teaching tools. Teachers are welcome to use the Demonstration Center to preview any of this collection.

Many periodicals contain regular software reviews of new and existing products. There are several publications devoted to providing reviews of a large number of products.

Association for Technology in Music Instruction Courseware Directory. A special interest group of the Association for the Development of Computer Based Instruction Systems, Ann Blombach, President - ATMI 1866 College Rd., Columbus OH 43210. $15.00 per year.

The most extensive resource available for courseware in music education. There are 739 items listed in the software section alone! Sections include information about software for: specialized data bases, patch editors and librarians, marching band, Hypercard stacks, notation, recording and playing, sounds and samplers, and utilities as well as hardware listings, information sources, audio and video materials, laserdiscs, and source addresses.

The MTNA Guide to Music Instruction Software, MTNA Publications, Suite 1432, 617 Vine Street, Cincinnati, Ohio 45202-2434.,1990, 201 pp. available for $17.50.

A collection of 90+ software reviews presented by several music educators. The Guide provides a reference of software by publisher and a separate reference of software by music skill area.

The 1989 Educational Software Preview Guide. ED307856, available through the ERIC document reproduction service (see Appendix J for order forms).

Guidelines for Evaluating Music Literacy Software:

In general:

- Run program thoroughly
- Take time to run a beginning, intermediate, and advanced example
- Explore the range of topics covered
- Take time to access record keeping (if available)
- Explore any teacher utilities (can you set student parameters for lessons, secretly access log books, etc.)

From the student's point of view:

- Are the instructions available and clear?
- Are answers easy to enter?
- Is there sufficient reward for success?
- Are there tutorials for wrong answers?

From the teacher's point of view:

- Does software address teaching objectives?
- How broad is the range of material for the dollar being spent?
- Is there sufficient documentation and support?
- Complete a software evaluation for your files.

Guidelines for Evaluating Composition/Editing/Sequencing Software

In general:

- How is information entered? Computer keyboard, MIDI keyboard, both, and/or mouse?
- Are errors easy to change?
- Does documentation provide good instruction?
- Is there any on-line help?
- How difficult would it be to introduce this software to a student?

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Count-Me-Out**
Publisher **Temporal Acuity Products**
Author(s) **David J. Otterson**
Copyright Date **1988**
Date of last update and version **1988 V.1.8**
Price **$60.00**
Reviewed by

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- x Apple IIgs
- x Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
Commodore 64/128

Networkable?
- x Monochrome

Monitor: Color

Other Memory

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
5 1/4"
- x 3 1/2"

Hard Drive

Monitor
- x CGA

Hercules
EGA
- x VGA

Sound Source(s) used

How many voices does this program use?

- x Internal Monophonic

Internal Polyphonic
- x MMI DAC board
- x Apple IIgs chip
- x Apple MIDI out/external
- x MIDI in and MIDI out

MPU-401 (Roland) compatible
- x Passport MIDI out/Internal

IBM MusicFeature card
Other sound production

Objectives and Content

none Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

A game/test of your counting accuracy.

Objectives and Content (continued)

Educational objectives inferred

A counting program that has the student figuring out the right rhythm counts and typing the counts under the note(s).

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

A game that utilizes four levels of counting difficulties using three choices of counting syllable systems. There is also a time limit that challenges even the advanced musician.

Teacher Support

yes Is documentation included?
yes Does it provide pedagogical assistance?
yes Does it detail the program content?
yes Does it include operating instructions?
no Does it include scoring information?

Additional comments about documentation?

Easily understood instructions and very detailed for the user.

Categories (check all that apply)

- x Beginning Aural Discrimination
- Key Signatures
- x Error Detection
- Scale Tunings
- Music History/Composers
- Pitch Identification
- Melody/Melodic Dictation
- x Programs for Young Children
- Intervals
- Rhythm/Rhythmic Dictation
- x Musical Symbols
- Musical Terms
- x Testing and Evaluation
- Fingerings
- Transposition
- Scales/Modes
- x Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- x Drill and practice
- x Tutorial
- x Game
- x M'xed

Summary

Overall strengths	- Different levels of difficulty - Choice of counting systems - Challenging even for the advanced musician - Allows audible examples of rhythm
Overall weaknesses	-Too many keys used for the typing of rhythms -Does not allow for counts actually not played
Evaluator's comments	

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name	**Courseware Music Fundamentals I, II, III**
Publisher	**Silver Burdett**
Author(s)	**Linda Borry Newhouse**
Copyright Date	**1985**
Date of last update and version	**1985**
Price	**$50 each disk + $10 overlay**
Reviewed by	**Kirk Kassner** **5/20/90**

Hardware

X	Apple II+		Mac Plus	?	Networkable?
X	Apple IIc		Mac SE	X	Monochrome
X	Apple IIe		Mac II	X	Monitor: Color
X	Apple IIgs		Amiga		
X	Laser 128		Atari		Other
		X	Commodore 64/128	48 K	Memory

IBM-Compatible		Disk Drives		Monitor
	XT/AT	X	5 1/4"	CGA
	286		3 1/2"	Hercules
	386		Hard Drive	EGA
	PS/2			VGA

Sound Source(s) used

1 How many voices does this program use?

X	Internal Monophonic	MIDI in and MIDI out
	Internal Polyphonic	MPU-401 (Roland) compatible
	MMI DAC board	Passport MIDI out/internal
	Apple IIgs chip	IBM MusicFeature card
	Apple MIDI out/external	Other sound production

Objectives and Content

7-14 Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

Music literacy and ear training fundamentals
Piano keyboard and computer keyboard familiarity

Objectives and Content (continued)

Educational objectives inferred

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

Teacher Support

yes Is documentation included?
yes Does it provide pedagogical assistance?
yes Does it detail the program content?
yes Does it include operating instructions?
n/a Does it include scoring information?

Additional comments about documentation?

Categories (check all that apply)

- **X** Beginning Aural Discrimination
- Key Signatures
- **X** Error Detection
- Scale Tunings
- Music History/Composers
- **X** Pitch Identification
- **X** Melody/Melodic Dictation
- Programs for Young Children
- Intervals
- **X** Rhythm/Rhythmic Dictation
- **X** Musical Symbols
- Musical Terms
- Testing and Evaluation
- Fingerings
- Transposition
- Scales/Modes
- **X** Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- X Drill and practice
- X Tutorial
- X Game
- X Mixed

Summary

Overall strengths	Well-sequenced set of lessons on three disks, taking students from zero knowledge to broad understanding of music basics. Good mix of tutorial, drill and practice, and games.
Overall weaknesses	Uses internal chip on Apple for poor sound quality and no volume control or headphone jack. Uses plastic overlay of keyboard, which is at first confusing and is easily misplaced. Disk II rhythm tapping demands too much precision.
Evaluator's comments	A very useful program over many grade levels for teaching note-reading skills (pitch and rhythm) and piano keyboard fundamentals. Students like "Presto," the robot guide, who smiles approval and frowns disappointment.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Doremi**
Publisher **Temporal Acuity Products**
Author(s) **Bruce Benward/David Williams**
Copyright Date **1988**
Date of last update and version **1988**
Price **$75.00**
Reviewed by **Mark Williams** **5/90**

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- x Apple IIgs
- x Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
Commodore 64/128

Networkable?
- x Monochrome
- Monitor: Color

Other
64K Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- x 5 1/4"
- x 3 1/2"
- Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

1 How many voices does this program use?
- x Internal Monophonic
- Internal Polyphonic

opt. MMI DAC board
- x Apple IIgs chip
- Apple MIDI out/external

opt. MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

Grade 3 and up Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

A beginning ear-training program that teaches students to identify (by sound only) the individual degrees of a major scale using solfege responses.

Objectives and Content (continued)

Educational objectives inferred

Building tonal memory (up to 4-note sequences can be played and identified). Identifying degrees of the scale by solfege and/or scale step number (1-8).

Does student need to be able to read to use this program? **no**

Thoroughly describe the program scope and content

The program generates your choice of 1, 2, 3, or 4-note sequences which the student then identifies by either solfege or scale step. Students are given three tries, after which a "walk through" of the correct solution is given. The complete scale is performed first to provide a tonal reference. A sortable student log is generated and may be printed or displayed.

Teacher Support

yes Is documentation included?

yes Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

yes Does it include scoring information?

Additional comments about documentation

Well thought out including "quick-start" instructions.

Categories (check all that apply)

- x Beginning Aural Discrimination
- Key Signatures
- Error Detection
- Scale Tunings
- Music History/Composers
- x Pitch Identification
- x Melody/Melodic Dictation
- x Programs for Young Children
- x Intervals
- Rhythm/Rhythmic Dictation
- Musical Symbols
- Musical Terms
- Testing and Evaluation
- Fingerings
- Transposition
- Scales/Modes
- Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- x Drill and practice
- Tutorial
- Game
- Mixed

Summary

Overall strengths

When a student makes a mistake, the program displays and plays what the student input and compares that to the intended sequence (using ??? for the note incorrectly guessed). Good walk through when a student cannot correctly answer after three tries.

Overall weaknesses

Only presents exercises in one key, although it does use different octaves. When using one-pitch sequences, it still says "the first note played was..." even though only one note was played. Student may think it means the first note of the scale.

Evaluator's comments

Very good for building relative pitch using diatonic scale steps and tonal memory. A good first-level ear-training tool.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **General Music Terms**
Publisher **Temporal Acuity Products**
Author(s) **David Williams, Al Blackford, Julie Schulze**
Copyright Date **1988**
Date of last update and version **1988**
Price **$70.00**
Reviewed by **Mark Williams** **5-90**

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- x Apple IIgs
- x Laser 128
- • Mac Plus
- Mac SE
- Mac II
- Amiga
- Atari
- Commodore 64/128

Networkable?
- x Monochrome
- Monitor: Color

Other
- **64K** Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- x 5 1/4"
- x 3 1/2"
- Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

- **1** How many voices does this program use?
- x Internal Monophonic
- Internal Polyphonic
- **opt.** MMI DAC board
- x Apple IIgs chip
- Apple MIDI out/external
- **opt.** MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

intermediate Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

Drills six different categories of musical terms (melody, harmony, instrumental forms and style, vocal forms and others, rhythm and notation, tone color, and dynamics). There are three drill options: 1) Select-a-term, 2) Spell-a-term, and 3) Recall-a-term.

Objectives and Content (continued)

Educational objectives inferred

Memorization of musical terms and their definitions.

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

Learning a definition and correct spelling for many commonly used musical terms.

Teacher Support

yes Is documentation included?

yes Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

yes Does it include scoring information?

Additional comments about documentation?

Well thought out with "quick-start" instructions.

Categories (check all that apply)

Beginning Aural Discrimination
Key Signatures
Error Detection
Scale Tunings
Music History/Composers
Pitch Identification
Melody/Melodic Dictation
Programs for Young Children
Intervals
Rhythm/Rhythmic Dictation
Musical Symbols
Musical Terms
Testing and Evaluation
Fingerings
Transposition
Scales/Modes
Rhythm Sight-Reading
Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

Drill and practice

Tutorial

Game

Mixed

Summary

Overall strengths	On Spell-a-term and Recall-a-term, the program checks to see if the student's answer was close so that the student can fine-tune their response.
Overall weaknesses	The only weaknesses noted are the same ones that are common to all drill-and-practice computer software.
Evaluator's comments	If you want to drill musical terms using the computer, this is a good piece of software. If computer time is at a premium, you may wish to use it instead on other types of software (melodic or rhythmic dictation, error detection, composition/sequencing).

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Guitar Wizard**
Publisher **Baudville**
Author(s) **Baudville**
Copyright Date **1986**
Date of last update and version **unknown**
Price **$34.95**
Reviewed by **Mike Benson** **5/20/90**

Hardware

- X Apple II+
- X Apple IIc
- X Apple IIe
- X Apple IIgs
- Laser 128

- X Mac Plus
- X Mac SE
- Mac II
- Amiga
- X Atari
- X Commodore 64/128

Networkable?
- X Monochrome
- Monitor: Color

Other
- **512K** Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- X 5 1/4"
- X 3 1/2"
- X Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

n/a How many voices does this program use?

- Internal Monophonic
- Internal Polyphonic
- MMI DAC board
- Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

unknown Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

n/a

Objectives and Content (continued)

Educational objectives inferred

Provides a thorough visual display of chords and scales on the guitar fretboard to assist students in learning multiple voicings and positions.

Does student need to be able to read to use this program? **no**

Thoroughly describe the program scope and content

Uses graphic fretboard illustrations of most all chords and scales in all keys, in multiple voicings and positions. Provides separate displays for note names, intervals, and fingering schemes for each chord and scale. Also provides alternate tunings and suggested scales for improvisation in a given key.

Teacher Support

Is documentation included?

Does it provide pedagogical assistance?

Does it detail the program content?

Does it include operating instructions?

Does it include scoring information?

Additional comments about documentation?

Categories (check all that apply)

Beginning Aural Discrimination	Programs for Young Children
Key Signatures	Intervals
Error Detection	Rhythm/Rhythmic Dictation
Scale Tunings	Musical Symbols
Music History/Composers	Musical Terms
Pitch Identification	Testing and Evaluation
Melody/Melodic Dictation	X Fingerings
	Transposition
	X Scales/Modes
	Rhythm Sight-Reading
	X Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- X Drill and practice
- X Tutorial
- Game
- Mixed

Summary

Overall strengths	Very thorough graphic illustration of chords and scales on the guitar in all keys and in multiple positions. Very nice visual effects.
Overall weaknesses	Lack of on-screen instructions for handling/interpreting alternate tunings.
Evaluator's comments	An excellent resource for the serious guitar student wishing a thorough knowledge of the fretboard in terms of notes, intervals, and f gering. A great source for guitar class hand-outs.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Harmony Drills: Set I**
Publisher **Temporal Acuity Products**
Author(s) **Bruce Benward & J. Timothy Kolosick**
Copyright Date **1988**
Date of last update and version
Price **$90.00**
Reviewed by **Diana Mickelson** **5-20-90**

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- x Apple IIgs
- x Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
Commodore 64/128

no Networkable?
x Monochrome
x Monitor: Color

Other
64K Memory

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
x 5 1/4"
3 1/2"
Hard Drive

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

4 How many voices does this program use?

- x Internal Monophonic
- x Internal Polyphonic
- x MMI DAC board
- Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- x Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

4th gr. - adult Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

The student will learn aural recognition of chord progressions and harmonic dictation.

Objectives and Content (continued)

Educational objectives inferred

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

The computer plays a series of chord progressions. The student chooses from a menu the chord in each progression, and the inversion. When all of your choices are made, you are told all of your choices are made, you are told what is correct and what is not. At that point, you have options for going on, redoing, seeing the correct answer or getting the correct answer.

Teacher Support

yes Is documentation included?

no Does it provide pedagogical assistance?

yes Does it detail the program content?

somewhat Does it include operating instructions?

yes Does it include scoring information?

Additional comments about documentation?

I feel the manual helps only with an overview. The main instruction is in the program and can't be referred to while working on a problem.

Categories (check all that apply)

Beginning Aural Discrimination
Key Signatures
Error Detection
Scale Tunings
Music History/Composers
Pitch Identification
Melody/Melodic Dictation
Programs for Young Children
Intervals
Rhythm/Rhythmic Dictation
Musical Symbols
Musical Terms
Testing and Evaluation
Fingerings
Transposition
Scales/Modes
Rhythm Sight-Reading
x Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- x Drill and practice
- Tutorial
- Game
- Mixed

Summary

Overall strengths	The program is fairly easy to use and would be excellent practice for an advanced music student.
Overall weaknesses	
Evaluator's comments	I don't feel the average 4th grader could do this program. The targeting seems to be completely off.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Hear Today...Play Tomorrow**
Publisher **ECS**
Author(s) **Penny Pursell**
Copyright Date **1985**
Date of last update and version **1985**
Price **39.95**
Reviewed by

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- x Apple IIgs
- x Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
- x Commodore 64/128

Networkable?
- x Monochrome
- x Monitor: Color

Other
Memory

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
- x 5 1/4"
3 1/2"
Hard Drive

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

1 How many voices does this program use?
- x Internal Monophonic
Internal Polyphonic
MMI DAC board
- x Apple IIgs chip
Apple MIDI out/external
MIDI in and MIDI out
MPU-401 (Roland) compatible
Passport MIDI out/internal
IBM MusicFeature card
Other sound production

Objectives and Content

13 + Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

Ear-training skills whereby the user identifies the melody or interval played by the computer.

Objectives and Content (continued)

Educational objectives inferred

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

Ear-training drill with six difficulty levels of melodies from simple to intermediate. The melodies include major and minor keys. The program also includes identification of diatonic intervals in all 12 major keys.

Teacher Support

minimal Is documentation included?

no Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

yes Does it include scoring information?

Additional comments about documentation?

Minimal documentation is sufficient with the available screen prompts.

Categories (check all that apply)

- x Beginning Aural Discrimination
- Key Signatures
- x Error Detection
- Scale Tunings
- Music History/Composers
- x Pitch Identification
- x Melody/Melodic Dictation
- Programs for Young Children
- x Intervals
- Rhythm/Rhythmic Dictation
- x Musical Symbols
- Musical Terms
- Testing and Evaluation
- Fingerings
- Transposition
- x Scales/Modes
- Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list) **Ear-training**

Type of Presentation

- x Drill and practice
- x Tutorial
- Game
- Mixed

Summary

Overall strengths	Easy to use, good visual feedback, good for repetitive drills.
Overall weaknesses	You cannot exit or change the difficulty level during a drill. User entry of data is awkward.
Evaluator's comments	

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Kidstime (Kidsnotes game)**
Publisher **Great Wave Software**
Author(s) **Robert & Debbie Gardner**
Copyright Date **1986**
Date of last update and version
Price **$49.00**
Reviewed by **Diana Mickelson** **5/18/90**

Hardware

Apple II+	x	Mac Plus	Networkable?
Apple IIc	x	Mac SE	Monochrome
Apple IIe		Mac II	Monitor: Color
Apple IIgs		Amiga	
Laser 128		Atari	Other
		Commodore 64/128	**128K** Memory

IBM-Compatible	Disk Drives	Monitor
XT/AT	5 1/4"	CGA
286	3 1/2"	Hercules
386	Hard Drive	EGA
PS/2		VGA

Sound Source(s) used

1 How many voices does this program use?

Internal Monophonic		MIDI in and MIDI out
x Internal Polyphonic		MPU-401 (Roland) compatible
MMI DAC board		Passport MIDI out/internal
Apple IIgs chip		IBM MusicFeature card
Apple MIDI out/external		Other sound production

Objectives and Content

3 to 8 yrs. Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

Children will develop an interest in music while teaching musical concepts such as note names and durations, the basics of key and time signatures and the correlation between notes on the piano keyboard and on the staff.

Objectives and Content (continued)

Educational objectives inferred

Children will recognize the correlation between the notes on the staff and what they hear.

Does student need to be able to read to use this program? **no**

Thoroughly describe the program scope and content

The child sees a piano keyboard which he may play, one note at a time, by clicking the mouse pointer on the keys. As the keyboard is "played," notes apprear on a staff. The longer a note is held, the longer the staff note duration is. The staff notes may be played again by clicking on a separate button on the screen.

Teacher Support

yes Is documentation included?

no Does it provide pedagogical assistance?

briefly Does it detail the program content?

yes Does it include operating instructions?

N/A Does it include scoring information?

Additional comments about documentation?

The objectives state the student will learn about note duration, key signatures, and time signatures but no instruction is given for this in any documentation so any of this learning is luck.

Categories (check all that apply)

- Beginning Aural Discrimination
- x Key Signatures
- Error Detection
- Scale Tunings
- Music History/Composers
- Pitch Identification
- x Melody/Melodic Dictation
- x Programs for Young Children
- Intervals
- Rhythm/Rhythmic Dictation
- x Musical Symbols
- Musical Terms
- Testing and Evaluation
- Fingerings
- Transposition
- Scales/Modes
- Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

Drill and practice

Tutorial

Game

x Mixed

Summary

Overall strengths

This program offers the fun of "plinking" on a piano. While seeing what the names of the keys are. What is different from a piano is that it remembers what you play and can play it back. New learners would love that!

Overall weaknesses

Songs longer than the screen width disappear off the screen, never to be seen again. They are playable but you can only see the beginnings. Time signatures, key signatures, and notes of different durations are on screen to play with but never are explained anywhere.

Evaluator's comments

This program is meant for educational play and as such is good. It is not really meant as a straight teaching tool. If someone with musical knowledge used it with children, it could be used as a beginning music literacy helper.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Magic Piano**
Publisher **Edusoft**
Author(s) **Alan Sagan**
Copyright Date **1984**
Date of last update and version **1984**
Price **$45 single $85 site license**
Reviewed by **Deb Wagner** **5/15/90**

Hardware

- X Apple II+
- X Apple IIc
- X Apple IIe
- X Apple IIgs
- X Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
Commodore 64/128

Networkable?
- X Monochrome
- X Monitor: Color

Other
- 48 K Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- X 5 1/4"
- 3 1/2"
- Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

- 1 How many voices does this program use?
- X Internal Monophonic
- Internal Polyphonic
- MMI DAC board
- Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM Music Feature card
- Other sound production

Objectives and Content

7 - adult Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

Magic Piano explores the three basic areas of music: composition, rhythm, and melody. Develop and refine your music skills as you play each game again and again.

Objectives and Content (continued)

Educational objectives inferred

- Greater ability to perform rhythm patterns and increase skill at reading rhythm patterns correctly.
- Greater ability to hear and correctly identify melodic intervals.

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

Very straightforward and easy program which covers three areas:
1. Magic Piano - Allows user to create a melody, play it back at various tempos, edit, save to disk, and print it out. One staff only. 2. Rhythm Game - User hears and repeats rhythms that computer plays. Select from 10 different skill levels. User taps the space bar to perform the rhythms. 3. Melody Game - Ear-training game. User copies melodies that the computer plays. Select from 10 different skill levels.

Teacher Support

yes+workbk Is documentation included?

yes Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

no Does it include scoring information?

Additional comments about documentation?

It is not extensive due to the onscreen instructions being very clearly provided. It is mostly an extension of what you see on screen.

Categories (check all that apply)

- [X] Beginning Aural Discrimination
- [ ] Key Signatures
- [ ] Error Detection
- [ ] Scale Tunings
- [ ] Music History/Composers
- [ ] Pitch Identification
- [X] Melody/Melodic Dictation
- [X] Programs for Young Children
- [X] Intervals
- [X] Rhythm/Rhythmic Dictation
- [ ] Musical Symbols
- [ ] Musical Terms
- [ ] Testing and Evaluation
- [ ] Fingerings
- [ ] Transposition
- [ ] Scales/Modes
- [ ] Rhythm Sight-Reading
- [X] Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- [x] Drill and practice
- [ ] Tutorial
- [ ] Game
- [ ] Mixed

Summary

Overall strengths

Site license fee is a plus – the program is a bargain if you have access to multiple computers. You are also allowed to choose level of difficulty.

Overall weaknesses

Any rhythm program which relies on input by tapping the spacebar runs the risk of wearing out the spacebar as well as not being incredibly accurate. Concepts of note relationships (rhythmically) are not taught onscreen – teacher would need to cover before using program.

Evaluator's comments

This program is very simple and I thought that high school students would not necessarily like it, but it has been the most booted-up program by my piano classes when they are using the computer on their own. They mostly use the Rhythm Game and Melody Game.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **MECC #712 Music Theory Vol. 1**
Publisher **MECC**
Author(s) **Linda Borry**
Copyright Date **1980**
Date of last update and version **Ver: 2.1**
Price **$59.00**
Reviewed by **Diana Mickelson** **5-19-90**

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- x Apple IIgs
- Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
Commodore 64/128

Networkable?
- x Monochrome
- Monitor: Color

Other Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- x 5 1/4"
- 3 1/2"
- Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

one How many voices does this program use?

- x Internal Monophonic
- Internal Polyphonic
- MMI DAC board
- Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

none suggested Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

The program is to give drill and practice in musical terminology and notation, rhythm, and pitch.

1.0

Objectives and Content (continued)

Educational objectives inferred

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

There are 18 different programs on this disk. They range from very basic (such as naming notes) to more difficult work with chords.

Teacher Support

yes Is documentation included?

yes Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

yes Does it include scoring information?

Additional comments about documentation?

The documentation also includes very basic instruction on how to use an apple computer.

Categories (check all that apply)

- x Beginning Aural Discrimination
- x Key Signatures
- x Error Detection
- Scale Tunings
- Music History/Composers
- Pitch Identification
- x Melody/Melodic Dictation
- x Programs for Young Children
- x Intervals
- x Rhythm/Rhythmic Dictation
- Musical Symbols
- x Musical Terms
- Testing and Evaluation
- Fingerings
- Transposition
- x Scales/Modes
- x Rhythm Sight-Reading
- x Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- x Drill and practice
- Tutorial
- Game
- Mixed

Summary

Overall strengths	This program is extremely flexible and useful on many levels.
Overall weaknesses	The rhythm section is a little touchy if a student doesn't tap eighth notes exactly right. There should be a little more flexibility.
Evaluator's comments	

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Music Achievement Series**
Publisher **Alfred Publishing**
Author(s) **Sandy Feldstein**
Copyright Date **1987**
Date of last update and version
Price **$125.00**
Reviewed by **Harry D. Weldon** **5/90**

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- Apple IIgs
- Laser 128
- Mac Plus
- Mac SE
- Mac II
- Amiga
- Atari
- x Commodore 64/128

Networkable?
Monochrome
Monitor: Color

Other
Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- 5 1/4"
- 3 1/2"
- Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

4 How many voices does this program use?

- Internal Monophonic
- x Internal Polyphonic
- MMI DAC board
- Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compati
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

4-12 Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

To test student achievement of basic music fundamentals.

Objectives and Content (continued)

Educational objectives inferred

The series of randomized tests could be used for student placement, evaluation of program objectives and guide student learning and study.

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

This is the testing program for PRACTICAL THEORY which tests the skills presented in the other program.

Teacher Support

yes Is documentation included?

yes Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

yes Does it include scoring information?

Additional comments about documentation?

Excellent documentation - very complete.

Categories (check all that apply)

- Beginning Aural Discrimination
- x Key Signatures
- Error Detection
- Scale Tunings
- Music History/Composers
- Pitch Identification
- Melody/Melodic Dictation
- Programs for Young Children
- x Intervals
- Rhythm/Rhythmic Dictation
- x Musical Symbols
- x Musical Terms
- x Testing and Evaluation
- Fingerings
- Transposition
- x Scales/Modes
- Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

Drill and practice

Tutorial

Game

Mixed

Summary

Overall strengths	Good program; useful to access achievement and student needs.
Overall weaknesses	This is strictly an evaluation, testing program. It does not re-teach things a student does not know.
Evaluator's comments	I have used this program with a wide variety of students – band, chorus and general music students. It helps find where students need help.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Perceive**
Publisher **Coda**
Author(s) **James J. Romeo, George F. Litterst**
Copyright Date **1987**
Date of last update and version
Price **$99.00**
Reviewed by **Donald J. Clausen** **5/17/90**

Hardware

Apple II+
Apple IIc
Apple IIe
Apple IIgs
Laser 128

x Mac Plus
x Mac SE
x Mac II
Amiga
Atari
Commodore 64/128

Networkable?
x Monochrome
Monitor: Color

Other
800K Memory

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
5 1/4"
x 3 1/2"
x Hard Drive

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

4 How many voices does this program use?
Internal Monophonic
x Internal Polyphonic
MMI DAC board
Apple IIgs chip
Apple MIDI out/external

x MIDI in and MIDI out
MPU-401 (Roland) compatible
Passport MIDI out/internal
IBM MusicFeature card
Other sound production

Objectives and Content

Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

Perceive is a complete ear-training package.

Objectives and Content (continued)

Educational objectives inferred

Does student need to be able to read to use this program? **no**

Thoroughly describe the program scope and content

The program is designed to develop the ear and increase head knowledge in a variety of theoretical areas. It uses scales, chords, intervals and triads. Its difficulty level is beginner through second year theory. It also explores sounds and wavelength construction.

Teacher Support

yes Is documentation included?

yes Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

yes Does it include scoring information?

Additional comments about documentation?

Text and workbook included in package.

Categories (check all that apply)

- Beginning Aural Discrimination
- Key Signatures
- x Error Detection
- x Scale Tunings
- Music History/Composers
- x Pitch Identification
- Melody/Melodic Dictation
- Programs for Young Child··n
- x Intervals
- Rhythm/Rhythmic Dictation
- x Musical Symbols
- x Musical Terms
- x Testing and Evaluation
- Fingerings
- Transposition
- x Scales/Modes
- Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- x Drill and practice
- x Tutorial
- Game
- Mixed

Summary

Overall strengths	The strengths are that this is a very powerful program that can be incorporated into a MIDI setting. It is designed to fit any ear-training level and is well laid out for the user.
Overall weaknesses	This program is not designed to be used with younger children, although a fraction of it can be used for early ear-training. It lacks the whistles and bells of some programs that are necessary to hold a child's attention.
Evaluator's comments	I strongly recommend this package for high school students and above who take ear-training seriously and want to better their skills in pitch discrimination and recognition.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Practica Musica**
Publisher **Ars Nova**
Author(s)
Copyright Date **1989**
Date of last update and version **1989 2.192**
Price **125.00**
Reviewed by **Donald J. Clausen** **5-20-90**

Hardware

Apple II+
Apple IIc
Apple IIe
Apple IIgs
Laser 128

IBM-Compatible
XT/AT
286
386
PS/2

x Mac Plus
x Mac SE
Mac II
Amiga
Atari
Commodore 64/128

Disk Drives
5 1/4"
x 3 1/2"
x Hard Drive

Networkable?
Monochrome
Monitor: Color

Other
Memory

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

4 How many voices does this program use?
Internal Monophonic
x Internal Polyphonic
MMI DAC board
Apple IIgs chip
Apple MIDI out/external

x MIDI in and MIDI out
MPU-401 (Roland) compatible
Passport MIDI out/internal
IBM MusicFeature card
Other sound production

Objectives and Content

none given Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

To teach traditional literacy: note writing, major and minor scales, triads.

Objectives and Content (continued)

Educational objectives inferred

How to use a keyboard as a tool toward literacy.

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

This program will work with a remedial music student and go through advanced dictation. chord spelling, intervals and scales (level 1-4). The format is designed to be a game where the user works against a clock.

Teacher Support

yes Is documentation included?

Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

yes Does it include scoring information?

Additional comments about documentation?

Excellent. There is a book supplied called WINDOWS ON MUSIC (a tutorial).

Categories (check all that apply)

- **x** Beginning Aural Discrimination
- **x** Key Signatures
- **x** Error Detection
- **x** Scale Tunings
- **no** Music History/Composers
- **yes** Pitch Identification
- **yes** Melody/Melodic Dictation
- **x** Programs for Young Children
- **x** Intervals
- **x** Rhythm/Rhythmic Dictation
- **x** Musical Symbols
- **x** Musical Terms
- **x** Testing and Evaluation
- **no** Fingerings
- **no** Transposition
- **yes** Scales/Modes
- **yes** Rhythm Sight-Reading
- **no** Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- x Drill and practice
- x Tutorial
- x Game
- Mixed

Summary

Overall strengths	Very well thought-out and documented.
Overall weaknesses	There are no weaknesses in this program as it is designed.
Evaluator's comments	I use this program for my 3-5th graders as a pitch matching game. It can also be used for college level ear training. The program as a whole is very user-friendly.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Practical Theory**
Publisher **Alfred Publishing Co., inc.**
Author(s) **Sandy Feldstein**
Copyright Date **1984**
Date of last update and version
Price **$199.95 (3 Levels)**
Reviewed by **Harry D. Weldon** **5-90**

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- Apple IIgs
- Laser 128
- Mac Plus
- Mac SE
- Mac II
- Amiga
- Atari
- x Commodore 64/128

Networkable?
Monochrome
Monitor: Color
Other
Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- x 5 1/4"
- 3 1/2"
- Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

4 How many voices does this program use?

- Internal Monophonic
- x Internal Polyphonic
- MMI DAC board
- Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

grade 4-12 Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

To provide a method to present basic music theory concepts. Lessons and random drills teach 84 different topics.

Objectives and Content (continued)

Educational objectives inferred

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

The program/workbook takes students from an introduction to staff/clefs and measures through notes, rests, scales, key signatures, chords, inversions, and harmonizing.

Teacher Support

some Is documentation included?

yes Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

no Does it include scoring information?

Additional comments about documentation?

Categories (check all that apply)

- x Beginning Aural Discrimination
- x Key Signatures
- x Error Detection
- Scale Tunings
- Music History/Composers
- Pitch Identification
- Melody/Melodic Dictation
- Programs for Young Children
- x Intervals
- x Rhythm/Rhythmic Dictation
- x Musical Symbols
- x Musical Terms
- Testing and Evaluation
- Fingerings
- Transposition
- x Scales/Modes
- Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- x Drill and practice
- x Tutorial
- Game
- x Mixed

Summary

Overall strengths	Program is good to introduce and review basic concepts to students.
Overall weaknesses	Some students do not like the places where they cannot continue until they have mastered the concept.
Evaluator's comments	I like the program and have used it in my classes for the past several years. The sound on a basic Apple is poor, but the sound on a Commodore is very good. Using cooperative learning techniques, students can work in this program in groups of up to four per computer. Group selection must be carefully made.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Rhythm Write**
Publisher **Temporal Acuity Products**
Author(s) **Ian Polster**
Copyright Date **1988**
Date of last update and version
Price **90.00**
Reviewed by **Diana Mickelson** **5-19-90**

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- x Apple IIgs
- x Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
Commodore 64/128

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
- x 5 1/4"
- 3 1/2"
- Hard Drive

no Networkable?
- x Monochrome
- x Monitor: Color

Other
64K Memory

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

1 How many voices does this program use?
- x Internal Monophonic
- Internal Polyphonic
- x MMI DAC board
- Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- x Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

all serious music Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

It teaches the student to hear, read, and write common duple and triple rhythm patterns.

Objectives and Content (continued)

Educational objectives inferred

It will enhance the student's music writing abilities.

Does student need to be able to read to use this program? **a little**

Thoroughly describe the program scope and content

This is a program that uses a combination of paper and pencil along with a computer. The computer plays a rhythm and the student writes it down. The correct answer is then shown. There is a special help section that lets you see and hear the rhythms used as often as you like before you go into the practice or test programs.

Teacher Support

yes Is documentation included?

no Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

yes Does it include scoring information?

Additional comments about documentation?

This is a simple program to run so there is almost more documentation than is needed.

Categories (check all that apply)

- Beginning Aural Discrimination
- Key Signatures
- Error Detection
- Scale Tunings
- Music History/Composers
- Pitch Identification
- Melody/Melodic Dictation
- Programs for Young Children
- Intervals
- x Rhythm/Rhythmic Dictation
- Musical Symbols
- Musical Terms
- Testing and Evaluation
- Fingerings
- Transposition
- Scales/Modes
- Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- x Drill and practice
- x Tutorial
- Game
- Mixed

Summary

Overall strengths	Excellent for rhythm training of the ear. The special help section helps you improve on rhythms that give you trouble and the practice and testing section help pinpoint student weaknesses.
Overall weaknesses	A small bug in the program is frustrating but not harmful. When finishing part of the special help section, the options are 1. rerun that part, 2. practice another part, or 3. exit special help. Pushing 1 or 2 reruns the part just done! To do option 2, you must start over.
Evaluator's comments	I really felt that this program was not as difficult at the elementary level as the other TAP products I reviewed and yet it was rated for much higher age levels. I think early drummers could benefit in some ways although they have to be experienced and should be given more than the optimum four second answer time.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name	**Sebastian II**
Publisher	**Temporal Acuity Products**
Author(s)	**Brian Moore**
Copyright Date	**1988**
Date of last update and version	**1988 ver. 2.0**
Price	**125.00**
Reviewed by	**Mark Williams** **5/90**

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- x Apple IIgs
- x Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
Commodore 64/128

Networkable?
- x Monochrome
- Monitor: Color

Other
- **64K** Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- x 5 1/4"
- x 3 1/2"
- Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

- **4** How many voices does this program use?
- Internal Monophonic
- x Internal Polyphonic
- **opt.** MMI DAC board
- x Apple IIgs chip
- Apple MIDI out/external
- **opt.** MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

all ages Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

A powerful and entertaining program for all ages that develops aural and visual discrimination through melodic error detection. The computer displays and plays a melody with a single randomly chosen error which the student is asked to identify. The error can be in pitch, rhythm, or tempo.

Objectives and Content (continued)

Educational objectives inferred

Ability to audiate (hear internally) what one sees on a page of printed music.

Does student need to be able to read to use this program? **yes**

Thoroughly describe the program scope and content

Error detection program using errors in rhythm, pitch (both wrong note and out-of-tune) and tempo. Has five levels from simple scales in treble clef through non-tonal melodies in mixed meter with double sharps and double flats.

Teacher Support

yes Is documentation included?

yes Does it provide pedagogical assistance?

yes Does it detail the program content?

yes Does it include operating instructions?

yes Does it include scoring information?

Additional comments about documentation?

Well thought out with quick-start instructions.

Categories (check all that apply)

- x Beginning Aural Discrimination
- Key Signatures
- x Error Detection
- Scale Tunings
- Music History/Composers
- x Pitch Identification
- x Melody/Melodic Dictation
- Programs for Young Children
- Intervals
- x Rhythm/Rhythmic Dictation
- Musical Symbols
- Musical Terms
- Testing and Evaluation
- Fingerings
- Transposition
- Scales/Modes
- Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

Drill and practice

Tutorial

x Game

Mixed

Summary

Overall strengths	Student can, through trial and error, be guided in the direction of the correct answer and gain skills in listening on the way. Easiest levels are quite useful.
Overall weaknesses	Some of the hardest levels contain exercises of such difficulty that professional musicians would find them difficult. Complex rhythms involving eighth and sixteenth notes are not beamed, making them difficult to read.
Evaluator's comments	I find the easier levels to be quite useful and pedagogically sound for the public school music classroom. This one program builds skills in both pitch discrimination and rhythmic discrimination.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **The Music Class 2: Rhythm**
Publisher **DH Custom Software, Inc.**
Author(s) **Virgil Hicks**
Copyright Date **1979**
Date of last update and version **1989**
Price **$39.95**
Reviewed by

Hardware

- x Apple II+
- x Apple IIc
- x Apple IIe
- x Apple IIgs
- Laser 128

- Mac Plus
- Mac SE
- Mac II
- Amiga
- Atari
- Commodore 64/128

- no Networkable?
- x Monochrome
- Monitor: Color
- Other
- Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- x 5 1/4"
- 3 1/2"
- Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

- 1 How many voices does this program use?
- x Internal Monophonic
- Internal Polyphonic
- MMI DAC board
- Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

Objectives and Content (continued)

Educational objectives inferred

Basic rhythm literacy, including basic note values, pulse, and beat.

Does student need to be able to read to use this program? **Yes**

Thoroughly describe the program scope and content

The program provides instruction, as opposed to simple drill and practice with note types from sixteenth to whole. It relates all of these to beat with an on-screen character, tapping his foot. Students are asked to tap the space bar in unison with this character, Mr. Gnome. Understanding can be achieved, along with some limited proficiency.

Teacher Support

Yes Is documentation included?

No Does it provide pedagogical assistance?

No Does it detail the program content?

Yes Does it include operating instructions?

No Does it include scoring information?

Additional comments about documentation?

Directions are sufficient, but teacher knowledge of content is assumed.

Categories (check all that apply)

- Beginning Aural Discrimination
- Key Signatures
- x Error Detection
- Scale Tunings
- Music History/Composers
- Pitch Identification
- Melody/Melodic Dictation
- x Programs for Young Children
- Intervals
- x Rhythm/Rhythmic Dictation
- Musical Symbols
- x Musical Terms
- x Testing and Evaluation
- Fingerings
- Transposition
- Scales/Modes
- x Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list)

Type of Presentation

- x Drill and practice
- x Tutorial
- x Game
- Mixed

Summary

Overall strengths	The program is simple in format and proceeds in logical sequence, easy to follow. Young children will find it engaging.
Overall weaknesses	Sound is limited, and this will limit effective understanding of notes of duration beyond one beat.
Evaluator's comments	This is a good beginning program. As such rhythm programs go, it is very useful. Tap Master is a superior program, but only if it is available! In its absence, this is an effective program for beginners.

MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name **Tune It II**
Publisher **ECS**
Author(s) **Fred Willman**
Copyright Date **1984**
Date of last update and version **1984**
Price **39.95**
Reviewed by

Hardware

- X Apple II+
- X Apple IIc
- X Apple IIe
- X Apple IIgs
- X Laser 128
- Mac Plus
- Mac SE
- Mac II
- Amiga
- Atari
- X Commodore 64/128

Networkable?
- X Monochrome
- X Monitor: Color

Other Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- X 5 1/4"
- 3 1/2"
- Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

1 How many voices does this program use?

- X Internal Monophonic
- Internal Polyphonic
- MMI DAC board
- X Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

10 + Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

Designed to help students learn to accurately tune one pitch to another.

Objectives and Content (continued)

Educational objectives inferred

Does student need to be able to read to use this program? **Yes**

Thoroughly describe the program scope and content

The computer randomly generates two pitches. The player then raises or lowers the second pitch until the two pitches match. Four difficulty levels are available.

Teacher Support

Minimal Is documentation included?
No Does it provide pedagogical assistance?
Outlined Does it detail the program content?
Minimal Does it include operating instructions?
Does it include scoring information?

Additional comments about documentation?

The minimal documentation is sufficient as the program nearly runs itself.

Categories (check all that apply)

- X Beginning Aural Discrimination
- Key Signatures
- X Error Detection
- Scale Tunings
- Music History/Composers
- Pitch Identification
- Melody/Melodic Dictation
- X Programs for Young Children
- Intervals
- Rhythm/Rhythmic Dictation
- Musical Symbols
- Musical Terms
- X Testing and Evaluation
- Fingerings
- Transposition
- Scales/Modes
- Rhythm Sight-Reading
- Chords/Harmonic Dictation

Other Categories (list) **Pitch-matching, non-specified.**

Type of Presentation

- X Drill and practice
- Tutorial
- X Game
- Mixed

Summary

Overall strengths	Easy to use, excellent visual aids, game format, effective pitch matching drill, varying skill levels, and class score management feature for use by the instructor.
Overall weaknesses	You cannot access tutorial instructions during a drill. Graphics are unimaginative. Program does not automatically adjust skill level according to user accuracy.
Evaluator's comments	

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name **Deluxe Music Construction Set**
Publisher **Electronic Arts**
Author(s) **Geoff Brown & John McMillan**
Copyright Date **1985**
Date of last update and version **1988 2.5**
Price **$129.95**
Reviewed by **Donald Clausen** **5/21/90**

Hardware

Apple II+
Apple IIc
Apple IIe
Apple IIgs
Laser 128

Mac Plus
X Mac SE
X Mac II
Amiga
Atari
Commodore 64/128

Networkable?
X Monochrome
Monitor: Color

Other
800 K Memory

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
5 1/4"
3 1/2"
Hard Drive

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

How many voices does this program use?
Internal Monophonic
X Internal Polyphonic
MMI DAC board
Apple IIgs chip
Apple MIDI out/external

X MIDI in and MIDI out
MPU-401 (Roland) compatible
Passport MIDI out/internal
IBM MusicFeature card
Other sound production

Categories (check all that apply)

10 up Suggested (by manufacturer) age range
X Composing (record and play back)
X Polyphonic playback?
? Sequencing (combine or play back individual tracks)
X Editing (change timbre, attack, decay, instruments, etc.)
X Printing using computer keyboard entry
X Printing using MIDI instrument entry
X Printing from sequencer entry

If yes, which sequencer(s)?

X Juke box (playing pre-recorded songs)

Features

yes Does the program allow input from MIDI devices?
no If so, does it allow real-time input?
yes Does it allow step-time input?
yes Are the commands used primarily icon-based?
no Primarily text-based?
yes Or do they allow for giving commands using either icons or text?
yes Does the program allow you to transpose parts?
yes If so, can you transpose parts independent of one another?
yes Can you display a full score?
no Can you display individual parts?
Excellent! How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

The only drawback is the size of the screen. It does not accommodate a full score.

no Is on-screen help available?
If so, rate the quality of the help
Excellent Rate the ease of editing if errors must be corrected
both In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

none

Documentation

yes Was the documentation clear for accomplishing specific tasks?
yes Is a quick features card provided?
no Does the documentation contain a tutorial section?
Excellent Rate the thoroughness of the documentation
Excellent Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

yes-disp Can you playback and display simultaneously?
no Is a traditional display of notation used?
yes Can you save a composition to a disk?
yes Can you transport your composition to a printing program?
yes Are printing capabilities built into the program?
no Are mixing capabilities built into the program?

Other sequencing or editing features

Printing Software Features

yes Can you add lyrics?

very good If so, rate the flexibility in working with lyrics

2 What is the maximum number of staves you can use?

no Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?

Excellent Rate the quality of the printed output

yes Does this program support laser printer use?

yes Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

Describe any difficulties you encountered displaying standard notation

none

Summary

Overall strengths

This is a high power construction program. It is designed to accomodate grand staff and "lead sheet" or part construction. Printing capabilities are excellent. Very easy to use.

Overall weaknesses

MIDI insertion of notes cannot be done in real time.

Evaluator's comments

I think this is an excellent program for the person who needs a step construction kit. Every aspect of this was well thought out and updated and upgraded with subsequent version.

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name	**Dr. T's KCS/Dr. T's Copyist Professional**
Publisher	**Dr. T's**
Author(s)	**Emile Tobenfeld**
Copyright Date	**1988**
Date of last update and version	**1988 (1.7)**
Price	**$199.00/$239.00**
Reviewed by	**Doug Sutton/Shawn Wright** 5-22-90

Hardware

	Apple II+		Mac Plus	?	Networkable?
	Apple IIc		Mac SE	yes	Monochrome
	Apple IIe		Mac II	yes	Monitor: Color
	Apple IIgs	x	Amiga		
	Laser 128	x	Atari		Other
		x	Commodore 64/128	512	Memory

IBM-Compatible		Disk Drives		Monitor	
yes	XT/AT	yes	5 1/4"	yes	CGA
yes	286	yes	3 1/2"	no	Hercules
yes	386	yes	Hard Drive	yes	EGA
yes	PS/2			yes	VGA

Sound Source(s) used

4	How many voices does this program use?		
yes	Internal Monophonic	yes	MIDI in and MIDI out
yes	Internal Polyphonic		MPU-401 (Roland) compatible
	MMI DAC board		Passport MIDI out/internal
	Apple IIgs chip	yes	IBM MusicFeature card
	Apple MIDI out/external		Other sound production

Categories (check all that apply)

	Suggested (by manufacturer) age range
yes	Composing (record and play back)
yes	Polyphonic playback?
yes	Sequencing (combine or play back individual tracks)
yes	Editing (change timbre, attack, decay, instruments, etc.)
yes	Printing using computer keyboard entry
yes	Printing using MIDI instrument entry
yes	Printing from sequencer entry

If yes, which sequencer(s)?

Itself

yes	Juke box (playing pre-recorded songs)

Features

yes Does the program allow input from MIDI devices?
yes If so, does it allow real-time input?
yes Does it allow step-time input?
no Are the commands used primarily icon-based?
yes Primarily text-based?
text Or do they allow for giving commands using either icons or text?
yes Does the program allow you to transpose parts?
yes If so, can you transpose parts independent of one another?
yes Can you display a full score?
yes Can you display individual parts?
good How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

Transcription process takes time, is fairly slow.

yes Is on-screen help available?
pretty good If so, rate the quality of the help
fairly complex Rate the ease of editing if errors must be corrected
single notes In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

Documentation

yes Was the documentation clear for accomplishing specific tasks?
no Is a quick features card provided?
yes Does the documentation contain a tutorial section?
excellent Rate the thoroughness of the documentation
fairly good Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

yes Can you playback and display simultaneously?
yes Is a traditional display of notation used?
yes Can you save a composition to a disk?
yes Can you transport your composition to a printing program?
yes Are printing capabilities built into the program?
no Are mixing capabilities built into the program?

Other sequencing or editing features

Three different modes of sequencing available. No graphic editing.

Printing Software Features

yes	Can you add lyrics?
good	If so, rate the flexibility in working with lyrics
16	What is the maximum number of staves you can use?
yes	Does the program allow a "fudge fac.. " (quantizing) for inexact keyboard playing?
reasonable	Rate the quality of the printed output
yes	Does this program support laser printer use?
yes	Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

Describe any difficulties you encountered displaying standard notation

Summary

Overall strengths

Extremely powerful sequencer with many options.

Overall weaknesses

Transcription program is slightly slow and involves some editing.

Evaluator's comments

1990 update version 3.0 is window-based; this version being text-based is tough for a Macintosh user.

PLEASE NOTE: Dr. T's KCS is a sequencing program and Dr. T's Copyist Professional is a printing program. They are sold separately even though they are reviewed together in this evaluation.

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name **Encore**
Publisher **Passport Designs**
Author(s) **Dave Kusek/Don Williams**
Copyright Date **1989**
Date of last update and version **1/90 1.16**
Price **$599**
Reviewed by **Mark Williams** 5/90

Hardware

Apple II+
Apple IIc
Apple IIe
Apple IIgs
Laser 128

x Mac Plus
x Mac SE
x Mac II
Amiga
Atari
Commodore 64/128

Networkable?
x Monochrome
Monitor: Color

Other
512 k Memory

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
5 1/4"
x 3 1/2"
x Hard Drive

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

64 How many voices does this program use?

Internal Monophonic
Internal Polyphonic
MMI DAC board
Apple IIgs chip
Apple MIDI out/external

x MIDI in and MIDI out
MPU-401 (Roland) compatible
Passport MIDI out/internal
IBM MusicFeature card
Other sound production

Categories (check all that apply)

none Suggested (by manufacturer) age range
x Composing (record and play back)
x Polyphonic playback?
x Sequencing (combine or play back individual tracks)
Editing (change timbre, attack, decay, instruments, etc.)
x Printing using computer keyboard entry
x Printing using MIDI instrument entry
x Printing from sequencer entry

If yes, which sequencer(s)?

Any sequencer that produces Type 1 MIDI files.

Juke box (playing pre-recorded songs)

Features

yes	Does the program allow input from MIDI devices?
yes	If so, does it allow real-time input?
yes	Does it allow step-time input?
x	Are the commands used primarily icon-based?
	Primarily text-based?
yes	Or do they allow for giving commands using either icons or text?
yes	Does the program allow you to transpose parts?
yes	If so, can you transpose parts independent of one another?
yes	Can you display a full score?
yes	Can you display individual parts?
excellent	How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

When importing MIDI files or interpreting real-time MIDI input, a dotted half note is displayed as a quarter note tied to a half note. This is easily fixed through manual editing.

no	Is on-screen help available?
not needed	If so, rate the quality of the help
very easy	Rate the ease of editing if errors must be corrected
single note	In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

A few program bugs (very few for a new piece of software), but I've found workarounds for all of them.

Documentation

yes	Was the documentation clear for accomplishing specific tasks?
no	Is a quick features card provided?
yes	Does the documentation contain a tutorial section?
very good	Rate the thoroughness of the documentation
good	Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

yes	Can you playback and display simultaneously?
yes	Is a traditional display of notation used?
yes	Can you save a composition to a disk?
yes	Can you transport your composition to a printing program?
yes	Are printing capabilities built into the program?
no	Are mixing capabilities built into the program?

Other sequencing or editing features

Parts can be played back over various MIDI channels for multi-timbral playback.

Printing Software Features

yes Can you add lyrics?

very good If so, rate the flexibility in working with lyrics

64 What is the maximum number of staves you can use?

yes Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?

very good Rate the quality of the printed output

yes Does this program support laser printer use?

yes Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

Postscript printers.

Describe any difficulties you encountered displaying standard notation

Listed above.

Summary

Overall strengths

Very intuitive, easy-to-use, ease of editing, doesn't require use of separate sequencing software.

Overall weaknesses

Notating multiple rhythms on one staff requires use of special "voicing" techniques and the composite rhythm cannot be pasted.

Evaluator's comments

This is by far the most flexible and easiest to use music printing program that I have worked with. Working on full-band or orchestral scores will require at least one megabyte of memory and a full-screen monitor.

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name **Incredible Musical Keyboard**
Publisher **Sight & Sound Music Soft re, Inc.**
Author(s)
Copyright Date **1984**
Date of last update and version
Price **$24.95**
Reviewed by **H rry Weldon** **5/90**

Hardware

Apple II+
Apple IIc
Apple IIe
Apple IIgs
Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
X Commodore 64/128

Networkable?
Monochrome
Monitor: Color
Other
Memory

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
5 1/4"
3 1/2"
Hard Drive

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

3 How many voices does this program use?
Internal Monophonic
X Internal Polyphonic
MMI DAC board
Apple IIgs chip
Apple MIDI out/external

MIDI in and MIDI out
MPU-401 (Roland) compatible
Passport MIDI out/internal
IBM MusicFeature card
Other sound production

Categories (check all that apply)

Not listed Suggested (by manufacturer) age range
X Composing (record and play back)
X Polyphonic playback?
Sequencing (combine or play back individual tracks)
X Editing (change timbre, attack, decay, instruments, etc.)
Printing using computer keyboard entry
Printing using MIDI instrument entry
Printing from sequencer entry

If yes, which sequencer(s)?

Juke box (playing pre-recorded songs)

Features

No Does the program allow input from MIDI devices?

Yes If so, does it allow real-time input?

Does it allow step-time input?

Are the commands used primarily icon-based?

X Primarily text-based?

Or do they allow for giving commands using either icons or text?

No Does the program allow you to transpose parts?

If so, can you transpose parts independent of one another?

Can you display a full score?

Can you display individual parts?

Good How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

Yes Is on-screen help available?

Fair If so, rate the quality of the help

None Rate the ease of editing if errors must be corrected

In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

Documentation

Yes Was the documentation clear for accomplishing specific tasks?

No Is a quick features card provided?

No Does the documentation contain a tutorial section?

There is very little Rate the thoroughness of the documentation

None Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

Yes Can you playback and display simultaneously?

Yes Is a traditional display of notation used?

No Can you save a composition to a disk?

No Can you transport your composition to a printing program?

No Are printing capabilities built into the program?

Yes to Are mixing capabilities built into the program?

Other sequencing or editing features

Printing Software Features

Can you add lyrics?

If so, rate the flexibility in working with lyrics

What is the maximum number of staves you can use?

Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?

Rate the quality of the printed output

Does this program support laser printer use?

Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

There are no printing features with this program.

Describe any difficulties you encountered displaying standard notation

---

Summary

Overall strengths

The keyboard provides some easy ways for young people to discover what a synthesizer can do. The reverse side of the disk provides the music entry program.

Overall weaknesses

For what it is, it works well, but it could do a lot more. The demo program of other IMIC programs is very good. Their use of the keyboard makes it better.

Evaluator's comments

I use the program to teach keyboard concepts to 7th and 8th graders and as a beginning program in electronic music. It works well as an intro, but students soon want something more complex.

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name **Jam Session**
Publisher **Broderbund**
Author(s) **Ed Bogas**
Copyright Date **1987**
Date of last update and version
Price **$59.00**
Reviewed by **Deb Wagner**

Hardware

- Apple II+
- Apple IIc
- Apple IIe
- X Apple IIgs
- Laser 128

- X Mac Plus
- X Mac SE
- Mac II
- Amiga
- Atari
- Commodore 64/128

Networkable?
- X Monochrome
- X Monitor: Color

Other
- **512K** Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- 5 1/4"
- 3 1/2"
- Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

- **6** How many voices does this program use?
- Internal Monophonic
- X Internal Polyphonic
- MMI DAC board
- X Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Categories (check all that apply)

- **Not stated** Suggested (by manufacturer) age range
- X Composing (record and play back)
- X Polyphonic playback?
- Sequencing (combine or play back individual tracks)
- X Editing (change timbre, attack, decay, instruments, etc.)
- Printing using computer keyboard entry
- Printing using MIDI instrument entry
- Printing from sequencer entry

If yes, which sequencer(s)?

- X Juke box (playing pre-recorded songs)

Features

No Does the program allow input from MIDI devices?
If so, does it allow real-time input?
Does it allow step-time input?
No Are the commands used primarily icon-based?
Yes Primarily text-based?
Or do they allow for giving commands using either icons or text?
No Does the program allow you to transpose parts?
No If so, can you transpose parts independent of one another?
No Can you display a full score?
No Can you display individual parts?
N/A How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

N/A

N/A Is on-screen help available?
N/A If so, rate the quality of the help
Rate the ease of editing if errors must be corrected
In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

Documentation

X Was the documentation clear for accomplishing specific tasks?
No Is a quick features card provided?
Yes Does the documentation contain a tutorial section?
Very Good/Short Rate the thoroughness of the documentation
Very Good Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

N/A Can you playback and display simultaneously?
N/A Is a traditional display of notation used?
Yes Can you save a composition to a disk?
No Can you transport your composition to a printing program?
No Are printing capabilities built into the program?
No Are mixing capabilities built into the program?

Other sequencing or editing features

Jam Session is a program that allows for immediate composition with no wrong notes involved. The program loads over 20 different "background" stylings and the user "plays" the lead melody by pressing different computer keys. The "song" (sequences) can be saved to disk for playback.

Printing Software Features

Can you add lyrics?

If so, rate the flexibility in working with lyrics

What is the maximum number of staves you can use?

Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?

Rate the quality of the printed output

Does this program support laser printer use?

Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

N/A

Describe any difficulties you encountered displaying standard notation

Summary

Overall strengths

This program is very easy to use and is very powerful in its output of good sounds without needing MIDI equipment. Students love to work with this program!

Overall weaknesses

This is not an instructional program in any sense. An instructor would need to "fill in" around the material presented in this program. There is no computer instruction provided on such things as "how rhythms are created" or "chord progressions."

Evaluator's comments

Jam Session is pure fun and creativity! The students will be highly motivated because of the ability to instantly create great sounding sequences utilizing different musical styles.

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name **Master Tracks Pro. 4**
Publisher **Passport Designs**
Author(s) **Don Williams**
Copyright Date **1989**
Date of last update and version **1989 ver.4.09**
Price **$499.00**
Reviewed by **Jim Iafrati ,Mark Williams** **5/22/90**

Hardware

Apple II+
Apple IIc
Apple IIe
Apple IIgs
Laser 128

x Mac Plus
x Mac SE
x Mac II
Amiga
Atari
Commodore 64/128

Networkable?
Monochrome
Monitor: Color
Mac 512e Other
Memory

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
5 1/4"
x 3 1/2"
x Hard Drive

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

64 How many voices does this program use?

Internal Monophonic
Internal Polyphonic
MMI DAC board
Apple IIgs chip
x Apple MIDI out/external
x MIDI in and MIDI out
MPU-401 (Roland) compatible
x Passport MIDI out/internal
IBM MusicFeature card
Other sound production

Categories (check all that apply)

not listed Suggested (by manufacturer) age range
x Composing (record and play back)
x Polyphonic playback?
x Sequencing (combine or play back individual tracks)
Editing (change timbre, attack, decay, instruments, etc.)
Printing using computer keyboard entry
Printing using MIDI instrument entry
Printing from sequencer entry

If yes, which sequencer(s)?

Juke box (playing pre-recorded songs)

Features

- x Does the program allow input from MIDI devices?
- x If so, does it allow real-time input?
- x Does it allow step-time input?
- x Are the commands used primarily icon-based?
- x Primarily text-based?
- x Or do they allow for giving commands using either icons or text?
- x Does the program allow you to transpose parts?
- X If so, can you transpose parts independent of one another?

Can you display a full score?

Can you display individual parts?

How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

> Notation cannot be displayed.

No Is on-screen help available?

Not necessary If so, rate the quality of the help

Very easy Rate the ease of editing if errors must be corrected

Single notes In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

> Very few difficulties.

Documentation

- **X** Was the documentation clear for accomplishing specific tasks?
- **No** Is a quick features card provided?
- **X** Does the documentation contain a tutorial section?
- **Very Good** Rate the thoroughness of the documentation
- **Good** Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

- **No** Can you playback and display simultaneously?
- **No** Is a traditional display of notation used?
- **X** Can you save a composition to a disk?
- **X** Can you transport your composition to a printing program?
- **No** Are printing capabilities built into the program?
- **X** Are mixing capabilities built into the program?

Other sequencing or editing features

> Individual volume control for each track has a humanize feature that adds random discrepancies to performance to give a more natural sound to overly quantized sequences.

Printing Software Features

Can you add lyrics?

If so, rate the flexibility in working with lyrics

What is the maximum number of staves you can use?

Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?

Rate the quality of the printed output

Does this program support laser printer use?

Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

Describe any difficulties you encountered displaying standard notation

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Summary

Overall strengths

Very easy to use with tape recorder. Style controls. Easy to learn.

Overall weaknesses

Does not display in standard notation.

Evaluator's comments

Very easy recording and sequencing program to learn. Highly recommended for grades 5 through professional.

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name **Music Port**
Publisher **Tech Sketch**
Author(s)
Copyright Date **1985**
Date of last update and version
Price **$100.00**
Reviewed by **Harry Weldon** **5/90**

Hardware

Apple II+
Apple IIc
Apple IIe
Apple IIgs
Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
X Commodore 64/128

Networkable?
Monochrome
Monitor: Color

Other
Memory

IBM-Compatible

XT/AT
286
386
PS/2

Disk Drives

5 1/4"
3 1/2"
Hard Drive

Monitor

CGA
Hercules
EGA
VGA

Sound Source(s) used

4 How many voices does this program use?
Internal Monophonic
X Internal Polyphonic
MMI DAC board
Apple IIgs chip
Apple MIDI out/external

MIDI in and MIDI out
MPU-401 (Roland) compatible
Passport MIDI out/internal
IBM MusicFeature card
Other sound production

Categories (check all that apply)

Not available Suggested (by manufacturer) age range
X Composing (record and play back)
X Polyphonic playback?
X Sequencing (combine or play back individual tracks)
X Editing (change timbre, attack, decay, instruments, etc.)
Printing using computer keyboard entry
Printing using MIDI instrument entry
Printing from sequencer entry

If yes, which sequencer(s)?

X Juke box (playing pre-recorded songs)

Features

No,	Does the program allow input from MIDI devices?
Yes	If so, does it allow real-time input?
Yes	Does it allow step-time input?
	Are the commands used primarily icon-based?
X	Primarily text-based?
X	Or do they allow for giving commands using either icons or text?
Yes	Does the program allow you to transpose parts?
No	If so, can you transpose parts independent of one another?
No	Can you display a full score?
	Can you display individual parts?
Good	How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

Notation displayed in sharps only – no flats.

No	Is on-screen help available?
	If so, rate the quality of the help
Poor	Rate the ease of editing if errors must be corrected
	In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

Changes must be done on whole voices at a time.

Documentation

Fair	Was the documentation clear for accomplishing specific tasks?
No	Is a quick features card provided?
No	Does the documentation contain a tutorial section?
Fair	Rate the thoroughness of the documentation
OK	Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

Yes	Can you playback and display simultaneously?
Yes	Is a traditional display of notation used?
Yes	Can you save a composition to a disk?
Yes	Can you transport your composition to a printing program?
No	Are printing capabilities built into the program?
Yes	Are mixing capabilities built into the program?

Other sequencing or editing features

Printing Software Features

Can you add lyrics?

If so, rate the flexibility in working with lyrics

What is the maximum number of staves you can use?

Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?

Rate the quality of the printed output

Does this program support laser printer use?

Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

Printer program is optional.

Describe any difficulties you encountered displaying standard notation

Summary

Overall strengths

Music Port is a music synthesizer keyboard (full size keys) and multi-track recording system for the C-64. Software provides 120 preset sounds. Data may be stored to disk.

Overall weaknesses

Students find use of synthesizer panel hard to use.

Evaluator's comments

The program is very good to allow beginning students to input music to the SID and play it back. Because of the full-size keyboard it is especially good for piano students. Students have fun creating with the program.

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name **Notator**
Publisher **Club**
Author(s) **Dr. Gerhard Lengeling and Chris Adam**
Copyright Date **1988**
Date of last update and version **Mar. 89**
Price **$649.99**
Reviewed by **Steve Moll** **5/21/90**

Hardware

- [ ] Apple II+
- [ ] Apple IIc
- [ ] Apple IIe
- [ ] Apple IIgs
- [ ] Laser 128
- [ ] Mac Plus
- [ ] Mac SE
- [ ] Mac II
- [ ] Amiga
- [x] Atari
- [ ] Commodore 64/128

Networkable?
- [x] Monochrome
- [x] Monitor: Color

Other
Memory

IBM-Compatible
- [ ] XT/AT
- [ ] 286
- [ ] 386
- [ ] PS/2

Disk Drives
- [ ] 5 1/4"
- [x] 3 1/2"
- [x] Hard Drive

Monitor
- [ ] CGA
- [ ] Hercules
- [ ] EGA
- [ ] VGA

Sound Source(s) used

Unlimited How many voices does this program use?

- [ ] Internal Monophonic
- [ ] Internal Polyphonic
- [ ] MMI DAC board
- [ ] Apple IIgs chip
- [ ] Apple MIDI out/external
- [x] MIDI in and MIDI out
- [ ] MPU-401 (Roland) compatible
- [ ] Passport MIDI out/internal
- [ ] IBM MusicFeature card
- [ ] Other sound production

Categories (check all that apply)

13 + Suggested (by manufacturer) age range

- [x] Composing (record and play back)
- [x] Polyphonic playback?
- [x] Sequencing (combine or play back individual tracks)
- [ ] Editing (change timbre, attack, decay, instruments, etc.)
- [x] Printing using computer keyboard entry
- [x] Printing using MIDI instrument entry
- [x] Printing from sequencer entry

If yes, which sequencer(s)?

Club-Creator or MIDI Files

- [x] Juke box (playing pre-recorded songs)

Features

Does the program allow input from MIDI devices?
If so, does it allow real-time input?
Does it allow step-time input?
Are the commands used primarily icon-based?
Primarily text-based?
Or do they allow for giving commands using either icons or text?
Does the program allow you to transpose parts?
If so, can you transpose parts independent of one another?
Can you display a full score?
Can you display individual parts?
How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

Is on-screen help available?
If so, rate the quality of the help
Rate the ease of editing if errors must be corrected
In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

Documentation

Was the documentation clear for accomplishing specific tasks?
Is a quick features card provided?
Does the documentation contain a tutorial section?
Rate the thoroughness of the documentation
Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

Can you playback and display simultaneously?
Is a traditional display of notation used?
Can you save a composition to a disk?
Can you transport your composition to a printing program?
Are printing capabilities built into the program?
Are mixing capabilities built into the program?

Other sequencing or editing features

Music edits possible with music notation symbols, event list, or bar graphs. Changes to individual notes may effect pitch, duration, and/or amplitude. Tempo changes may be recorded in real time. Assignable MIDI faders.

Printing Software Features

yes	Can you add lyrics?
moderate	If so, rate the flexibility in working with lyrics
32	What is the maximum number of staves you can use?
yes	Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?
Good	Rate the quality of the printed output
yes	Does this program support laser printer use?
yes	Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

Describe any difficulties you encountered displaying standard notation

Summary

Overall strengths

The program is moderately easy to use. The program screens provide a lot of simultaneous information. It is important to read the manual to discover how to access and change the data. The program is very flexible in terms of the editting features and allows linear and pattern sequencing.

Overall weaknesses

The program could provide more options in the sizing of the music notation symbols.

Evaluator's comments

The Club notator/creator software represents a quality of programming and features that are unmatched by other Atari programs and equals the best I've seen for the Mac.

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name **Performer**
Publisher **Mark of the Unicorn**
Author(s) **John Mauraides**
Copyright Date **1989**
Date of last update and version **1989 3.0**
Price **$395.00**
Reviewed by **Mike Benson** **5/20/90**

Hardware

- Apple II+
- Apple IIc
- Apple IIe
- Apple IIgs
- Laser 128

- x Mac Plus
- x Mac SE
- x Mac II
- Amiga
- Atari
- Commodore 64/128

- Networkable?
- x Monochrome
- Monitor: Color
- Other
- **1 meg** Memory

IBM-Compatible
- XT/AT
- 286
- 386
- PS/2

Disk Drives
- 5 1/4"
- x 3 1/2"
- x Hard Drive

Monitor
- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

250 track How many voices does this program use?

- Internal Monophonic
- Internal Polyphonic
- MMI DAC board
- Apple IIgs chip
- Apple MIDI out/external

- x MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Categories (check all that apply)

- **unknown** Suggested (by manufacturer) age range
- x Composing (record and play back)
- x Polyphonic playback?
- x Sequencing (combine or play back individual tracks)
- x Editing (change timbre, attack, decay, instruments, etc.)
- x Printing using computer keyboard entry
- x Printing using MIDI instrument entry
- x Printing from sequencer entry

If yes, which sequencer(s)?

Above three entries in combination with Professional Composer.

Juke box (playing pre-recorded songs)

Features

- x Does the program allow input from MIDI devices?
- x If so, does it allow real-time input?
- x Does it allow step-time input?
- x Are the commands used primarily icon-based?
- x Primarily text-based?
- x Or do they allow for giving commands using either icons or text?
- x Does the program allow you to transpose parts?
- x If so, can you transpose parts independent of one another?
- N/A Can you display a full score?
- N/A Can you display individual parts?
- N/A How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

N/A

- no Is on-screen help available?
  If so, rate the quality of the help
- extremely easy Rate the ease of editing if errors must be corrected
- single In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

None.

Documentation

- yes Was the documentation clear for accomplishing specific tasks?
- no Is a quick features card provided?
- yes Does the documentation contain a tutorial section?
- superior Rate the thoroughness of the documentation
- superior Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

- no Can you playback and display simultaneously?
- no Is a traditional display of notation used?
- yes Can you save a composition to a disk?
- yes Can you transport your composition to a printing program?
- yes Are printing capabilities built into the program?
- yes Are mixing capabilities built into the program?

Other sequencing or editing features

Looping, auto rewind, auto record, punch in/punch out, over-dubbing, MIDI sliders for mixing levels, tempo and meter change, and video synching.

Printing Software Features

na Can you add lyrics?
If so, rate the flexibility in working with lyrics
na What is the maximum number of staves you can use?
yes Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?
na Rate the quality of the printed output
yes Does this program support laser printer use?
yes Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

Describe any difficulties you encountered displaying standard notation

N/A

Summary

Overall strengths: Editing ease, user friendly, high resolution (480 ticks/quarter note).

Overall weaknesses: No built-in randomness, humanization factors. MIDI data-to-notation conversion somewhat awkward.

Evaluator's comments: A top-notch, professional-quality sequencing program!

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name **Professional Composer**
Publisher **Mark of the Unicorn**
Author(s) **John Mauraides**
Copyright Date **1985-88**
Date of last update and version **1990 2.3**
Price **$395.00**
Reviewed by **Mike Benson** **5/20/90**

Hardware

Apple II+
Apple IIc
Apple IIe
Apple IIgs
Laser 128

x Mac Plus
x Mac SE
x Mac II
Amiga
Atari
Commodore 64/128

Networkable?
x Monochrome
Monitor: Color

Other
800k Memory

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
5 1/4"
x 3 1/2"
x Hard Drive

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

How many voices does this program use?
Internal Monophonic
x Internal Polyphonic
MMI DAC board
Apple IIgs chip
Apple MIDI out/external

x MIDI in and MIDI out
MPU-401 (Roland) compatible
Passport MIDI out/internal
IBM MusicFeature card
Other sound production

Categories (check all that apply)

unknown, est. Suggested (by manufacturer) age range
Composing (record and play back)
x Polyphonic playback?
Sequencing (combine or play back individual tracks)
Editing (change timbre, attack, decay, instruments, etc.)
x Printing using computer keyboard entry
x Printing using MIDI instrument entry
x Printing from sequencer entry

If yes, which sequencer(s)?

Performer – Mark of the Unicorn

Juke box (playing pre-recorded songs)

Features

yes Does the program allow input from MIDI devices?

yes If so, does it allow real-time input?

Does it allow step-time input?

no Are the commands used primarily icon-based?

yes Primarily text-based?

Or do they allow for giving commands using either icons or text?

yes Does the program allow you to transpose parts?

yes If so, can you transpose parts independent of one another?

yes Can you display a full score?

yes Can you display individual parts?

excellent How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

> Inability to completely divide rhythms on a single staff. Overlapping of some dynamics/articulations with notes.

no Is on-screen help available?

If so, rate the quality of the help

somewhat easy Rate the ease of editing if errors must be corrected

single In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

> Removing articulations and dynamics. Removing or realigning text. Sometimes these due to bugs, most of which are removed.

Documentation

yes Was the documentation clear for accomplishing specific tasks?

no Is a quick features card provided?

yes Does the documentation contain a tutorial section?

excellent Rate the thoroughness of the documentation

excellent Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

yes Can you playback and display simultaneously?

yes Is a traditional display of notation used?

yes Can you save a composition to a disk?

yes Can you transport your composition to a printing program?

yes Are printing capabilities built into the program?

no Are mixing capabilities built into the program?

Other sequencing or editing features

> Copying text vertically and horizontally. Over-all spacing is editable.

Printing Software Features

yes Can you add lyrics?

excellent If so, rate the flexibility in working with lyrics

40 What is the maximum number of staves you can use?

no Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?

excellent Rate the quality of the printed output

yes Does this program support laser printer use?

yes Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

N/A

Describe any difficulties you encountered displaying standard notation

Dividing rhythms on a single staff. Incidental additon of staff for brief passages.

Summary

Overall strengths

High quality printed output, highly flexible notation, very good text (lyrics) possibilities, ease of use, excellent print editing (spacing), and MIDI keyboard notation entry.

Overall weaknesses

Dividing rhythms on single staff, addition of short segments on staff, and some dynamic/articulation overlapping with notes.

Evaluator's comments

A highly recommended professional level notation program with a sequencing interfaced product (Performer) which allows conversion of MIDI data to notation.

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name **Super Studio Session**
Publisher **Bogus Productions**
Author(s) **Bogus, Capps, Cormia, Roberts**
Copyright Date **1986**
Date of last update and version **2.0 1988**
Price **$100-MacWarehouse**
Reviewed by **Donald J. Clausen** **5/20/90**

Hardware

Apple II+
Apple IIc
Apple IIe
Apple IIgs
Laser 128

Mac Plus
Mac SE
Mac II
Amiga
Atari
Commodore 64/128

Networkable?
Monochrome
Monitor: Color

Other
Memory

IBM-Compatible
XT/AT
286
386
PS/2

Disk Drives
5 1/4"
3 1/2"
Hard Drive

Monitor
CGA
Hercules
EGA
VGA

Sound Source(s) used

How many voices does this program use?

Internal Monophonic
X Internal Polyphonic
MMI DAC board
Apple IIgs chip
Apple MIDI out/external

MIDI in and MIDI out
MPU-401 (Roland) compatible
Passport MIDI out/internal
IBM MusicFeature card
Other sound production

Categories (check all that apply)

Suggested (by manufacturer) age range
X Composing (record and play back)
X Polyphonic playback?
X Sequencing (combine or play back individual tracks)
Editing (change timbre, attack, decay, instruments, etc.)
Printing using computer keyboard entry
Printing using MIDI instrument entry
Printing from sequencer entry

If yes, which sequencer(s)?

Juke box (playing pre-recorded songs)

Features

no Does the program allow input from MIDI devices?
If so, does it allow real-time input?
Does it allow step-time input?
yes Are the commands used primarily icon-based?
Primarily text-based?
Or do they allow for giving commands using either icons or text?
yes Does the program allow you to transpose parts?
yes If so, can you transpose parts independent of one another?
no Can you display a full score?
yes Can you display individual parts?
good How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

I would prefer the full score (or tracks) to be seen at once.

no Is on-screen help available?
If so, rate the quality of the help
good Rate the ease of editing if errors must be corrected
single notes In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

Again, because the writer cannot see the whole screen with all parts at once, editing is slow, and laborious.

Documentation

yes Was the documentation clear for accomplishing specific tasks?
no, but Is a quick features card provided?
yes Does the documentation contain a tutorial section?
very good Rate the thoroughness of the documentation
good Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

no Can you playback and display simultaneously?
yes Is a traditional display of notation used?
yes Can you save a composition to a disk?
Can you transport your composition to a printing program?
no Are printing capabilities built into the program?
no Are mixing capabilities built into the program?

Other sequencing or editing features

Printing Software Features

no Can you add lyrics?

If so, rate the flexibility in working with lyrics

What is the maximum number of staves you can use?

no Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?

- Rate the quality of the printed output
- Does this program support laser printer use?
- Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

Describe any difficulties you encountered displaying standard notation

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Summary

Overall strengths: This is an excellent "beginner package" for someone who wants to have fun with multi-tracking. The onboard songs are fun to play along with the animation.

Overall weaknesses: No MIDI, no printing, and no simultaneous track or score viewing.

Evaluator's comments: I would not recommend this package as there are other music construction kits that are more powerful for the money.

MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name	**Vision**
Publisher	**Opcode**
Author(s)	**Dave Oppenheim & Ray Spears**
Copyright Date	**1989**
Date of last update and version	**May '90 Ver.1.1**
Price	**$495.00**
Reviewed by	**Steve Moll** **5/21/90**

Hardware

Apple II+	X	Mac Plus	**No**	Networkable?
Apple IIc	X	Mac SE	**X**	Monochrome
Apple IIe	X	Mac II	**X**	Monitor: Color
Apple IIgs		Amiga		
Laser 128		Atari	**512K w/ 1 Meg**	Other
		Commodore 64/128	**1 Meg**	Memory

IBM-Compatible	Disk Drives	Monitor
XT/AT	5 1/4"	CGA
286	3 1/2"	Hercules
386	Hard Drive	EGA
PS/2		VGA

Sound Source(s) used

unlimited How many voices does this program use?

Internal Monophonic		X	MIDI in and MIDI out
Internal Polyphonic			MPU-401 (Roland) compatible
MMI DAC board			Passport MIDI out/internal
Apple IIgs chip			IBM MusicFeature card
Apple MIDI out/external			Other sound production

Categories (check all that apply)

Age 13 + Suggested (by manufacturer) age range

- **X** Composing (record and play back)
- **X** Polyphonic playback?
- **X** Sequencing (combine or play back individual tracks)
- Editing (change timbre, attack, decay, instruments, etc.)
- Printing using computer keyboard entry
- Printing using MIDI instrument entry
- Printing from sequencer entry

If yes, which sequencer(s)?

Juke box (playing pre-recorded songs)

Features

Yes Does the program allow input from MIDI devices?

Y If so, does it allow real-time input?

Y Does it allow step-time input?

Y Are the commands used primarily icon-based?
Primarily text-based?
Or do they allow for giving commands using either icons or text?

Y Does the program allow you to transpose parts?

Y If so, can you transpose parts independent of one another?

No Can you display a full score?

Y Can you display individual parts?

N/A How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

N/A

Y Is on-screen help available?

Very good If so, rate the quality of the help

Good Rate the ease of editing if errors must be corrected

single In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

Documentation

Y Was the documentation clear for accomplishing specific tasks?

Y Is a quick features card provided?

N Does the documentation contain a tutorial section?

Good Rate the thoroughness of the documentation

Good Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

Yes Can you playback and display simultaneously?

No Is a traditional display of notation used?

Yes Can you save a composition to a disk?

Yes Can you transport your composition to a printing program?

No Are printing capabilities built into the program?

Yes Are mixing capabilities built into the program?

Other sequencing or editing features

The program features easy edits to pitch, rhythm, and duration using an elegant bar graph system or event list. The program has algorithimic composition features for pitch and/or rhythm and assignable MIDI faders.

Printing Software Features

Can you add lyrics?

If so, rate the flexibility in working with lyrics

What is the maximum number of staves you can use?

Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?

Rate the quality of the printed output

Does this program support laser printer use?

Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

N/A

Describe any difficulties you encountered displaying standard notation

---

Summary

Overall strengths

The program is fairly easy to use. The on-screen helps make for easy use. The bar graph music editor is really nice.

Overall weaknesses

The user interface is not completely transparent. Some functions are a little difficult to understand immediately.

Evaluator's comments

The program is very strong. It enables easy music editing. Vision is strongly oriented for pattern sequencing. Linear sequencing is possible, but is not the primary design of the program.

A Guide to Software Purchase

The Hardware Question

It is most desirable to find the software that best suits your needs and then buy the hardware to run that software. For some buying situations, this is an unthinkable luxury, and compromises must be made. With the remarkable number of music software products available, the music educator must establish some methods for thinking through the purchase process. There are products available to do just about everything you can think of, but they do not all run on the same machines!!!

Software purchases are often complicated by school district policy. When a district hardware policy allows only one type of computer at a given school, teachers may be put in a position of buying software of lower standards. One workstation type may not be the answer, and many institutions are deciding to have multiple stations running the optimum hardware/software combinations.

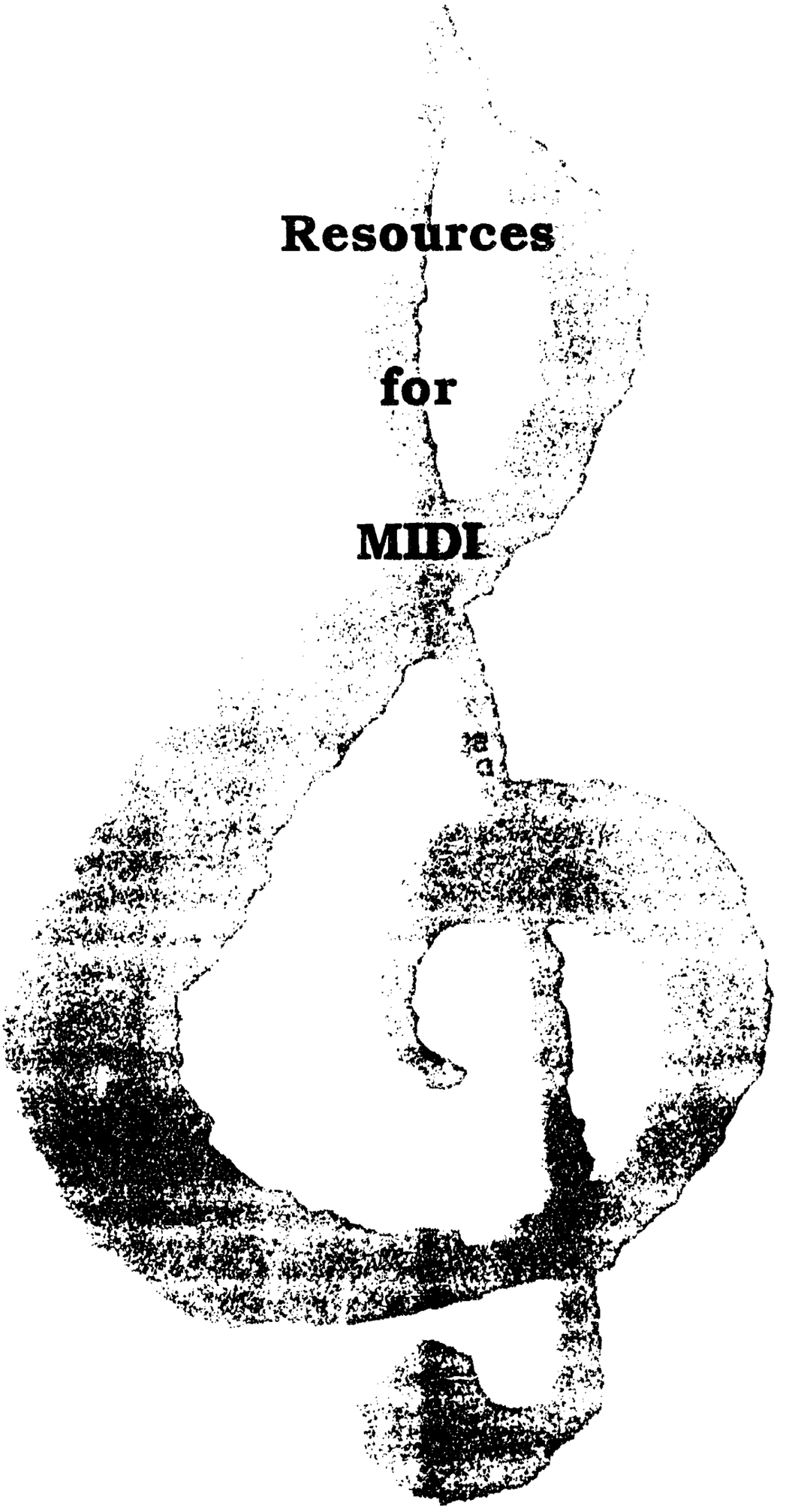
Practical Considerations:
The following questions are a few that should be asked at the outset of software purchase.

- Who will be using the software?
- Why will the software be used?
- What alterations will need to be made in the teaching curriculum to accommodate a true integration of the new material?
- Where will the hardware/software be located?
  - Is sound production accounted for in that location? (i.e. amplifier/headphones)
  - Are electrical and ventilation systems adequate in the location?
  - Is there adequate monitoring and security?
- How will the materials be financed?
  - **NOTE:** Many schools are able to locate surplus hardware that is being replaced with newer machines. The "outdated" hardware can be a tremendous teaching asset and can often be acquired for FREE!!
- How will the faculty be trained?

Ethical Considerations:

Most educational software, CD-ROM, and Laserdisc material falls under normal copyright laws. Publishers see this copyright as a way to protect a substantial investment of development time and costs. The fact that one single diskette may be loaded into several machines does not make it legal! Please consult the publisher and your district technology office to comply with the ethics of appropriate and fair use. Permission to use material in any way other than stated in the documentation or implied by fair use must be received in writing from the publisher. Many schools are using network systems and software prices will change for network versions.

Resources for MIDI



MIDI Advice

If you feel you need a MIDI primer to get started, please refer to the list of books and articles on the MIDI Books page that follows the Glossary. Many of these references contain excellent foundational information.

The following thoughts were compiled in Ellensburg, Wash., on May 23, 1990. Many educators in our state are using MIDI teaching tools on a regular basis. They have sifted through mountains of information and choices to decide which combination of tools to use. In the following discussion, they hope to save the reader some time and provide direction. The MIDI options available to the buyer change daily, but there are some valuable standard considerations to be made.

Please refer to the Glossary for MIDI, Computers, and Electronic Music found next in this resource guide when confronted with unfamiliar terms. Every effort has been made to provide definition in a "jargon happy" field!

Essential Equipment for General MIDI Use:

In most cases, teachers are using a MIDI keyboard with a computer and a printer to provide tools to teach literacy, composition, and editing. The basic components of a system are:

- A computer
- A MIDI interface with at least one MIDI IN and one MIDI OUT
- A MIDI keyboard (See desired keyboard features listed below)
- An amplifier/speaker (to hear the keyboard)
- Music software that can be used for literacy and/or composition and editing.

Desirable Features in a MIDI Keyboard:

(For an excellent, current listing of keyboards on the market, refer to "The MIDI Resource Guide: Keyboards", in The Computer and Music Educator, March 1990, pp. 44-51.)

- Full-size keys
- Velocity/touch sensitive keys (after touch is also desirable)
- 16 voice multi-timbrel tone generator
- Pitch and modulation wheels
- A damper pedal
- On-board effects/signal processing
- Good Sounds !!
  (Sampled sounds are the most realistic, but having a combination of synthesized and sampled sounds proves useful.)

Issues to Consider:

- Synthesized sound vs. Sampled sound

  Are you going to buy a system that uses synthetic sounds that replicate instruments or a system with digitized samples of actual instrument sounds. The differences in these two ways of producing sound are growing narrower as technology advances. Many users today look for some of both if possible. Sampled sounds generally occupy more memory.

- Software based sequencing or Hardware based sequencing

  Are you going to manage your MIDI channels software on a computer or use a built in system on your MIDI device.

- Workstation vs. MIDI station

  The term "workstation" has many implications. In MIDI, a recent development has been the combination of a synthesizer, drum machine and sequencer housed in one unit. All of these elements are available separately, and many people prefer to purchase them separately. The final decision must be made according to use and personal preference.

Synthesizer Considerations:

There are four types of synthesis dominating the market today. They are:

- Subtractive synthesis
- Additive synthesis
- FM synthesis
- Wave-table synthesis.

Each type is an operating system for sound and has its own method of constructing sounds by manipulating a sound's timbre. Educators should preview MIDI devices and keyboards in each of the areas of synthesis.

Glossary for MIDI, Computers, and Electronic Music

Active Sensing The ability of a synthesizer to "know" when its MIDI cable has become disconnected. It then shuts itself off eliminating the considerable embarrassment of a note that is stuck on.

Additive Synthesis A type of synthesis in which sine waves of different frequ and amplitude are combined producing very complex and natural sounding tim s.

Aftertouch A type of MIDI data. The ability of some synthesizers to send additional MIDI data after a key has been pushed down. Generally found on more expensive keyboards.

Algorithm In FM sound synthesis, one particular combination of a synthesizer's operators used to create a sound or patch.

Analog The continuously variable voltage-control based system on which many early synthesizers were based. Most synthesizers are now either "digital" or combinations of the two.

Attack Velocity The downward speed of a key on a synthesizer keyboard when the key is first pressed.

Basic MIDI Channel The main MIDI channel (1 through 16) that a synthesizer is set to receive MIDI info on.

Binary The two digit numbering system (0 and 1) that MIDI uses to form "8-bit" MIDI words called "bytes."

Bit The smallest unit of computer data used to represent either a 1 or 0. It is short for binary digit.

Byte An eight digit MIDI word. In binary-land 00100101 is a byte which means the number "37."

CPU - Central Processing Unit The parts of a computer, usually on a single silicon chip, that performs calculations and controls the rest of the computer. (See Microprocessor).

Daisy Chain A way of connecting MIDI devices to one another in which a cable from one instrument's MIDI Thru port is connected to another instrument's MIDI In port. About four instruments can be "daisy chained" before time lag becomes a problem.

Default Settings The pre-set state that a MIDI instrument is in when it is first turned on. This might include its program, basic MIDI channel, and reception mode setting. One way to reset a synthesizer to its "default" setting is to power off and reboot (turn it off and on again).

Digital A computer-based method of generating sound using a series of numbers in a waveform table. The series is later converted into an audio signal.

Digital Rhythm Programmer A fancy way of saying drum machine.

Floppy Disk A thin, flexible disk of magnetic recording material enclosed in a protective covering used in a computer or synthesizer disk drive to store information. Floppy disks are usually found in two sized 5.25" (Apple IIe, IBM, Commodore 64) or 3.5" (Apple IIGS, Macintosh, most sampling synthesizers).

Frequency Modulation (FM) A Digital (computer based) type of synthesis in which microprocessors generate sine waves and modulate them with other sine waves according to a number of algorithms. Yamaha uses FM for their DX and TX instruments.

Hardware The actual physical components of a computer system including the computer itself, the disk drive(s), monitor, printer, and connecting devices.

Icon Based Operating System A computer operating system that shows programs and data files in the computer as small pictures on the monitor instead of as text. Such a system allows the computer operator to choose commands and files without typing them on the keyboard.

Interface A connection between synthesizers and computer. The interface includes both the physical connection and the format requirements for interaction between the components.

Keyboard Split A music keyboard feature that enables the performer to play different patches at the same time on different sections of the keyboard.

LCD - Liquid Crystal Display (As found on watches, calculators and synthesizers.) Uses polarized liquid crystals to create text and graphics.

LED - Light-emitting Diode (As found on alarm timers, VCRs, and synthesizers.) Uses glowing diodes to create text and graphics.

Master/Slave Setup A situation in which one or more MIDI devices (slave) follows instructions sent to it over a MIDI cable by another device (master). Either master or slave could be a keyboard, drum machine, or computer depending upon the situation.

Microprocessor A small central processing unit (CPU) built into a single silicon chip. (See CPU.)

MIDI An acronym for Musical Instrument Digital Interface. MIDI is a communications standard for exchanging data between electronic instruments and computers.

MIDI Cable A five pin cable specified for MIDI data transmission. It's based upon the DIN cable that has been long used for European audio gear.

MIDI Channel A MIDI message transmission scheme that allows data to be sent over a MIDI network to individual devices without being received by all of the devices on the network. There are 16 MIDI channels available in the current scheme.

MIDI Clock A special type of MIDI data which is generated by a sequencer or drum machine that keeps various MIDI devices synchronized.

MIDI Controller Any device that can create MIDI data for transmission. It now includes keyboards, drum machines, MIDI electric guitars, MIDI wind instruments, and we'll soon see MIDI toasters, garage door openers, and microwaves. (Well.....maybe.)

MIDI Implementation Sheet An important part of any owners manual that will tell you (if you can decipher it) just what type of MIDI information that a piece of equipment is capable of sending and receiving. This can vary tremendously.....buyer beware!

MIDI In The MIDI port, usually on the back of a piece of MIDI equipment, that receives MIDI data.

MIDI Interface A piece of hardware that acts as a translator between a computer and one or more instruments. It's often combined with a thru box.

MIDI Out The MIDI port, usually on the back of MIDI equipment, that sends MIDI data.

MIDI Port A five pin socket built into a MIDI device, used to plug in a MIDI cable. There are three kinds of MIDI ports:
1. MIDI IN - Received MIDI data
2. MIDI OUT - sends MIDI data
3. MIDI THRU - passes a copy of MIDI data received to another MIDI device

MIDI Reception Modes One major type of MIDI data that a MIDI instrument can be set to receive. These include:
1) Omni (receives all 16 MIDI channels)
2) Poly (receives the basic channel polyphonically)
3) Mono (receives the basic channel monophonically)
4) Omni Off/Mono (receives more than one channel monophonically).

MIDI Thru The MIDI port, usually on the back of a piece of MIDI equipment, that echoes data received at the MIDI in. It's used in "daisy chaining" and, while very useful, is not found on all MIDI instruments.

Modulation Wheel A piece of hardware found on most synthesizers. It allows you to "modulate" a particular "program" to a varying degree. This is often used to create a vibrato or tremolo effect.

Monitor The component of a computer system that displays information (e.g., TV screen).

Monophonic Synthesizer A synthesizer that plays only one note at a time. A monophonic synthesizer cannot play chords.

Monotimbral Synthesizer A synthesizer that can play notes using only one patch at a time.

Mouse A hand-held device rolled on a desktop to control a computer. Movement of the mouse generally results in a corresponding movement of a pointer on the computer's monitor.

Multitimbral The ability of a some MIDI instruments to simultaneously receive MIDI data on as many as eight different MIDI channels, each set to its own "program." It's very useful when using a computer as a master.

Multi-track The ability to record different instruments on separate tracks of tape. This is an important concept to understand since most sequencers are software imitators of Multi-track tape recorders.

Note On A type of MIDI message that triggers a particular note to be played.

Note Off A type of MIDI message that shuts off a note.

Patch On a synthesizer, a specific sound design created using the synthesizer's controls. A synthesizer plays notes using the sounds that are defined as patches. The pre-80's name for "program."

Patch Library Software Computer software that can store and catalogue "programs."

Phase Distortion A type of synthesis used by Casio in which the phase of a sine wave is modulated to produce different timbres.

Pitch Bend A type of MIDI message that contains and transmits information about pitch bend. It's usually controlled by a pitch bend wheel.

Polyphonic Synthesizer A synthesizer that can play more than one patch at a time. Such a synthesizer, as opposed to a monophonic synthesizer, is capable of playing chords.

Polyphonic Key Pressure This is particular kind of aftertouch in which each key is able to produce its own value (instead of an average for all keys). It is rare and expensive.

Polytimbral Synthesizer A synthesizer that can play more than one patch at a time.

Portamento The same as pitch glide. The effect is similar to what a slide trombone can do when sliding between pitches.

Program (or Patch) A particular sound that an electronic instrument can produce (organ, harpsichord, brass etc.). Synthesizers generally come with lots of factory supplied "programs" and also let you create your own. They were called "patches" in the 60's and 70's.

Program Change A type of MIDI message that sends "program change" information. It allows you to change the "program" on a "slave" from the front panel of a "master."

Quantize The ability of a drum machine or sequencer to "round-off" a performance to the nearest value. It's often used as a type of "auto-correction" which can be useful when a part is played sloppily.

RAM - Random Access Memory A chip that stores information in a way that allows one to erase or write new data over the information.

Real Time Record A recording made in "real time." All tape recording is done this way.

Resolution A way of describing how much detail is used in converting a musical performance into numbers. For instance, the Performer sequencer incorporates a fairly high resolution of 480 parts per quarter note. MIDI clock rate specifies a medium resolution of 24 pulses per quarter note which allows for sequencers and drum machines to play notes as small as 32nd-note triplets.

ROM - Read Only Memory A chip that stores information permanently so that the information cannot be erased.

Sample A digital recording of any sound. It may then be transposed to other pitches and played as notes or chords on a sampling keyboard.

Sampler A device which has the ability to record samples. It usually looks more or less like a synthesizer. Some samplers are combined with synthesizers and sequencers in one unit.

Sequence In the world of MIDI a sequence is a digital recording of a series of MIDI events (notes/on, notes/off, dynamics, etc.). It is not a recording of sound in the sense of a tape recording or a sample. It's really a set of directions to create sounds similar to the roll of paper on a player piano

Sequencer Essentially a digital recorder. It's like a tape recorder but doesn't record sounds on tape. It records MIDI events (note on, note off, pitch bend etc...) in computer code which can then be played back on any MIDI instrument. There are three types of sequencers: *Add-On* (software that you use with a computer), *Built-In* (part of a synthesizer), and *Stand Alone* (a small computer that only records music).

Song Position Pointer A type of MIDI information that tells instruments in a MIDI setup what the current location is. It allows a drum machine and a sequencer to be in sync with each other when starting at a location other than at the beginning of a sequence. Very useful.

Sound (or Tone) Module A synthesizer or sampler without a piano keyboard. MIDI makes multiple keyboards unnecessary. Modules have the same "programs" as popular synthesizers but take up a smaller amount space at a lower price.

Subtractive Synthesis A type of synthesis based on the filtering of waveforms rich in harmonics to arrive at different timbres. It is generally used on Analog synthesizers.

Thru Box This is like a junction box for MIDI signals. It receives an output from a master device and sends it to a number of MIDI Thru ports which can then be attached via MIDI cable to slaves. Prices vary depending upon the number of Thru ports in the box. This is a better way to create a MIDI set-up because it avoids the time lag problem inherent in "daisy chaining." Other names for a Thru Box are Star Network and MIDI Expander.

Track In a MIDI recorder, a separate section of the computer's memory used to store one sequence of notes separate from other sequences. In a tape recorder, a separate length-wise region of tape used to record an audio signal and to distinguish it from other recorded signals.

Step Time Record A way to record music (MIDI events) one note at a time (as opposed to "Real Time"). Many sequencers allow you to record in "Step Time" and "Real Time."

SMPTE Stands for Society of Motion Picture and Television Engineers and was developed by NASA as a timing reference for accurately logging data on tape. It is created by a SMPTE Generator and recorded onto one track of a multitrack tape. Many MIDI sequencers can synchronize to SMPTE which allows for a variety of truly amazing possibilities. As its name suggests, it is widely used in the motion picture and television industries.

System Exclusive A type of MIDI data that allows information unique to one manufacturer to be exchanged between instruments. It is also commonly used as a way of shuttling programs and sequencer information between MIDI instruments and computers.

System Reset A computer command that returns all MIDI instruments to their "Default" settings.

Sync to Tape The process of slaving a Sequencer to a Multi-Track tape recorder. SMPTE time code recorded on one track of the tape is currently one of the most widely used and effective ways of accomplishing this.

Velocity (or Touch Sensitivity) A type of MIDI information that has to do with how hard a key is struck and can be used to create dynamics. Most keyboards in the medium-and-up price range are "velocity" sensitive. Many drum machines can receive, but not transmit it.

Voice Editing Software This is a computer based way of "voice editing" formerly known as "synthesis." Most synthesizer are not easy to use in this respect due to the lack of buttons and knobs (which has made the under $1,000 synthesizer a reality). Voice Editing Software allows any "program" to be displayed graphically on a computer screen where parameters like waveform, envelope attack time, and filter cut-off point can be easily changed.

Waveform Table A series of numbers used in digital synthesis to describe a waveform.

Books and Articles on MIDI

Anderton, Craig. **The Electronic Musicians Dictionary**. Amsco Pub., NY, 1988

Anderton, Craig. **Electronic Projects For Musicians**, revised edition. Guitar Player Books; Cupertino, CA, 1980

Anderton, Craig. **MIDI For Musicians**, Music Sales Corp.; Chester, NY, 1986

Appleton, Jon and Ronald Perera. **The Development And Practice Of Electronic Music**, Prentice-Hall; Englewood Cliffs, NJ

Boom, Michael. **Music Through MIDI**, Microsoft Press; Redmond, WA, 1987

Casabona, Helen and David Frederick. **Using MIDI**, Alfred Publishing; 1987

Crombie, Dave. **The Complete Electronic Percussion Book**, Amsco Pub., NY, 1987

Crombie, Dave. **The New Complete Synthesizer**, Omnibus Press; London, 1986

Darter, Tom. **The Art Of Electronic Music**, GPI Publications: Cupertino, CA, 1985

De Furia, Steve. **The MIDI Book**, Third Earth Prod., Pompton Lakes, NJ,1986

Devarahi. **The Complete Guide To Synthesizers**, Prentice-Hall; Englewood Cliffs, NJ, 1987

Ernst, David. **The Evolution Of Electronic Music**, Schirmer Books; NY, 1986

Fishman, Jack. **MacBeat's MIDI Guide**, MacBeat, Inc., Santa Fe, NM, 1989

Hurtig, Brent (editor). **"Synthesizers And Computers"** (from the pages of Keyboard Magazine). Hal Leonard Books, Milwaukee, WI, 1987

Milano, Dominic (editor). **"Mind Over MIDI"** (from the pages of Keyboard Magazine). Hal Leonard Books, Milwaukee, WI, 1987

Roads, Curtis and John Strawn. **Foundations Of Computer Music**, MIT Press, Boston, MA, 1985

The MIDI Resource Guide, **"Keyboards"** (from the pages of The Music and Computer Educator). Huntington Station, NY, 1990

Yelton, Geary. **Music and the Macintosh**, MIDI America, Inc., Atlanta, GA, 1989

Educational Resource Information Center (ERIC) Listings

and

Literature Concerning Computer Assisted Instruction

Educational Resources Information Center (ERIC) Introduction

What is ERIC?

"ERIC" is the Educational Resources Information Center. The program began in 1966 and is sponsored by the National Institute of Education. The service provides easy access to educational literature. Listings include articles from periodicals, complete research papers, books, teacher's guides, and other research documents.

Material is funnelled through two main channels within the ERIC system: I Resources in Education (RIE) and II Current Index to Journals in Education (CIJE). The user can determine in which an article appears by checking the Accession Number. Accession numbers beginning with the letters "ED" (educational document) are indexed in the RIE. Accession numbers beginning with the letters "EJ" (educational journal) are indexed in the CIJE.

Why does the user need to know that?

Because articles are accessed differently according to which of those two indexes apply. Read on for details.

I. **Resources in Education (RIE)** provides access to educational documents, research reports, teacher's guides, and books. Materials are complete on microfiche. Users may access the material at any of the locations listed on page 166. (Remember, these articles have an accession number beginning with the letters "ED" for educational document.)

How do I get a paper copy of an RIE listing?

1. If the document is a research report or a book, a local public or university library may have a copy for circulation.

2. Locations listed in this guide will provide the complete microfiche of the desired document. If the location has a microfiche reader/printer you may read and/or get a paper copy of any or all of the pages of interest, but there will be a per page fee for printing. (Many people read the document and select certain pages for their files.)

3. A personal microfiche for a document may be obtained at the University of Washington for 15 cents. Many school districts have microfiche readers to check out, and the microfiche can be turned into paper copy for a per page fee with any reader/printer.

4. The national ERIC office accepts orders for paper copies. The prices for this are listed on the ERIC order form provided in this guide in Appendix J. The form can be mailed to the listed address. Also, anyone may call the toll free number with the Accession Number, and a paper copy can be sent. (Refer to order form for fees. The ERIC customer service department accepts checks, MasterCard, and Visa!)

   The number is: 1-800-227-3742

II **Current Index to Journals in Education (CIJE)** provides access to articles and writings that appear in journals and periodicals. (Remember, these accession numbers begin with the letters "EJ" for educational journal.)

How do I get a copy of a journal or periodical article?

Articles may be accessed only through the actual magazine in which they were published. The ERIC index provides all the necessary information to find the correct periodical in which the article was published.

The Music and Technology Resource Guide provides a list of citations for educational literature related to Music and Technology indexed through the ERIC catalog. The citations provided here were found by searching through the following descriptor:

Music and Computers and Education

Enough information is provided so the user may access the article on microfiche or from the original source. ERIC materials are available through the facilities listed on the following page. Space prohibits the listing of all articles, books, and research reports related to the field of Music and Technology. More listings can be accessed by using the printed indexes or the CD-ROM indexes found at the facilities listed on the following page. Many districts provide professional library services. Take advantage of the wealth of information and creative thought that has taken place in this dynamic field!

Educational Resources Information Center (ERIC) Locations in Washington State

Central Washington University
Library, Documents Department
Ellensburg, WA 98926
(509) 963-1541

Eastern Washington University
Library
Cheney, WA 99004
(509) 359-2263

Educational Service District 123
124 South Fourth Street
Pasco, WA 99301
(509) 547-8441

Educational Service District 189
Learning Resources Center
205 Stewart Road
Mount Vern n, WA 98273
(206) 424-9574

Gonzaga University
Crosby Library
East 502 Boone
Spokane, WA 99258
(509) 328-4220

Seattle Pacific University
Weter Memorial Library
3307 Third Avenue West
Seattle, WA 98119
(206) 281-2228

Seattle Public Library
Education/Psychology/Sociology
1000 4th Avenue
Seattle, WA 98104
(206) 625-4883

Seattle University
Lemieux Library
Broadway and Madison
Seattle, WA 98122
(206) 626-6859

Superintendent of Public Instruction
Resource Information Center
Old Capitol Building FG-11
Olympia, WA 98504
(206) 753-7631

University of Washington
Health/Sciences Library
Online Services Center
Seattle, WA 98195
(206) 543-5530

University of Washington
Suzzallo Library
Seattle, WA 98195
(206) 543-0242

Washington State Library
State Library Building, AJ-11
Olympia, WA 98504
(206) 753-5590

Washington State University
Education Library
130 Cleveland Hall
Pullman, WA 99164
(509) 335-1591

Western Washington University
Wilson Library
Bellingham, WA 98225
(206) 676-3295

Educational Resources Information Center (ERIC) Listings for Music and Technology

AN: EJ398382
AU: Kuzmich, John, Jr.
TI: **New Styles, New Technologies, New Possibilities in Jazz**
PY: 1989
JN: Music Educators Journal; v76 n3 p41-46 Nov 1989

AB: Focuses on the growth of jazz-related ensembles and jazz education. Covers trends that parallel technological developments including electronic keyboards, Musical Instrument Digital Interface (MIDI) systems, the computer, computer assisted instruction, interactive video, and the compact disc. Urges teachers to update their knowledge and experience to keep up with students. (LS)

AN: EJ398381
AU: Feldstein, Sandy
TI: **An Ear to the Past, an Eye to the Future**
PY: 1989
JN: Music Educators Journal; v76 n3 p38-40 Nov 1989

AB: Examines the state of school instrumental music, presenting an optimistic projection for the future. Claims that understanding developments in technology while honoring the past is the key to future success. Encourages the use of computers, portable keyboards, rock music, and television in the classroom to capture students' interest in technology. (LS)

AN: EJ386433
AU: Reimer, Bennett
TI: **Music Education as Aesthetic Education: Toward the Future**
PY: 1989
JN: Music Educators Journal; v75 n7 p26-32 Mar 1989

AB: Argues that the developing computer technologies will allow more people to compose. Contends that this composing ability can be enhanced for more students through the curriculum. Envisions a three-part music program consisting of required and elective courses designed to meet the needs of all students. (GEA)

AN: EJ386386
AU: Reimer, Bennett
TI: **Music Education as Aesthetic Education: Past and Present. First of a Two-Part Series**
PY: 1989
JN: Music Educators Journal; v75 n6 p22-28 Feb 1989

AB: Cites the publication of "Basic Concepts in Music Education," and "Foundations and Principles of Music Education," as the event which compelled music educators to seek guidance from aesthetics. Identifies two fundamental principals of aesthetic education. Concludes that

computer technology and cognitive psychology will have a profound effect on music education's future. (LS)

AN: EJ384614
AU: Jordahl, Gregory
TI: **Teaching Music in the Age of MIDI**
PY: 1988
JN: Classroom Computer Learning; v9 n2 p78-85 Oct 1988

AB: Explores the combination of the microcomputer and a digital synthesizer which use the Musical Instrument Digital Interface (MIDI). Discusses the evolution of MIDI, music classroom applications, and suggestions before purchasing a MIDI. (MVL)

AN: EJ381026
AU: Kassner, Kirk
TI: **Rx for Technophobia**
PY: 1988
JN: Music Educators Journal; v75 n3 p18-21 Nov 1988

AB: States that teachers' fear of using computers and electronic technology in music education may prevent students from reaching their full potential. Includes suggestions for diagnosis and cure of "technophobia." Suggests that using electronic media to teach music will strengthen teaching and stimulate students' love of music. (LS)

AN: EJ376354
AU: Smith, Dorothy
TI: **Technology that Teaches**
PY: 1988
JN: Gallaudet Today; v18 n4 p3-13 1988

AB: The article reviews uses of technology at Gallaudet University for the hearing impaired in such areas as drama, musical training, written interaction via computers, the School of Preparatory Studies, basic computer aided instruction, electronic circuitry, diagnostic tools, interactive videodiscs, and telecommunications. (DB)

AN: EJ375579
AU: Taylor, Jack A.
TI: **Computers in Music and Music Instruction: The Joys of Hardware and the Woes of Software**
PY: 1988
JN: Design for Arts in Education; v89 n5 p50-55 May-Jun 1988

AB: Traces the history of computer usage in the arts, examines how computers are being used in music today, and addresses the state of computer-based music instruction. Assesses available

hardware and software, calling for more innovative and interactive products and a discontinuance of the drillmaster-learning machine approach to computer-based instruction. (GEA)

AN: EJ371147
AU: Placek, Robert W.
TI: **MusicShapes**
PY: 1988
JN: Music Educators Journal; v74 n8 p57-60 Apr 1988

AB: Evaluates MUSICSHAPES, a graphic music construction software program which manipulates sound in terms of pitch, rhythm, timbre, and sequence to help students create complex synthesizer compositions. Intended for ages eight to adult, the program utilizes Apple II computers and additional hardware. Discusses how MUSICSHAPES can be used effectively in the classroom. (GEA)

AN: EJ368195
AU: Feldstein, Sandy
TI: **Technology for Teaching**
PY: 1988
JN: Music Educators Journal; v74 n7 p35-37 Mar 1988

AB: Offers an overview of the use of computers and electronic keyboards or synthesizers in school-based music instruction. Contends that teachers must keep abreast of new developments by attending conventions, reading trade journals, and visiting local music stores. (JDH)

AN: EJ362628
AU: Solomon, Gwen
TI: **Computers, Networks, and Desegregation at San Jose High Academy**
PY: 1987
JN: Electronic Learning; v7 n3 p14,18 Nov-Dec 1987

AB: Describes magnet high school which was created in California to meet desegregation requirements and emphasizes computer technology. Highlights include local computer networks that connect science and music labs.

AN: EJ361199
AU: DeLoughry, Thomas J.
TI: **Computers Are Giving Music Educators New Sounds and New Ways to Teach**
PY: 1987
JN: Chronicle of Higher Education; v34 n8 pA14-16 Oct 21 1987

AB: Computers and synthesizers are being used to create new sounds that cannot be played on traditional instruments. Computers and instructional software are also helping to teach students to compose music, to analyze scores, to read music, and to do ear training drills. (MLW)

AN: EJ354439
AU: Balzano, Gerald J.
TI: **Reconstructing the Curriculum for Design: Music, Mathematics, and Psychology**
PY: 1987
JN: Machine Mediated Learning; v2 n1-2 p83-109 1987

AB: Explores the use of computers in design-oriented learning and the need to reconstruct curriculum to accommodate the new technology. Music is highlighted and a musical computer design environment called Streamer is described. Implications of a design-oriented computer environment for programming and the structure of classrooms are discussed. (Author/LRW)

AN: EJ346080
AU: Rumery, Kenneth R.
TI: **Computer Applications in Music Education**
PY: 1986
JN: Technological Horizons in Education; v14 n2 p97-99 Sep 1986

AB: Discusses the results of a survey taken of postsecondary schools with regard to the use of computers in music education programs. Indicates that a significant number of institutions have, or plan to have, music computer facilities. Describes computer uses in instruction, research, and administration of music education programs. (TW)

AN: EJ342662
AU: Higgins, John
TI: **Integrating (Computers) with (Foreign Language) Classwork: A Fable**
PY: 1986
JN: System; v14 n2 p215-19 1986

AB: Describes the growth of computer-assisted language teaching in fable form by relating the story of how music became a method of language instruction in a fictional country. The reactions to and problems with such a method of teaching and how the method was incorporated into the school system are described. (SED)

AN: EJ309211
AU: Gollnick, Doris J.
TI: **An Orchestra in Your Lap**
PY: 1985
JN: Music Educators Journal; v71 n5 p30-32 Jan 1985

AB: How computerized electronic keyboards can be used in elementary music classrooms is discussed. Tips for buying the right keyboard are also presented. (RM)

AN: ED308984
TI: **Oregon Kindergarten Guide: 1989**
PY: 1989

AB: The purpose of this guide is to help teachers and elementary principals create kindergarten environments designed to meet children's developmental needs. Section 3 explores the kindergarten curriculum in the areas of English, language arts, science, art, music, mathematics, social studies, computers, combination K-1 and K-1-2 classes, and transitions. The fifth section provides bibliographies of general books and publications related to areas of the curriculum. Appendices A and B provide several lists of books for students, parents, teachers, and administrators. (RH)

AN: EJ308665
AU: Medsker, Larry
TI: **A Course in Computers and Music**
PY: 1983
JN: Collegiate Microcomputer; v1 n2 p133-40 May 1983

AB: Describes an undergraduate course on computers in the field of music. Illustrations of what can be presented are provided by descriptions of course content related to computer-aided music analysis, computer music, and computer-aided composition. An annotated bibliography is presented as a resource to those preparing to introduce such a course. (MBR)

AN: ED307856
TI: **The 1989 Educational Software Preview Guide**
PY: 1988

AB: Developed to help educators locate microcomputer software programs they may want to preview for students in grades K-12, this guide lists commercially available instructional software programs that have been favorably reviewed by members of the Educational Software Evaluation Consortium. Programs are arranged alphabetically by title within curriculum areas: music is included. Information provided for each program includes the title, publishers, computer and instructional mode specifications, grade level(s), price, and a very brief annotation. A list of review participants, abbreviation keys, an alphabetical list of titles, publishers' addresses, 11 articles and a policy statement on software use, review, and evaluation, eight of which are reprints from Computers in Composition Instruction or The Computing Teacher are also included. (EW)

AN: ED304325
TI: **East Coast Logo Conference '87 Proceedings (Arlington, Virginia, April 2-4, 1987)**
PY: 1987

AB: A total of 59 papers are compiled into these proceedings. The papers are organized alphabetically by each author's last name. A directory of speakers' names and addresses is included. In the index of this publication, papers are listed by session. General sessions are listed first, followed by 21 regular sessions: (1) "Logo and Music"

AN: ED302178
TI: **District Level Plans: Cincinnati Country Day School, Cincinnati, Ohio**
PY: 1986
JN: Learning Tomorrow: Journal of the Apple Education Advisory Council; n2 p125-168 Win 1986

AB: This report also discusses six basic components of the implementation process. The fourth report presents a tentative eight- to ten-year computer technology plan for the Cincinnati Country Day School in a chart which shows both past and future computer use in the school under the headings of hardware, software, staff development, curriculum, music/art/dance. (EW)

AN: ED297703
TI: **Software Selection, Evaluation and Organization [and] Software Reviews. Article Reprints**
PY: [1985]
JN: Computing Teacher; 1982-1986

AB: This collection of reprints from The Computing Teacher contains 11 articles on the selection, evaluation, and organization of software published between August 1983 and March 1986, as well as more than 20 reviews of educational software packages published between December 1982 and June 1986. The articles are: (1) "The New Wave of Educational Software" (Ludwig Braun); (2) "How Do Teacher and Student Evaluations of CAI Software Compare?" (Barbara Signer); (3) "The DISC Model for Software Evaluation and Support Material Design" (Shelly Yorke Rose and Carol Klenow); (4) "Cooperative Learning: One Key to Computer Assisted Learning" (David W. Johnson and Roger T. Johnson); (5) "Teacher + Computer + More Learning" (Cathy Chmielowski Carney); (6) "Teaching with Your Fingertips!" (Sharon Burrowes); (7) "Selecting Computer Software--We Take It Seriously!" (Jean Donham); (8) "The Software Selection Process: Some Management Questions" (Anne Batey); (9) "Enrichment Courseware for Middle School Mathematics" (Lois Edwards); (10) "Doing Science" (Richard C. Adams); and (11) "Project DISC: Developing Indian Software Curriculum" (Carolyn Jacobi and Carl Edeburn). The computer software programs reviewed are designed for use in teaching problem-solving and reasoning skills; Music is included. Each review provides the name of the software program, the name of the reviewer, the producer's name, target audience, hardware requirements, and cost. (DJR)

AN: EJ295994
AU: Schwartz, Richard
TI: **Roll Over, Schoenberg: A Computer-Generated Tone Row**
PY: 1984
JN: Music Educators Journal; v70 n8 p46-47 Apr 1984

AB: Describes software programs in BASIC which teach music, using the Apple, Timex Sinclair 1000, TRS-80, and Commodore computers. Music educators should incorporate computer instruction into the curriculum to teach theory, history, and even practical techniques of music. Computers will never supersede the teacher, who must guide and motivate. (CS)

AN: EJ293866
TI: **Middle Grades Ideas**
PY: 1984
JN: Classroom Computer Learning; v4 n7 p74-75 Feb 1984

AB: Presents activities that focus on computer memories, accuracy of computers, making music, and computer functions. Instructional strategies for the activities and program listings (when applicable) are included. (JN)

AN: EJ293865
TI: **Early Grades Ideas**
PY: 1984
JN: Classroom Computer Learning; v4 n7 p70-71 Feb 1984

AB: Presents computer and computer-related activities for young students. These include an activity demonstrating a sorting procedure for punched cards similar to those used by computers, a short Atari music program, an activity involving "bar codes" found on commercial products, and others. (JN)

AN: ED291627
AU: Brinkley, Robert C.
TI: **Integrating a Music Curriculum into an External Degree Program Using Computer Assisted Instruction**
PY: 1986

AB: This paper outlines the method and theoretical basis for establishing and implementing an independent study music curriculum. The curriculum combines practical and theoretical paradigms and leads to an external degree. The computer, in direct interaction with the student, is the primary instructional tool, and the teacher is involved in indirect consultative interaction with the student.

AN: ED290436
TI: **The Role of the Computer in Education. Proceedings of the Annual Meeting (7th, Arlington Heights, Illinois, February 18-20, 1987)**
PY: 1987

AB: The 47 papers in these proceedings describe computer technology and its many applications to the educational process. Programming languages such as Show and Tell and Logo are also reviewed. Additional papers discuss the use of computers to teach music to normal, gifted, and handicapped students. Other educational applications included laser videodisc and computer based instruction.

AN: ED290230
TI: **100 Winning Curriculum Ideas**
PY: 1987

AB: The editors of The American School Board Journal and The Executive Educator magazines recently invited school leaders from across North America to send in curriculum ideas that work. From among the 1,026 entries that were submitted, a panel of judges selected 100, which are published in this special report. Criteria for selection included (1) evidence of success in measurable instructional outcomes within a specified budget; (2) evidence that the program could be used elsewhere in a comparable subject area or grade level; and (3) evidence that the program is relevant to the most pressing curricular and instructional needs of schools throughout North America. Entries are included for music/arts. Each entry includes a program title, the name and address of the school where it was developed, a brief description, and a contact person's name and address. (TE)

AN: EJ285795
AU: Horlacher, Wes (and others)
TI: **Cultivating Creativity - How Computers Can Help**
PY: 1983
JN: SoftSide; v6 n10 p34-35 Sep 1983

AB: Discusses how microcomputers can aid in higher-level creative processes, enabling students to experience the joy/fulfillment of spontaneous creative expression. "The Magic Melody Box" (Atari) program, in which users choose a rhythm and draw a melody line, is used as an example to illustrate the computer's potential in this area. (JN)

AN: ED284764
AU: Holmes, Glyn, Ed.
TI: **Computer-Assisted Instruction. Special Double Issue**
PY: 1984
JN: Computers and the Humanities; spec iss v18 n3/4 Jul-Dec 1984

AB: This booklet presents evidence to support the idea that distinctions between the instructional and research applications of the computer are becoming blurred. The issue includes contributions from authors who are at the forefront of computer-assisted instruction (CAI) development in their respective fields. An attempt is made to represent most disciplines in the humanities, with emphasis included for music. All of the articles accomplish at least one of three functions: (1) constitute an overview of CAI in the discipline; (2) focus on a specific representative contribution of the computer; or (3) state more philosophically how computers

can be relevant to their field. Currently, CAI is a field in the process of maturation. Obstacles to growth include the need for systematization and standardization of courseware, the inherent conservatism of the educational system, and the need for improved hardware. The issue concludes with a book review of current writings on computers and education. (RSL)

AN: EJ281769
AU: Peelle, Howard A.
TI: **Computer Metaphors: Approaches to Computer Literacy for Educators**
PY: 1983
JN: Weaver of Information and Perspectives on Technological Literacy; v1 n2 p10-11 Spr 1983

AB: Describes several different metaphors to help educators develop constructive approaches to understanding computer applications for teaching and learning. These include the computer as person, tool, brain, map, glass box, vitamin, palette, mentor, and catalyst. Computer-as-palette, for example, considers computer use in facilitating human creativity in arts, music, and other areas. (JN)

AN: EJ275332
TI: **Glossary of Computer Terms**
PY: 1983
JN: Music Educators Journal; v69 n5 p79-81 Jan 1983

AB: Presents a glossary of 146 terms related to computers and their application in education. (KC)

AN: EJ275331
TI: **Industry Resources Directory**
PY: 1983
JN: Music Educators Journal; v69 n5 p75-77 Jan 1983

AB: Lists 40 manufacturers of software, computers, synthesizers, and other electronic devices, and compositions for computer, tape, and electronic instruments. Names, addresses, and type of product manufactured are included. (KC)

AN: EJ275330
TI: **Databank: Experts on Educational Uses of Computers**
PY: 1983
JN: Music Educators Journal; v69 n5 p71-73 Jan 1983

AB: Presents a directory of 46 organizations, agencies, and individuals with expertise in the educational applications of computers. Names, addresses, and brief descriptions are provided. (KC)

AN: EJ275322
AU: Taylor, Jack A.
TI: **Computers as Music Teachers**
PY: 1983
JN: Music Educators Journal; v69 n5 p43-45 Jan 1983

AB: Peripheral components for music instruction include a music keyboard, a digital music synthesizer, and music listening devices. Computers can teach sight-singing, playing an instrument, dictation, and composition. Computer programs should be interactive with students. (KC)

AN: EJ275319
AU: Franklin, James L.
TI: **What's a Computer Doing in My Music Room?**
PY: 1983
JN: Music Educators Journal; v69 n5 p29-32 Jan 1983

AB: Computers and humans use similar methods to process information. Advantages of computer-assisted instruction (CAI) include individual instruction, immediate positive reinforcement, high motivation, consistency, and organized instruction. Disadvantages of CAI include inadequate instructional programs, time needed to develop software, software/hardware incompatibility, and paucity of good music instructional programs. (KC)

AN: EJ269084
AU: Hicks, Charles Eugene
TI: **Team Teaching: Sharing the Wealth (of Talent)**
PY: 1982
JN: Music Educators Journal; v69 n3 p42-43 Nov 1982

AB: Discusses how the use of appropriate scheduling techniques and team teaching can improve the quality of music education. The use of computers to reduce competition between music and other unique classes is suggested. With properly scheduled classes, a cooperative team of music teachers can enrich the entire music curriculum. (AM)

AN: ED265831
TI: **Extending the Human Mind: Computers in Education Proceedings of the Annual Summer Computer Conference (4th, Eugene,Oregon, August 19-21, 1985)**
PY: 1985

AB: Focusing on ways in which Oregon educators have made use of computers, the 47 papers in this proceedings show substantial progress in some areas and point out some unanswered research, instructional, learning, and management questions. The contents are divided into three general areas: Curriculum Applications, Learning and Teaching, and Classroom and School Management. Each major section is further sub-divided into topic areas which contain from one to four papers each: (8) Music; An author index is provided. (JB)

AN: ED263850
AU: Reitenour, Steve
TI: **Music, Higher Education, and Technology. Annotated Bibliography**
PY: [1985]

AB: An annotated bibliography on music, higher education, and technology includes 27 journal articles and 6 books, most dated 1980 or later. The following topics are covered: resource groups with expertise in the music educational application of computers, manufacturers dealing with educational technology products, information on the National Consortium for Computer-Based Music Instruction, information on computer software available for music educators to use in the classroom, advantages/disadvantages of using the Synclavier II as a teaching device, the Graded Units for Interactive Dictation Operations system (a computer-based ear-training and music theory program), a classroom simulator used to train music teachers about the problems of performance preparation, information on the development of computer-assisted instruction (CAI) since the late 1960s, the importance of computer literacy by music teachers, the application of CAI at nine National Association of Schools of Music institutions, research applications in music CAI, the use of computer technology to the nontechnical music educator, an update on synthesizers, alternatives to CAI, teacher training and high technology, microcomputer-based music teaching, televised music instruction, programmed teaching, and electronic music for young people. (SW)

AN: ED262514
AU: McClellan, Elizabeth
TI: **Technology for the Gifted and Talented, 1985 Digest**
PY: 1985

AB: The digest examines issues related to the use of technology with gifted and talented students. A final computer application, as a tool for facilitating independent learning, is explored in terms of data processing for student research, word processing, art and music creation, authoring systems, and networking. (CL)

AN: ED248850
AU: Proud, Jim
TI: **LOGO Bibliography**
PY: [1984]

AB: This bibliography lists 168 articles, books, and instructional materials for anyone interested in learning more about the LOGO programming language. Items listed range from research reports and program descriptions to lesson plans and activities. Specific titles include "LOGO Music."

AN: ED227824
AU: Olivero, James L.
TI: **Software Descriptions. Micro-computers: Atari, Apple, PET, TRS-80**
PY: 1982

AB: Each of the more than 200 educational software programs developed by both commercial and public domain sources which are described is intended for use with one of the four microcomputers most frequently used for instructional purposes - Atari, Apple, PET, and TRS-80. These descriptions are offered as a service for those who are just beginning to learn about microcomputer applications and are not evaluations or recommendations. To promote effective use of the catalog, programs are listed by subject area, including music. Grade level classifications are given, and descriptions are listed by grade level clusters (such as K-3), beginning with the lowest grade cluster and progressing to grade 12. Descriptions are organized in alphabetical sequence when there is more than one within a single cluster. Title, subject, grade level, computer system, description, and approximate cost are listed for each program. Both games and instructional programs are included. (LMM)

AN: EJ255506
AU: Killam, Rosemary N. (and others)
TI: **Computer-Assisted Instruction in Music**
PY: 1981
JN: Pipeline; v6 n2 p3-4 Fall 1981

AB: The use of computer assisted instruction (CAI) in music education at North Texas State University is described. A special authoring language for CAI music lessons has been developed. (MP)

AN: EJ215482
AU: Hofstetter, Fred T.
TI: **Microelectronics and Music Education**
PY: 1979
JN: Music Educators Journal; v65 n8 p38-45 Apr 1979

AB: This look at the impact of microelectronics on computer-assisted instruction (CAI) in music notes trends toward new applications and lower costs. Included are: a rationale for CAI in music, a list of sample programs, comparison of five microelectronic music systems, PLATO cost projections, and sources of further information. (SJL)

AN: EJ198324
AU: Taylor, Jack A.; Parrish, James W.
TI: **A National Survey on the Uses of, and Attitudes Toward Programmed Instruction and Computers in Public School and College Music Education**
PY: 1978
JN: Journal of Computer Based Instruction; v5 n1-2 p11-21 Aug-Nov 1978

AB: Surveys the role of educational technology - specifically programmed instruction and the computer - in music education across the United States. Public school attitudes and employment practices and the attitudes and advising practices of college music departments are discussed as they relate to this technology. (RAO)

AN: EJ169042
AU: Gilbert, John V.
TI: **Electronic Music: A New Aesthetic**
PY: 1977
JN: New York University Education Quarterly; 8; 4; 22-8
AB: Electronic music challenges our ears as well as our culture and our methods of teaching. The author, a composer and New York University professor, explains electronic music as a medium of expression, tells how it is produced, and illustrates its use in the classroom. (Editor/RK)

AN: EJ147528
AU: Beckwith, Sterling
TI: **The Well-Tempered Computer**
PY: 1976
JN: Music Educators Journal; 62; 7; 32-6
AB: From a supertoy for the gifted to a musical sketchpad for the ordinary student--the computer is becoming an intriguing new learning tool. (Editor)

AN: ED190112
AU: Stein, Evan, Comp.
TI: **The Use of Computers in Folklore and Folk Music: A Preliminary Bibliography**
PY: 1979

AB: This bibliography on the use of the computer in the analysis and classification of folklore and folk music cites 107 titles of journal articles, books, and other publications gathered from worldwide sources. Countries represented include Africa, China, Czechoslovakia, Denmark, England, Finland, France, Germany, Haiti, Holland, Hungary, Indonesia, Latvia, Poland, Rumania, Russia, Spain, and Turkey, as well as the United States. Titles are in the language of publication. (RAA)

AN: ED175449

TI: **Mission of the Future. Proceedings of the Annual Convention of the Association for the Development of Computer-Based Instructional Systems. Volume III: Users Interest Groups (San Diego, California, February 27 to March 1, 1979)**

PY: 1979

AB: The third of three volumes of papers presented at the 1979 ADCIS convention, this collection includes 30 papers presented to special interest groups--implementation, minicomputer users, National Consortium for Computer Based Music Instruction, and PLATO users.

A Review of Literature Concerning Computer Assisted Instruction in Music

by
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The goal of this section is to review some of the available literature regarding Computer Assisted Instruction in Music (CAIM). We hope this information will be helpful in presenting grant requests for equipment and software, and for personal exploration on how best to use CAIM.

The literature has been divided into nine categories:

(1) Introductory Articles
(2) Rationales
(3) Histories
(4) Software Reviews
(5) Descriptions of School Uses
(6) Studies
(7) Curricula
(8) MIDI Applications
(9) Buyer's Guide

(1) Introductory Articles and Books

These articles and books provide an excellent introduction to the field of CAIM.

Aebischer, D. W., and Kassner, K. (1985). **Computer assisted instruction in music: An interview.** Oregon Music Educator, 38(1) Win 86, 10-11.
Common questions expressed by music educators contemplating using CAIM and some suggested answers by a music teacher experienced in using CAIM with students.

Chopp, J. M. (1986). **The computer: Integrating technology with education.** Music Educators Journal, 72(4) Dec 86, 22-25.
Explains some of the basics of CAIM, including scheduling and choosing software.

Ehle, R. C. (1986). **Musicians and computers.** American Music Teacher, 35 April/May 86, 30-31+.
An introductory article describing four categories of computer music functions: non-musical, music entertainment, music education, professional (commercial) music applications.

Friend, D., Pearlman, A. R., and Piggott, T. G. (1974). **Learning Music With Synthesizers.** 213 pp. Hal Leonard Publishing Corporation.
An excellent, though dated, introduction to principles of sound synthesis with special operating instructions for the ARP Odyssey.

Holland, S. (1984). **Synthesizers: A primer for teachers.** Clavier, Dec 23 84, 43-46.
An excellent first reading for the career piano teacher interested in learning about synthesizers. Includes explanation of some jargon, terms, a short history of synthesizer development, and teaching suggestions.

Hunt, D. C. (1986). **The many uses of computers.** Music Educators Journal, 72(4) Dec 86 pp 46-47.
Discusses several uses of computers: administrative tool, music theory instructor, Music history materials, music composition, improvization, sound synthesis, performance, performance skills.

Mills, D. L. (1986). **What are we going to do about those synthesizers?.** Clavier, 25 Apr 86, 38-9.
An introductory article slanted toward teachers of private piano. Contains an excellent summation of the advantages and limitations of synthesizers.

Placek, R. W., and Jones, D. L. (1986). **Getting Started: Designing and Programming.** Music Educators Journal, 72(4) Dec 86, 33-36.
Step-by-step instructions on programming a music lesson using SuperPILOT.

Rudolph, T. E. (1984). **Music and the Apple II** 175 pp. Drexel Hill, PA: Unsinn Publications, Inc.
Good general introductory book to music and computing with appendixes of software lists for variety of applications. matrix-format comparison of different programs.

Rumery, K. R. (1985). **Bringing Your Classroom On-Line.** Music Educators Journal, 71(5) Jan 85, 21-24.
A broad general introduction to the capabilities of computers as tools for musical applications with listing of early programs for CAI using Apple II and other computers. Ends with explanation of PILOT.

Taylor, J. A. (1981). **Introduction to computers and computer based instruction in music.** Tallahassee, FL: Center for Music Research, Florida State University
An early book describing hardware and software for CAIM. Part 2 offers a short historical perspective of CAIM from the 1950s.

Williams, D. B. (1984). **Pick Your Own Level of Computer Literacy.** Soundings, 4(2) Win 84-85, 7-8.
A concise article discussing need to overcome basic fear of computers and computer jargon by choosing from three levels of computer involvement: Buy-and-Run, Fill-Your-Own, and Roll-Your-Own.

(2) Rationale

These articles provide statements supporting the use of CAIM.

Allvin, R. L. (1971). **Computer-assisted music instruction: A look at the potential.** Journal of Research in Music Education, 19(2) Sum 71, 131-143.
Ability to individualize instruction with appropriate sequencing, pacing, and adjusting to individual differences. Examples of CAIM.

Appleton, J. H. (1987). **Universities' music departments must adapt to the revolution brought about by technology.** Chronicle of Higher Education 33, Jun 10, 1987, 40-41.
An overview article describing the impact of CAIM and the need for college music teachers to use technology.

Choksy, L, Abramson, R. M., Gillespie, A. F., and Woods, D. (1968). **Teaching music in the twentieth century.** 343 pp. Englewood Cliffs, NJ: Prentice-Hall, Inc.
Though a book mainly about non-computers, Choksy includes a succinct summative statement of rationale for CAIM (pp 22-23).

Collins, D. (1986). **Hi-Tech Cul-de-Sac?** Educational Media International, 33 Jun 86, 76-80.
A discussion of arts-vs.-technolog, issues including the seeming incompatibility of using computers (mainly Skinnerian) to teach artistic (aesthetic) principles (subjective experience).

Deihl, N. C. (1970). **Computers for instrumental music.** Music Journal, 28(4) Apr 1970, 57.
A very early article advocating CAIM use with rationale statements still seen in articles today (individual pace, immediate feedback, branching to special help, etc).

Dunn, S., and Dunn, C. (1988). **Computer phobia: still on the mind of American business.** Puget Sound Computer User Magazine, Aug 88, 1, 20-21.
An expose of fears toward computers held by businessmen: especially higher level executives with similarities to educators.

Embry, D. (1987). **Music computer-assisted instruction.** American Music Teacher, June 27, 1987.
A general overview article describing some of the capabilities of CAIM, especially drill and practice.

Feldstein, S. (1988). **Technology for Teaching.** Music Educators Journal, 74(7) Mar 88, 35-37.
Excellent overview of technology in education and discussion of why teachers should get involved (rationale).

Frolick, J. C. (1987). **Keyboard Investments Pay in Interest.** Oregon Music Educator, 39(2) Spring 1987, 5-7.
A review of keyboard uses in Oregon and positive effects on students, parents, principals re: student attitudes toward music and their accomplishments and list of schools/teachers to visit to see in action.

Gangware, E. R. (1985). **Turn on the power.** School Musician, 56 Apr 85, 1.
A brief history of electronic benefits to music education leading to advocacy of CAIM use.

Gollnick, D. J. (1984) **An Orchestra in Your Lap.** Music Educators Journal, 71(5) Jan 85, 30-32.
Discusses advantages of using synthesizers in general music classroom: portability, volume control, eye contact, variety of sound, rhythmic backgrounds, chordal accompaniments. Buying suggestions, lessons.

Grushcow, B. (1985). **Computers in the Private Studio.** Music Educators Journal, 71(5) Jan 85, 25-29.
Discussion of advantages, hardware, software, financing, suggested further readings, and a short directory of resources.

Isaak, T. J. (1987). **Computers and Music Teachers.** Computer Curriculum Resources Magazine, Oct 87, 1-12.
An excellent overview/rationale for using computers to teach music. Contains a short software directory (mostly game formats) and several excellent sample lesson plans with CAIM.

Kassner, K. (1988). **Rx for Technophobia.** Music Educators Journal, 75(3) Nov 88, 18-21.
A rationale exposing some common fears about using computers in the music classroom and suggestions for overcoming them.

Kulik, J. A., Kulik, C. C., and Bangert-Drowns, R. L. (1985). **Effectiveness of computer-based education in elementary schools.** Computers in Human Behavior, 1, 59-74.
A meta-analysis of 32 comparative studies showing computer-based education has generally had a positive effect on the achievement of elementary students.

McGreer, D. M. (1984). **The research literature in computer assisted instruction.** Update, 1984, 12-15.
An overview of findings from published literature examining the question: Do students learn more using a computer than other student using traditional instruction materials alone? Good dissertation background.

Miller, M. (1986). **Arousing student interest.** Music Educators Journal, 72(4) Dec 86, 48.
Argument in favor of using computers to teach music

Pembrook, R. G. (1986). **Some Implications of Students' Attitudes Toward a CB Melodic Dictation program.** Journal of Research in Music Education, 34(2), Sum 1986, 121-133.
Report of a survey of student attitudes toward a computer-based melodic dictation program (MEDICI) and suggestions for construction of future CBI programs. Excellent bibliography follows.

Riggs, R. L. (1985). **Computers: A music teacher's asset.** The Instrumentalist, 40 Oct 85, 40+.
A well-written overview introduction of what computers can do for the music teacher. "No teacher is more overworked than the successful music teacher. No one in the teaching profession has a greater need."

Voorhees, J. L. (1986). **Music in a New Age: The Challenge of Electronics.** Music Educators Journal, 72(2) Oct 86, 32-36.
Discusses some ramifications of using technological innovations in performance (technique and aesthetics) and in education (what remains relevant to teach?). "If computers can do it, it isn't art."

Wittlich, G. E. (1983). **Computers and music education.** The School Musician, Nov 83, 38-39.
An introductory article containing good rationale statements for CAIM.

(3) History

These articles provide information regarding the development of CAIM since the 1950s.

Anderton, C. (1988). **Twenty Great Achievements in Twenty Years of Musical Electronics.** Electronic Musician Magazine, 4(7) Jul 88, 28-30, 33, 36-38, 40, 42-47, 50, 52, 55-56.
An extremely long article compiled by Anderton consisting of anecdotal accounts of advances in electronic music by the people who made them. Interesting history, but overly detailed and folksy.

Anonymous. (1983). **Milestones in Computer Music Instruction.** Music Educators Journal, 69(5) Jan 83, 40-42.

Bales, K., (Ed.). (1985). **Newsletter of The Association for Technology in Music Instruction,** Aug 85, 4. Omaha, NB: Association for Technology in Music Instruction.
Report of CAI presentations at MENC Eastern Regional Conference, 1985 report of survey by Kenneth Rumery on CA use, product reviews.

Campbell, A. G. (1986). The Musical Apple II The Electronic Musician, 2(10) Oct 86, 50, 52, 55, 56, 88.
A short history of musical applications of the Apple II computers. Early music applications include Mountain Computer Music System (pre-MIDI), Soundchaser, Alphasyntauri, Decillionix DX-1; and current MIDI.

Doerksen, D. P. (1972). **Development of individualized electronic rhythmic instruction.** 87 pp. Dissertation, University of Oregon.
An explanation of the construction, development, and use of an electronic rhythm-teaching machine, the Tempus I and results from its field test. Not a computer as such, but an antecedent.

Eddins, J. M. (1981). **A brief history of computer-assisted instruction in music.** Symposium, 21(2).
Discusses hundreds of studies comparing programed instruction and computer-based instruction materials with "traditional" approaches.

Robinson, R. L. (1987). **Uses of computers in music education: Past, present, and future.** Update 1987, 12-15.
A brief history of CAIM, summary of current CAIM, and projections about the future. "Music teachers should not look for a way for the computer to do their job, but to help them do their job more efficiently."

Rumery, K. R. (1986). **Computer applications in music education.** T.H.E. Journal, Sep 86, 97-99.
Results of survey of postsecondary school regarding use of computers in music instruction. Calls for broadening use of computers to cover more music subjects; i.e., history, literature, jazz, counterpoint.

(4) Software Reviews

These sources describe and evaluate many CAIM programs.

Anonymous. (1984). **Musical Microworlds.** Popular Computing Magazine, Aug 84, 94.
Describes features of Songwriter, Musical Ideas, Musicalc I, Music Construction Set, MusicLand, and Music Designer II.

Boody, C. G. (Ed.). (1989). **Courseware Directory 89-90 of the Association for Technology in Music.** 100 pp. Columbus, OH: Association for Technology in Music Instruction.
The most complete directory and description/review of software for music instruction extant, with lists of selected specialized music hardware, list of books, journals, videos, etc. A MUST-HAVE BOOK.

Boody, C. G. (1988). **Floppy Discography: Magic Piano.** Music Educators Journal, 74(6) Feb 88, 104-107.
Description of Magic Piano program: drills of melodic and rhythmic dictation for third grade to adult. Students play back heard pitches on Apple II number keys, heard rhythms on the spacebar.

Boody, C. G. (1988). **Floppy Discography: Deluxe Music Construction Set and Concertware Plus.** Music Educators Journal, 74(7) May 88, 55-57.
Description, comparison, and contrast of two composing/printing program. Each allow step entry of musical notation from the computer keyboard and will play back composed melodies (Concertware has MIDI) and print.

Coffman, D. D., and Smallwood, D. (1986). **Some Software Cures for the Rhythm Blues.** Music Educators Journal, 72(4) Dec 86, 40-43.
Review of some software for teaching rhythm: including ECS: Flash Cards, Patterns in Rhythm; TAP: Rhythmic Dictator, Toney, etc.

Dames, J., and Susu-Mago, D. (1987). **The Apple IIGS and KidsTime II.**
The Instrumentalist, 42 Sept 87, 86-89.
An introductory article describing the Apple IIGS and a program review of KidsTime II, a program designed for young children. Contains two programs: note identification and creative changes.

Electronic Courseware Systems. (1986). **Instructional Software Catalogue.** 23 pp. Champaign, IL: Electronic Courseware Systems.
Brief descriptions of their current products and prices plus their software for math, language arts, and utilities and products other than ECS which they market.

Hofstetter, F. T. (1985). **Computers in the curriculum: Art and music.** Electronic Learning, May 85, 45-47.
A succinct article describing four programs useful for composing with students: Songwriter, Music Construction Set, Musicland, and Making Music on Micros.

Hofstetter, F. T. (1986). **Interactive Videodisc Chapters from Computer Literacy for Musicians,** 1-16, 149-161, 277-289. Englewood Cliffs, NJ: Prentice-Hall.
Technical chapters describing video-disc and programming instructions for enabling videodisc creative applications. List of music currently available on videodisc arranged by category.

Isaak, T. J., Erickson, F. J., and Vonk, J. A. (1986). **Micros and Music: Lesson Plans, A Directory of Software.** Holmes Beach, FA: Learning Publications, Inc.
An introductory book with sample lessons plans and an extensive annotated discography arranged by concept/skill focus and a section on evaluating software for learning outcomes.

Jones, D. L. (1987). **Floppy Discography: Uniform Manager Program.** Music Educators Journal, 74(3) Nov 87, 67-71.
Description of dedicated data base for managing uniform parts in inventory and assisting in uniform assignment and check-in. BEWARE: AppleWorks could easily duplicate these functions with less cost.

Kuzmich, J., Jr. (1986). **Tuning software: Applied ear-training!** The School Musician, 58 Nov 86, 4-7.
A rationale for using a tuning program, discussion of various capabilities of computers, instructional suggestions, and a short list and description of tuning programs with prices, addresses, etc.

Kuzmich, J., Jr. (1984). **Computers Today: An Economical Way to Start.** The Instrumentalist, Nov 84, 36-39, 98-104.
Suggestions for previewing software for the very beginner with descriptions of software programs for theory, notation, tuning, composition, instrumental fingering, teacher utilities, and marching.

Kuzmich, J., Jr. (1986). **How to Organize a Computer-Based Music Curriculum.** 6 pp. unpublished manuscript.
An outline of topics discussed at author's clinics and a good introductory software diskography arranged by level and need of peripheral board(s) and a list of addresses of software publishers.

Lowe, D. R. (1988). **Floppy Discography: Orchestral String Teacher's Assistant.** Music Educators Journal, 74(5) Jan 88, 65-67.
Description of Swan string fingering program.

MECC Minnesota Educational Computing Consortium Catalogue: Music Theory, Feb 81, 127 pp. St. Paul, MN: Minnesota Educational Computing Consortium
Listing of MECC programs available with detailed descriptions, sample screen pictures, and record-keeping charts. Brief rationale. For the Apple II series.

Miller, J. (1985). **Personal Composer.** Computer Music Journal, 9(4) Winter 1985, 27-37.
Description of the Personal Composer software for IBM including: Edit Mode, MIDIGraphics Mode, Recorder Mode, Channel Names Mode, and Sound Librarian Mode. Includes table of Edit Mode Commands.

Mix Publications, Inc. (1988). **The Mix Bookshelf Catalogue,** Summer 88, 67 pp. Emeryville, CA: Mix Publications, Inc.
A trade catalogue with descriptions of hundreds of books and software for sale having to do with computer assisted instruction, MIDI, sequencing, etc. On p. 31: handy chart of MIDI by application and composition.

Moore, H., and Brady, H. (1986). **Kids can write music!** Classroom Computer Learning, May 86, 12-15.
An introductory article reviewing six music composition programs: Magic Piano, Rock'n'Rhythm, Music Construction Set, The Music Studio, Bank Street Musicwriter, and the Music Shop. Comparison chart.

Placek, R. W. (1985). **Choosing the Best Software for your Class.** Music Educators Journal, 72(1) Sep 85, 49-53.
Excellent description of what to look for in good software, how to use it, and a short directory of software for a variety of computers.

Placek, R. W. (1985). **Floppy Discography: Clef Notes.** Music Educators Journal, 72(1) Sep 85, 54-55, 57.
Description of Clef Notes (ECS): drill on placing computer selected pitches on various staves. Students move the notes with the arrow keys.

Placek, R. W. (1985). **Floppy Discography: Micro-Trumpet.** Music Educators Journal, 72(2) Oct 85, 20-23.
Description of MMI Micro-Trumpet with valve simulator.

Placek, R. W. (1985). **Floppy Discography: Basic Musicianship--An Intro to Music Fundamentals w/CAI.** Music Educators Journal, 72(3) Nov 85, 14-17.
Description of package for teaching music fundamentals geared for prospective music majors, future elementary classroom teachers, etc. 180-page sequential workbook + 43 programs for $27 for Apple II

Placek, R. W. (1985). **Floppy Discography: Practical Music Theory.**
Music Educators Journal, 72(4) Dec 85, 8-11.
Description of Practical Music Theory by Alfred Pub.: six diskettes, and three workbooks. Comprehensive course in music fundamentals including harmonization of melodies in major and minor keys. 84 concepts.

Placek, R. W. (1986). **Floppy Discography: Mr. Metro Gnome/Rhythm II.** Music Educators Journal, 72(5) Jan 86, 17-19.
Description of Mr. Metro Gnome program: rhythm perception program. This is second of series of four diskettes of increasing difficulty. Students learn symbols and tap written rhythms on space bar.

Placek, R. W. (1986). **Floppy Discography: Tuner: Intonation Drill.** Music Educators Journal, 72(6) Feb 86, 18-21.
Description of Tuner:Intonation Drill and Music Room. Drill-and-practice program permitting the student to adjust a tone's pitch to match another pitch.

Placek, R. W. (1986). **Floppy Discography: Keyboard Fingerings.** Music Educators Journal, 72(7) Mar 86, 18-20.
Description of Keyboard Fingerings program. Needs MIDI board and synthesizer. Effective computer assistance for keyboard teachers. Drill on fingering patterns for major and minor keys.

Placek, R. W. (1986). **Floppy Discography: AtariMusic I-Notes and Steps.** Music Educators Journal, 72(8) Apr 86, 21-22.
Description of AtariMusic I: review, drill, and game covering such pitch-related concepts as treble and bass clef, grand staff, pitch letter names, the keyboard, sharps and flats, whole and half steps, etc.

Placek, R. W. (1986). **Floppy Discography: Music FUNdamentals III.** Music Educators Journal, 72(9) May 86, 67-70.
Description of Silver Burdett Courseware III: tutorial with drills on music fundamentals: rhythm, pitch identification, keyboarding.

Placek, R. W. (1986). **Floppy Discography: Music: Scales and Chords.** Music Educators Journal, 73(3) Nov 86, 60-61.
Description of Music: Scales and Chords for Commodore 64. Provides dry practice in ear training and work with intervals, scales, triads and seventh chords. Needs careful teacher preparation of students.

Placek, R. W. (1987). **Floppy Discography: Listen.** Music Educators Journal, 73(5) Jan 87, 18-21.
Description of Listen: a drill-and-practice program for the MAC. Mouse and graphics combined with flexibility of setting musical parameters are a delight. Needs structuring by human teacher.

Placek, R. W. (1987). **Floppy Discography: Foundations of Music: A Computer Assisted Introduction.** Music Educators Journal, 73(7) Mar 87, 56-58.
Description of Foundations of Music program which comes with 200-page workbook. Provides drill in rhythm notation, pitch notation, simple meters, compound meters, whole and half steps, major scales, etc.

Placek, R. W. (1987). **Floppy Discography: Trumpet Fingerings (Wenger).** Music Educators Journal, 73(8) Apr 87, 58-61.
Description of Trumpet Fingerings program from Wenger's series of fingering programs. Drill program presents notes on a staff with graphic of trumpet. Student indicates fingering with JKL keys.

Placek, R. W. (1987). **Floppy Discography: U of Delaware Videodisc Music Series.** Music Educators Journal, 73(9) May 87, 22-24.
Resource: 12 masterworks are performed and analyzed (with color lines and chord symbols) and are accompanied by a slide bank of history.

Placek, R. W. (1987). **Floppy Discography: Piano Theory Software.** Music Educators Journal, 74(1) Sep 87, 73-76.
Description of drill-and-game routines designed to teach basic music theory to young piano students. For Apple IIe with MIDI board and synthesizer. Designed to be used in conjunction with Alfred Piano Library.

Placek, R. W. (1987). **Floppy Discography: GUIDO Music Learning System: Ear-Training Lessons.** Music Educators Journal, 74(2) Oct 87, 76-79.
Description of Graded Units for Interactive Dictation Operations. Runs on IBMs with color monitor and Music Feature Card or equivalent. Excellent ear-training sequence. Nice color graphics, mouse driven.

Placek, R. W. (1987). **Floppy Discography: Keyboard Jazz Harmonies.** Music Educators Journal, 74(4) Dec 87, 68-70.
In-depth description of software: MIDI-compatible drill and quiz program for MS and older for Apple II IBM, and Commodore. Needs MIDI. Basic drill in four 7th chords: major, minor, dominant, half-diminished.

Placek, R. W. (1988). **Floppy Discography: MusicShapes.** Music Educators Journal, 74(8) Apr 88, 57-60.
Description of MusicShapes (also reviewed by Pogonowsky in General Music Today). More complete explanation of "Rooms": Foyer, Pitch, Time, Sound, Lifts, Flips, Shelves, and Save. Sound organization.

Pogonowski, L. (1987). **Software: MusicShapes.** General Music Today, 1(1) Fall 87, 24.
Description of the MusicShapes program which manipulates musical elements by adjusting icons with joystick or arrow keys. Needs MIDI card and synthesizer. Rare right-brained friendly software.

Rudolph, T. E. (1984). **Music and the Apple II** 175 pp. Drexel Hill, PA: Unsinn Publications, Inc.
Good general introductory book to music and computing with appendixes of software lists for variety of applications, matrix-format comparison of different programs.

Swan, P. (undated). **Swan Software for Arts Education.** 3 pp.
Provo, UT: Swan Software for Arts Education.
A listing and short explanation of software available.

Temporal Acuity Products **TAP Master Report.** (1988). 4 pp.
Bellevue, WA: Temporal Acuity Products.
An explanation of the TAP Master system in question-and-answer format, including what, who, where, why, how, etc.

Temporal Acuity Products Music Education Solutions (Catalogue of Products). (1988). 44 pp. Bellevue, WA: Temporal Acuity Products.
Descriptions of their current products and prices.

Weiss, L., and Hand, A. (1984). **A comparative look at educational software: Music packages for beginners.** Electronic Learning, Jan 84, 80-81.
A grid-style review of six music software programs: Notes, Sebastian, Early Games Music, Find the Key, Music Box, and Elements of Music.

Wenger Corporation Coda. (1987). 160 pp. Owatonna, MN: Wenger Corporation.
Extensive listing and description of software products available in a jumbled, confusing format: software for all machines (and accessories) and of all types is intermixed. Index.

Willman, F. (1984). **The Computer, An Effective Tool in the Music Program.**
Soundings, 4(2) Win 84-85, 1-2.
Concise overview of criteria for selecting software to solve specific music education needs and information management needs. Includes a short recommended diskography.

Yavelow, C. (1985). **Music Software for the Apple Macintosh.** Computer Music Journal, Fall 1985, 52-67.
Description of programs available for the MAC: ConcertWare, MACMusic, MusPrint, MusicWorks, Professional Composer, Song Painter, and Music Character Set.

(5) Description of School Use

These articles provide insight into how computers have already been used in school settings.

Peters, G. D. (1985). **Illinois Technology-Based Music Instruction Project.**
Unpublished manuscript. Jan 86. 5 pp.
Description of some of the work going on at University of Illinois, including videodisc, MIDI, CBI Music, keyboard performance judging.

Taylor, J. A. (1982). **The MEDICI melodic dictation computer program: Its design, management and effectiveness as compared to classroom melodic dictation.** Journal of Computer-Based Instruction, 9(2), 64-73.
A description of the MEDICI program and results of its use.

Anonymous. (1988). **The Renovation of a School Music Program.** Soundpost, Spring 88, 4, 15.
Description of San Jose High School procurement and use of 30-station MIDI lab as part of rejuvenating inner-city school into a technology magnet offering the prestigious IB degree.

Anonymous. (1987). **Experiment in Success: Keyboards and General Music.** Music Educators Journal, 74(4) Dec 87, 46-47.
A description of music education thru keyboarding in Oregon, with suggestions on logistics and sequence of activities for teaching music concepts/skills.

Bergering, A., and Dubois, P. (1986). **Design of a Software Package to Teach Basic Music Skills.** Conference handout. Apr 9, 86, 23 pp.
Description of MUSICA using MIDI-compatible ICON computer. Three main areas: Play Area, Note-Identification Area, and Rhythm Area. Sample screen graphics.

Bierman, D. (1986). **Aladdin's cave.** Times Educational Supplement, 3637, Mar 14, 1986, 49-50.
An overview article advocating the use of synthesizers and computers in general music classes. Short description of such use in an English school. Three main benefits: speed, accuracy, automization.

Bjorneberg, P. (1986). **A Growing Trend: Computers aid music instruction in schools.** Upbeat Magazine, Mar 86, 36-39.
An overview of growing use of computers in classrooms addressed to the music industry. Includes descriptions of Tom Rudolph's work in Haverford, Pennsylvania, Paul Swan in Provo, Utah, and Kirk Kassner, in Portland, Oregon.

Dale, J. (1984). **Relationship Between Music Instruction and Basic Skill Performance.** Trade flyer. Fall 1984, 5 pp.
Description of study at Sammamish High School showing position correlation between study on Pitch Master and increased reading and math scores.

Debban, B. (1988). **MIDI Instruction in Four Selected Public Schools.** Conference handout. Apr 20, 88, 17 pp.
Detailed description of Grant Wood Area Education Agency's MIDI project, including proposal, software, hardware, objectives, sample lesson plans, student reactions, teacher observations/opinions, etc.

Dixon, S. (1986). **An Idea for Everyone.** Music Educators Journal, 72(4) Dec 86, 47-48.
Description of using Silver-Burdett Courseware in North Carolina.

Erlendson, W., Peterson, H., and Herrold, R. (undated). **Music Education MIDI Project.** Conference handout 1988 MENC 11 pp.
Detailed report of San Jose High School MIDI Project including rationale, hardware and software lists, funding resources, lab set-up drawing, (uses Apple IIe, Mac, IBM, and synthesizers), appended articles.

Flagg, H. S. (1986). **A Computer Concert that Showcases Student Compositions.** Music Educators Journal, 72(4) Dec 86, 30-32.
Description of a computer-based project in music.

Gnann, R. (1986). **Computer efficiency.** Music Educators Journal, 72(4) Dec 86, 51-52.
Description of an outside-class computer tutoring program in Jefferson, Georgia.

Haig, G. (1986). **Closing the gap between notation and performance: Music magic.** Times Educational Supplement, 3669, Oct 24, 1986, 53-54.
A description of using the Yamaha CX5M music computer system in an English middle school. The author believes one of the main advantages of using computers is the ability to hear and change work.

Kassner, K. (1985). **Computer Assisted Instruction in Music.** Oregon Music Educator, 37(3) Fall 85, 27.
Short description of computer assisted music instruction at Hayhurst School, Portland, Oregon

Kassner, K. (1986). **Computers as another resource.** Music Educators Journal, 72(4) Dec 86, 48-49.
Description of CAIM in Portland and argument for integrating into total music curriculum.

Kuzmich, J., Jr. (1984). **Computers Today: Looking at a "Real-Time System" part 2.** The Instrumentalist, Oct 84, 26-34.
Description of using the Soundchaser system in Kirkwood, Missouri, High School with explanation of the system's hardware components, software, and how they are used with students.

Modugno, A. D. (1986). **The Computer As a Creative Musical Tool.** Conference handout, Apr 86, 4 pp.
A listing of computer equipment in her lab in Greenwich, Connecticut; last page a sample programming lesson creating a melody.

Morabito, M. (1986). **The Resource Center.** RUN, May 86, 84-89.
Description of how Commodore-64s are used at Augustana College in Sioux Falls, South Dakota, and at LaVenture Middle School in Mount Vernon, Washington. Includes a short directory of music software for the Commodore.

Piege, G. (1986). **At LaVenture Middle School, Music Education is . . .**
Skagit Valley Herald, May 29, 86, Section 2, p. 19.
Short description of Harry Weldon's computer music lab in Middle School.

Roberge, D. (19)6). **Taking creative risks.** Music Educators Journal, 72(4) Dec 8 52-54.
Description of CAIM using Commodore computers in Acton, Massachusetts. Lists and describes software used.

Schmidt, V. I. (1986). **Amazing Results.** Music Educators Journal, 72(4) Dec 86, 47.
Description of CAIM in music classes in West Lafayette, Indiana. Short list of software used with grade levels.

Swan, P. D. (1986). **Running a computer in the bandroom.** The Instrumentalist, 41 Aug 86, 46-48.
A description of author's use of CAIM in Provo, Utah, middle school band. List of essentials for setting up a lab and a rationale for using computers.

Thomas, R. (1986). **Does CAI really work?** Music Educators Journal, 72(4) Dec 86, 44-45.
Cites examples of music teachers currently using CAIM.

Wells, C. (1984). **Music and computers.** Times Educational Supplement, 3531, Mar 2, 84, 48-50.
Reports CAIM use in some British schools.

Wells, C. (1986). **Micros and music.** Times Educational Supplement, 3636, Mar 7, 1986, 12.
Overview of CAIM in British schools.

(6) Studies

These sources provide empirical evidence and conclusions about the efficacy of CAIM.

Hofstetter, F. T. (1975). **GUIDO: An interactive computer-based system for improvement of instruction and research in ear training.** Journal of Computer-Based Instruction, 1(4), 100-106.
A description of the GUIDO (Graded Units for Interactive Dictation Operations) system of ear training and some preliminary results of its use with college classes.

Hofstetter, F. T. (1978). **Computer-based recognition of perceptual patterns in harmonic dictation.** Journal of Research in Music Education, 26(2), 111-119.
A description of research findings in perception of harmonic dictation using the GUIDO system with detailed data gathered by GUIDO and a discussion of the seven confusions of harmonic dictation.

Hofstetter, F. T. (1979). **Evaluation of a competency-based approach to teaching aural interval identification.** Journal of Research in Music Education, 27(4), 201-213.
A description of research comparing competency-based learning of aural interval identification with sequential control group learning using the GUIDO computer system.

Hofstetter, F. T. (1981). **Applications of the GUIDO system to aural skills research, 1975-80.** College Music Symposium, 46-53.
A description of some of the findings of interval learning using the GUIDO system. Four types of research are discussed: recognition of perceptual patterns, dispelling common beliefs, controlled evaluation.

Jacobsen, J. R. (1986). **Effectiveness of a computer assisted instruction program in music fundamentals.** Dissertation UMI.
This study concluded that CAI in notational and rhythmic identification skills equalled traditional method of instruction for elementary education majors.

Lindeman, C. A. (1979). **Computer-assisted instruction in music: A program in rhythm for preservice elementary teachers.** Dissertation, UMI.
This study found preservice elementary majors learned rhythmic skills equally well with CAI and traditional instruction and they especially liked to set their own paces.

Parker, R. C. (1979). **Relative Effectiveness of the TAP System in Instruction in Sight Singing.** Dissertation, UMI.
Report of a study showing TAP System is effective tool for teaching sight singing.

Shrader, D. L. (1970). **An aural approach to rhythmic sight reading based upon principles of programming, utilizing a stereo-tape teaching machine.** Dissertation, UMI.
The original study describing the design, development, and use of the rhythm-teaching machine which became the TAP Master.

Thomas, R., and Giacobbe, G. (1985). **Pitch Master Studies: Initial Progress Report.** Industry publication.
Description of study showing positive correlation between use of Pitch Master and music achievement and SRA reading test results.

Utley, E. (1978). **TAP Master Report: Research Summary.** Industry publication.
Report of independent research by Norfolk Public School District evaluating the effectiveness of TAP as relates to reading achievement.

Willett, B. E., and Netusil, A. J. (1989). **Music computer drill and learning styles at the fourth grade level.** Journal of Research in Music Education, 37(3), 219-229.
A description of research showing a particular software program's (Clef Notes) effectiveness in teaching music knowledge and the interaction with learning styles. Good CAIM rationale.

(7) Curricula

These sources discuss how CAIM has been organized into courses of study.

Cannava, E. (1986). **Progressive Curricula.** Music Educators Journal, 72(4) Dec 86, 49-50.
Description of progressive (sequential) CAIM curriculum integrated into the total music curriculum.

Griswold, H. E. (1988). **How to Teach Aural Skills with Electronic Tuners.** Music Educators Journal, 74(5) Jan 88, 49-51.
Discussion of using electronic tuners to teach students to listen for beats while playing their instruments and to adjust their pitch to match the standard. Suggestions for full-class and home practice.

Hermanson, Christine D. (1990). **The Master Musician Music Literacy Curriculum.** (Temporal Acuity Products, Bellevue, WA) A music literacy curriculum for use with TAP products which divides concepts/skills into levels and suggests software to meet stated objectives.

Kassner, K. (1986). **Lesson Plans for Computer Assisted Instruction in Music.** Portland, OR: Author published. 114 pp.
148 lessons in modified ITIP format using CAIM to teach stated music objectives tied into Portland Public Schools curriculum.

Lindeman, C. A. (1988). **"Interfacing" computers with the elementary general music curriculum.** General Music Today, 2(1) Fall 88, 6-7.
Discussion of how and why computers can be integrated with other types of teaching in the general music classroom and discussion of several pieces of software as examples.

Margolis, J. N. (1987). **A School Synthesizer Program Comes of Age.** Music Educators Journal, 74(4) Dec 87, 32-36.
Description of lessons using synthesizers to teach music elements/composition, from rhythm track, through chord track, bass line track,to lead (melody) track with suggestions for incorporating music skills.

Isaak, T. J., Erickson, F. J., and Vonk, J. A. (1986). **Micros and Music: Lesson Plans, A Directory of Software.** Holmes Beach, FL: Learning Publications, Inc. 145 pp.
An introductory book with sample lessons plans and an extensive annotated diskography arranged by concept/skill focus and a section on evaluating software for learning outcomes.

Yamaha Corporation. **Music in Education: A Technology Assisted Music Program.** Grand Rapids, MI, 616-940-4900. A complete package to teach basic musicianship in the classroom environment with the assistance of individualized synthesizer keyboards and a Macintosh.

(8) MIDI Applications

These sources discuss various aspects of Musical Instrument Digital Interface.

Anderton, C. **MIDI for Musicians.** Berkeley, CA: Mix Publications, Inc.
A thorough tutorial for understanding and using MIDI with computers and synthesizers.

Anderton, C. (1986). **Making Your Micro Musical (Part 1).** Electronic Musician Magazine, 2(8) Aug 86, 18-19.
A brief introduction to MIDI.

Anderton, C. (1986). **Making Your Micro Musical (Part 2).** Electronic Musician Magazine, 2(9) Sep 86, 41-43.
Short overview of types of programs available including: sequencers, notational/transcription programs, educational software, voice editors, patch librarians, MIDI Analysis and processing, sampling, etc.

Anderton, C. (1988). **What's in a Sequencer?** Electronic Musician, 4(8) Aug 88, 18, 20-33.
An overview of MIDI features and their functions, some of which were excerpted from his book, MIDI for Musicians.

Blackman, J. M. (1986). **The MIDI Potential.** Music Educators Journal, 72(4) Dec 86, 29.
Short essay explaining how every child can be a composer, arranger, and player.

Hall, W. V. (1986). **Conquering the MIDI Muddle.** Music Educators Journal, 72(4) Dec 86, 26-28.
Explanation of MIDI technology and how to use as teaching tool.

Moore, H. (1986). **The Anatomy of a Note.** Classroom Computer Learning Magazine, Jan 86, 70-71.
Clear, concise explanation of a note's envelope: attack, decay, sustain, release with a listing of a sample program for controlling ADSR with suggestions on using the program to illustrate changes in ADSR.

Muro, D. (1987). **Sonic Options: Some Basics of Synthesizer Performance.** Music Educators Journal, 74(4) Dec 87 44-45, 60
A short, introductory discussion of several sound-modifying capabilities of contemporary synthesizers including: velocity-sensitive keyboards, pressure sensitive keys, etc. Includes a quick-reference chart.

Powell, S. (1987). **The ABC's of Synthesizers.** Music Educators Journal, 74(4) Dec 87, 32-36.
Introductory explanation of electronic sound genesis including good overview of types of synthesizers: subtractive synthesis, additive synthesis, and digital samplers. Also MIDI, sequencers and techniques.

Volanski, J. (1988). **Mapping Your Way Through MIDI Multi-Tracking.** Electronic Musician, 4(6) Jun 88, 24-28.
A brief description of the type of products, the order in which they should be added to a system, and how to interconnect them. Phase 1: 2-channel tape deck and synthesizer to Phase 7: seven pieces of equipment.

Wagner, M. J. (1988). **Technology: A musical explosion.** Music Educators Journal, 75(2) Oct 88, 30-33.
An overview discussion of technology's impact on the sound of music: digital sampling, controllers, MIDI.

Yavelow, C. (1986). **MIDI and the Apple Macintosh.** Computer Music Journal, Fall 1986, 11-47.
A long article beginning with general discussion of MIDI, then discussing Macintosh-specific information and overview of MIDI sequencer software packages, review of specific sequencer software.

Yavelow, C. (1988). **Mac Power User = Power Muser, Part I.** Electronic Musician, 4(4) Apr 88, 72-79.
First in a three-article series dealing with using the Macintosh computer to best advantage. This article discusses the functions and features of desk accessories ("window" single-purpose programs).

Yavelow, C. (1988). **Mac Power User = Power Muser, Part II.** Electronic Musician, 4(5) May 88, 56-62.
Second in a three-part series dealing with enhancement routines for the Macintosh computer. This article deals with "intermediate" power tools: FKeys, INITS, cdevs, print spoolers, etc.

Yavelow, C. (1988). **Mac Power User = Power Muser, Part III.** Electronic Musician, 4(6) Jun 88, 53-55, 59-62.
Part three of three-part series on MacIntosh computers as music machines. Briefly discusses some functions of the ResEdit, macro functions, telecommunications, expert systems, and advanced uses.

(9) Buyer's Guide

These sources provide information to inform buyers of available possibilities and to help buyers make intelligent purchasing decisions based on their needs.

Anderton, C. (1988). **The Musical Computer.** Electronic Musician, 4(4) Apr 88, 32-71.
A series of articles, tied together by Anderton's introduction, discussing the relative attributes of major computers as music machines: Amiga, IBM, Macintosh, and Atari. Good buyer's comparison.

Anonymous. (1987). **Music, MIDI, and Manufacturers.** The Instrumentalist, Jun 87, 67-71.vol41.
An extensive list of CAIM materials divided into categories and including prices and manufacturers' addresses and phone numbers. No discussion of these products, simply a listing.

Anonymous. (1988). **How to decipher a clone ad.** Consumer Reports Magazine, Mar 88, 181.
A quick, simple, one-page explanation of terms found in contempory computer ads. A good quick introduction to some of the important terms in computer hardware.

Ehle, R. C. (19). **Some applications of computers in music theory and composition.** American Music Teacher, 35, 21+.
An introduction to using the Apple IIe with expanded hardware (the AlphaSyntauri and Mountain Music hardware) to expand learning in theory and composition. This equipment was out-dated with MIDI.

Haerle, D. (1984). **Electronic keyboards for jazz bands.** The School Musician, 55 May 84, 8-9.
Discusses benefits of using an electronic synthesizer in school jazz bands: always in-tune, portable, electronically amplified to any level, many timbres, layering sound ability. Short list of brands.

Mahin, B. P. (1987). **Choosing a computer.** The Instrumentalist, Jun 87, 23-31.
A succinct introduction for those just beginning to think about computers. Describes leading computers and their abilities with music and includes a grid chart comparing them on important features.

Tully, T. (1986). **Choosing the Right Sampler.** Electronic Musician Magazine, 2(12) Dec 86, 26, 28-34.
A thorough discussion of sampling software with a comparison matrix including brand/model, list price, format, voices, number of keys, bit quantization, and other parameters for selection. Sampling primer.

Tully, T. (1988). **Akai EWI1000/EVI1000 and EWV2000.** Electronic Musician Magazine, 4(2) Feb 88, 118-120, 122-123.
A discussion/explanation of the Akai electronic woodwind instrument and electronic valve instrument and their synthesizer module that serves as companion to both (with MIDI out).

Tully, T. (1988). **The Yamaha WX7 Wind MIDI Controller.** Electronic Musician, 4(5) May 88, 102-107.
An introduction to the saxophone-like MIDI driver and explanation of some of its features and playing characteristics.

Warrick, J., and Tjarks, R. L. (1988). **An armchair shopper's guide to synthesizers.** Electronic Musician, 4(2) Feb 88, 31-32.
An overview introduction to features of synthesizers and a grid comparing 12 popular machines on these features.

Yunik, M., Borys, M., and Swift, G. W. (1985). **A Digital Flute.** Computer Music Journal, Summer 1985, 49-52.
Describes a microprocessor-based digital flute instrument with a non-Boehm keying system: 10 switches, volume control, microphone mounted on tubular plastic body. ADSR wind controlled. Circuitry.

Appendixes

Appendix A
Music and Technology Demonstration Center Software

Item #	Description	Computer	Publisher
A52	12-bar Tunesmith	Apple II	Electronic Courseware Systems (ECS)
A89	A Decent Interval	Apple II	Temporal Acuity Products
A61	Alfred's Basic Adult Piano Theory - Level 1	Apple II	Alfred Publishing Company
A62	Alfred's Basic Adult Piano Theory - Level 1A/B and 2	Apple II	Alfred Publishing Company
A63	Alfred's Basic Adult Piano Theory - Level 3, 4, and 5	Apple II	Alfred Publishing Company
A83	Arnold	Apple II	Temporal Acuity Products
I2	Aural Skills Trainer: Basic Chords	IBM	Electronic Courseware Systems (ECS)
A55	Aural Skills Trainer: Intervals	Apple II	Electronic Courseware Systems (ECS)
AT1	Aural Skills Trainer: Seventh Chords	Atari	Electronic Courseware Systems (ECS)
L2	Bachdisc	Laserdisc	LCD America
A20	Bare Facts on Composers, Vol. 1	Apple II	WBW Software
A21	Bare Facts on Intervals and Chords	Apple II	WBW Software
A22	Bare Facts on Music History	Apple II	WBW Software
A23	Bare Facts on Notes, Rhythms, and Terms	Apple II	WBW Software
CD1	Beethoven: Symphony No. 9	CD-ROM	Warner Audio
A18	Brass Fingerings	Apple II	ESS (Southern Music Co.)
A8	Brass Teacher's Assistant	Apple II	Swan Software for Arts Education
I6	Cakewalk 3.0	IBM	Twelve Tone Systems
M5	Casio CZ Series Editor/Librarian	Macintosh	Opcode Systems
A84	Catch the Key	Apple II	Temporal Acuity Products
A86	Chord Mania	Apple II	Temporal Acuity Products
A85	Chordelia	Apple II	Temporal Acuity Products

* Indicates materials donated to the Music and Technology Demonstration Center

Appendix A
Music and Technology Demonstration Center Software

Item #	Description	Computer	Publisher
A32	Clef Notes	Apple II	Electronic Courseware Systems (ECS)
A15	Clef Practicing	Apple II	ESS (Southern Music Co.)
A87	Composers and Their Works	Apple II	Temporal Acuity Products
M14	* Concertware	Macintosh	Great Wave Software
M15	* Concertware+MIDI	Macintosh	Great Wave Software
M26	* Concertware+ Music: Vol. 1	Macintosh	Great Wave Software
M27	* Concertware+ Music: Vol. 2	Macintosh	Great Wave Software
M28	* Concertware+ Music: Vol. 3	Macintosh	Great Wave Software
M29	* Concertware+ Music: Vol. 4	Macintosh	Great Wave Software
M30	* Concertware+ Music: Vol. 5	Macintosh	Great Wave Software
M31	* Concertware+ Music: Vol. 6	Macintosh	Great Wave Software
A14	Conducting Terms	Apple II	ESS (Southern Music Co.)
A88	Count-Me-Out	Apple II	Temporal Acuity Products
M18	CUE (Demo Disk)	Macintosh	Opcode Systems
M20	Deluxe Music Construction Set	Macintosh	Electronic Arts
M3	Deluxe Recorder	Macintosh	Electronic Arts
A90	Diatonic Chords	Apple II	Temporal Acuity Products
I9	* DiscCovering Rudiments Vers.II	IBM	MusicWare
A91	Doremi	Apple II	Temporal Acuity Products
A41	Double Reed Fingerings	Apple II	Electronic Courseware Systems (ECS)
A26	Ear Challenger	Apple II	Electronic Courseware Systems (ECS)
A74	* Ear-Training Drills	Apple II	Maestro Music

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Appendix A
Music and Technology Demonstration Center Software

Item #	Description	Computer	Publisher
A25	Early Music Skills-MIDI	Apple II	Electronic Courseware Systems (ECS)
A37	Elements of Music Complete Set	Apple II	Electronic Courseware Systems (ECS)
M8	Encore	Macintosh	Passport Designs
M6	EZ Vision	Macintosh	Opcode Systems
M11	Finale	Macintosh	Coda
A92	Foreign Instrument Names	Apple II	Temporal Acuity Products
A46	Functional Harmony-MIDI: Basic Chords	Apple II	Electronic Courseware Systems (ECS)
A47	Functional Harmony-MIDI: Diatonic 7ths	Apple II	Electronic Courseware Systems (ECS)
A93	General Music Terms	Apple II	Temporal Acuity Products
I11	GUIDO	IBM	Academic Computing and Instructional Technology
A12	Guitar and Bass Guitar Fingers	Apple II	Swan Software for Arts Education
M25	Guitar Wizard	Macintosh	Baudville
A94	Harmonious Dictator	Apple II	Temporal Acuity Products
A95	Harmony	Apple II	Temporal Acuity Products
A96	Harmony Drills	Apple II	Temporal Acuity Products
A38	Hear Today...Play Tomorrow; Complete Set	Apple II	Electronic Courseware Systems (ECS)
A97	Hearing Melodic Patterns	Apple II	Temporal Acuity Products
A53	Instant Keyboard Fun-MIDI	Apple II	Electronic Courseware Systems (ECS)
A132	Instant Synthesizer	Apple IIgs	Electronic Arts
A98	Interval Mania	Apple II	Temporal Acuity Products
A99	Italian Terms	Apple II	Temporal Acuity Products
A69	* Jam Session	Apple IIgs	Broderbund Software

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Appendix A
Music and Technology Demonstration Center Software

Item #	Description	Computer	Publisher
M12	Jam Session	Macintosh	Broderbund
A100	Jazz Dictator	Apple II	Temporal Acuity Produc
A101	Just Between Notes	Apple II	Temporal Acuity Products
A102	Key Signature Drills	Apple II	Temporal Acuity Products
A24	Key Signatures	Apple II	WBW Software
A42	Keyboard Blues–MIDI	Apple II	Electronic Courseware Systems (ECS)
A29	Keyboard Capers–MIDI	Apple II	Electronic Courseware Systems (ECS)
A34	Keyboard Chords–MIDI	Apple II	Electronic Courseware Systems (ECS)
A35	Keyboard Intervals–MIDI	Apple II	Electronic Courseware Systems (ECS)
A45	Keyboard Jazz Harmonies–MIDI	Apple II	Electronic Courseware Systems (ECS)
A54	Keyboard Note Drill–MIDI	Apple II	Electronic Courseware Systems (ECS)
A40	KIDS–MIDI	Apple II	Electronic Courseware Systems (ECS)
M32	* Kids Time Supplement	Macintosh	Great Wave Software
M13	* KidsTime	Macintosh	Great Wave Software
A66	* Knowledge Master for Apple II	Apple II	Academic Hallmarks
M22	Listen 2.0	Macintosh	Resonate
A31	Listen! A Music Skills Program	Apple II	Electronic Courseware Systems (ECS)
M1	MacDrums	Macintosh	Coda
M16	* MacGAMUT Demonstration disk	Macintosh	Mayfield Publishing Company
A120	Magic Musical Balloon Game	Apple II	Temporal Acuity Products
A129	Magic Piano Music Learning System	Apple II	Learning Services
M9	Master Tracks Pro 4	Macintosh	Passport Designs

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Appendix A
Music and Technology Demonstration Center Software

Item #	Description	Computer	Publisher
A103	Melodious Dictator	Apple II	Temporal Acuity Products
C3	Melody Race	Commodore	Temporal Acuity Products
A122	Micro Brass Series: Micro Baritone	Apple II	Temporal Acuity Products
A123	Micro Brass Series: Micro French horn	Apple II	Temporal Acuity Products
A124	Micro Brass Series: Micro Tuba	Apple II	Temporal Acuity Products
A121	Micro Brass Series: Micro-Trumpet	Apple II	Temporal Acuity Products
A67	* Micros for Micros: Music	Apple II	Math and Computer Education Project
A43	MIDI Jazz Improvization I	Apple II	Electronic Courseware Systems (ECS)
A44	MIDI Jazz Improvization II	Apple II	Electronic Courseware Systems (ECS)
A104	Mode Drills	Apple II	Temporal Acuity Products
A77	* Mr. Py's Coloring Adventures	Apple II	Pygraphics
A59	Music Achievement Series	Apple II	Alfred Publishing Company
A51	Music Appreciation: Study Guide; Software and Book	Apple II	Electronic Courseware Systems (ECS)
A1	Music Class: Ear-Training	Apple II	DH Custom Software
A5	Music Class: Music Fundamentals	Apple IIgs	DH Custom Software
A4	Music Class: Note-Reading	Apple II	DH Custom Software
A3	Music Class: Rhythm	Apple II	DH Custom Software
A2	Music Class: Symbols	Apple II	DH Custom Software
A50	Music Composer Quiz	Apple II	Electronic Courseware Systems (ECS)
A130	Music Concepts by Ventura	Apple II	Learning Services
A133	Music Construction Set	Apple IIgs	Electronic Arts
A36	Music Flash Cards Complete Set	Apple II	Electronic Courseware Systems (ECS)

* Indicates materials donated to the Music and Technology Demonstration Center

Appendix A
Music and Technology Demonstration Center Software

Item #	Description	Computer	Publisher
A82	* Music FUNdamentals - Levels 1, 2, and 3	Apple II	Silver Burdett and Ginn
I1	Music History: A Study Guide; Software and Instructor's Guide	IBM	Electronic Courseware Systems (ECS)
A49	Music History Review: Composers	Apple II	Electronic Courseware Systems (ECS)
A73	* Music Literacy Drills	Apple II	Maestro Music
A60	Music Made Easy	Apple II	Alfred Publishing Company
M23	Music Mouse	Macintosh	Opcode
I10	Music Printer Plus	IBM	Temporal Acuity Products
M7	Music Prose	Macintosh	Coda
C1	Music Room	Commodore	Electronic Courseware Systems (ECS)
A81	* Music Shapes	Apple II	Silver Burdett and Ginn
A105	Music Symbols	Apple II	Temporal Acuity Products
A9	Music Teacher's Assistant – Theory I	Apple II	Swan Software for Arts Education
A10	Music Teacher's Assistant - Theory II	Apple II	Swan Software for Arts Education
A11	Music Term-inator	Apple II	Swan Software for Arts Education
A33	Music Terminology	Apple II	Electronic Courseware Systems (ECS)
A68	* Music Theory I	Apple II	Maestro Music
A70	* Music Theory – Level III	Apple II	Maestro Music
A128	Musical Match-Up	Apple II	Notable Software
A58	Musical Stairs – MIDI	Apple II	Electronic Courseware Systems (ECS)
A125	Name It: Kids' Classics	Apple II	Temporal Acuity Products
A19	Notable Phantom	Apple IIe	Britannica Software
A119	Note Blaster	Apple II	Temporal Acuity Products

* Indicates materials donated to the Music and Technology Demonstration Center

Appendix A
Music and Technology Demonstration Center Software

Item #	Description	Computer	Publisher
A39	Note Detective – MIDI	Apple II	Electronic Courseware Systems (ECS)
A27	Note Speller	Apple II	Electronic Courseware Systems (ECS)
A127	Note Trespassing	Apple II	Notable Software
A6	Orchestral String Teacher's Assistant	Apple II	Swan Software for Arts Education
A56	Patterns in Pitch: Level I	Apple II	Electronic Courseware Systems (ECS)
I3	Patterns in Pitch: Level II	IBM	Electronic Courseware Systems (ECS)
A57	Patterns in Rhythm: Level I	Apple II	Electronic Courseware Systems (ECS)
I4	Patterns in Rhythm: Level II	IBM	Electronic Courseware Systems (ECS)
M2	Perceive	Macintosh	Coda
A48	Perspectives in Music History	Apple II	Electronic Courseware Systems (ECS)
A106	Pick the Pitch	Apple II	Temporal Acuity Products
A107	Pitch Drills	Apple II	Temporal Acuity Products
C3	Pitch Duel	Commodore	Temporal Acuity Products
C5	Pitch-u-lation	Commodore	Temporal Acuity Products
M21	Practica Musica	Macintosh	Ars Nova
A58	Practical Music Theory : Levels I, II, and III	Apple II	Alfred Publishing Company
I5	Prism	IBM	Magnetic Music
M10	Professional Composer	Macintosh	Mark of the Unicorn
M17	Professional Performer Ver. 3.3	Macintosh	Mark of the Unicorn
A76	* Pyware Charting Aid	Apple II	Pygraphics
A75	* Pyware Music Writer for Apple IIgs	Apple IIgs	Pygraphics
M33	* Pyware Music Writer for Macintosh	Macintosh	Pygraphics

* Indicates materials donated to the Music and Technology Demonstration Center

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Music and Technology Demonstration Center Software

Item #	Description	Computer	Publisher
A72	* Rhythm Drills	Apple II	Maestro Music
A108	Rhythm Drills	Apple II	Temporal Acuity Products
A109	Rhythm Machine	Apple II	Temporal Acuity Products
A131	* Rhythm Master	Apple II	Studio C Productions
A110	Rhythm Write	Apple II	Temporal Acuity Products
C2	Rhythmaticity	Commodore	Temporal Acuity Products
A111	Rhythmic Dictator	Apple II	Temporal Acuity Products
A112	Scale Lab	Apple II	Temporal Acuity Products
A113	Sebastian II	Apple II	Temporal Acuity Products
A114	Sir William Wrong-Note	Apple II	Temporal Acuity Products
A115	Sketch the Scale	Apple II	Temporal Acuity Products
I7	* SongWright IV Music Processor	IBM	SongWright
I8	* SongWright IV Music Publisher	IBM	SongWright
A116	Standard Instrument Names	Apple II	Temporal Acuity Products
A79	* Stickybear Music	Apple II	Weekly Reader Software/Optimum Resource,
A80	* Stickybear Music Library	Apple II	Weekly Reader Software/Optimum Resource,
A17	String Fingerings: Levels I, II, and III	Apple II	ESS (Southern Music Co.)
A30	Super Challenger–MIDI	Apple II	Electronic Courseware Systems (ECS)
M19	Super Studio Session	Macintosh	Bogas Productions
A16	The Clarinet	Apple II	ESS (Southern Music Co.)
CD2	The Magic Flute	CD-ROM	Warner Audio
L3	The Magic Flute	Laserdisc	Warner Audio

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Music and Technology Demonstration Center Software

Item #	Description	Computer	Publisher
C6	The Music Detective	Commodore	Temporal Acuity Products
A131	The Music Studio	Apple IIgs	Activision
L1	The University of Delaware Videodisc Music Series	Laserdisc	University of Delaware
A71	• Theory Readiness	Apple II	Maestro Music
A117	Theory Sampler	Apple II	Temporal Acuity Products
A126	Toney Listens to Music	Apple II	Temporal Acuity Products
A118	Transposition Drills	Apple II	Temporal Acuity Products
M24	Trax	Macintosh	Passport Designs
A28	Tune-It II	Apple II	Electronic Courseware Systems (ECS)
M4	Vision	Macintosh	Opcode Systems
A13	Woodwind Fingerings	Apple II	ESS (Southern Music Co.)
A7	Woodwind Teacher's Assistant	Apple II	Swan Software for Arts Education

• Indicates materials donated to the Music and Technology Demonstration Center

Appendix B
Music Software Publishers

Academic Computing and Instructional Technology
Willard Hall Education Building
Univ. of Delaware
Newark, DE 19716
(302) 451-2560

Activision, Inc.
3885 Bohannon Dr.
Menlo Park, CA 94025
(415) 960-6044

Ars Nova
Box 637
Kirkland, WA 98083
(800) 445-4866

Bogas Productions
520 Cashew Court
San Ramon, CA 94583
(415) 332-6427

Broderbund Software-Direct
P.O. Box 12947
San Rafael, CA 94913-2947
(415) 492-3290

Conduit
Univ. of Iowa, Oakdale Campus
Iowa City, IA 52242
(300) 365-9774

Dr. T's Music Software
220 Boylston St.-Suite 206
Chestnut Hill, MA 02167
(617) 244-6954

Educational Audio Visual Inc.
Pleasantville, NY 10570
(800) 431-2196

Electronic Arts
2755 Campus Drive
San Mateo, CA 94403
(415) 571-7171

Great Wave Software
5353 Scotts Valley Drive
Scotts Valley, CA 95066
(408) 438-1990

Academic Hallmarks
P.O. Box 998, #5 Woodland Suite B
Durango, CO 81302
(800) 321-9218

Alfred Publishing Company
P.O. Box 10003
Van Nuys, CA 91410-0003
(818) 891-5999

Baudville
5380 52nd St. S.E.
Grand Rapids, MI 49512
(616) 698-0888

Britannica Software
345 Fourth Street
San Francisco, CA 94107
(415) 546-1866

Coda Music Software
1401 E. 79th St.
Minneapolis, MN 55425-1126
(800) 843-2066

DH Custom Software
696 N. Portage Path
Akron, OH 44303
(216) 375-6356

Dynaware
1163 Chess Drive, Suite J
Foster City, CA 94404
(800) 444-DYNA

EuuSoft Educational Software
P.O. Box 2360
Berkeley, CA 94702
(415) 548-2304

Electronic Courseware Systems (ECS)
1210 Lancaster Drive
Champaign, IL 61821
(217) 359-7099

Intelligent Music
116 North Lake Avenue
Albany, NY 12206
(518) 434-0308

Appendix B
Music Software Publishers

Kinko's Academic Courseware Exchange
P.O. Box 8022
Ventura, CA 93002-8022
(800) 235-6919

Magnetic Music, Inc.
6 Twin Rocks Road
Brookfield, CT 06804
(203) 775-7803

Math and Computer Education Project
Lawrence Hall of Science, University of CA
Berkeley, CA 94720
(415) 642-3167

MECC Minnesota Educational Computing Consortium
3490 N. Lexington
St. Paul, MN 55126
(612) 481-3500

Music Systems for Learning, Inc.
311 E. 38th- Suite 20C
New York, NY 10016
(212) 661-6096

Notable Software
P.O. Box 1556
Philadelphia, PA 19105
(215) 736-8355

Passport Designs, Inc.
625 Miramontes St.
Half Moon Bay, CA 94019
(415) 726-0280

Queue
338 Commerce Drive
Fairfield, CT 06430
(800) 232-2224

Roland Corportation US
7200 Dominion Circle
Los Angeles, CA 90040-3647
(213) 685-5141

SongWright
Route 1, Box 83
Lovettsville, VA 22080-9608
(703) 822-9068

Maestro Music
2403 San Mateo NE, Suite P-6
Albuquerque, NM 87110
(505) 881-9181

Mark of the Unicorn
222 3rd St.
Cambridge, MA 02142
(617) 576-2760

Mayfield Publishing Company
1240 Villa Street
Mountain View, CA 94941
(415) 960-3222

Music Education Incentives
328 E-1 1300th North
Chesterton, IN 46304
(219) 926-6315

Music Ware
996 Cottontree Close
Victoria, B.C. V8X 4E9
(604) 658-1399

Opcode Systems
1024 Hamilton Court
Menlo Park, CA 94025
(415) 321-8977

Pygraphics
P.O. Box 639
Grapevine, TX 76051
(800) 222-7536

Resonate
P.O. Box 996
Menlo Park, CA 94025
(415) 323-5022

Silver Burdett and Ginn Company
250 James Street
Morristown, NJ 07960
(201) 285-7744

Southern Music Co.
P.O. Box 329
San Antonio, TX 78292
(512) 226-8167

Appendix B
Music Software Publishers

Studio C Productions
Route 1, Box 188
Matlock, WA 98560
(206) 426-0985

Temporal Acuity Products, Inc.
Bldg. 1, Suite 200
300 - 120th Ave N.E.
Bellevue, WA 98005
(206) 462-1007

Warner Audio
3500 Olive Avenue
Burbank, CA 91505

Weekly Reader Software/Optimum Resource
10 Station Pl.
Norfolk, CT 06058
(203) 542-5553

Swan Software for Arts Education
P.O. Box 1755
Provo, UT 84603-1755
(801) 370-6395

W.I.B.C. Publishing
407 Terrace Street
Ashland, OR 97502

WBW Software
5 Rene Drive
Spencerport, NY 14559
(716) 352-3675

Yamaha Corporation
3445 East Paris Ave. S.E.
Grand Rapids, MI 49512
(616) 940-4900

Appendix C
Music and Technology Demonstration Center Equipment

Description	Manufacturer
10-ft MIDI cables	Rapco
Amplified Speakers (Part #40-1264)	Radio Shack
AppleCD SC (CD-ROM drive) with cables	Apple Computer
CM-32L Sound Module	Roland
DAC board for Apple II	Temporal Acuity
HR-16 Drum Machine	Alesis
M-1 Synthesizer	Korg
MIDI Interface for IBM	Music Quest
MIDI Interface for Apple II	Passport Designs
Pitch Master	Temporal Acuity
Studio Plus 2 MIDI Interface for Macintosh	Opcode Systems
TAP Master II	Temporal Acuity
Vocalizer 1000	Breakaway Systems
MIDI Wind Controller (WX-11) and BT-7 box	Yamaha

Appendix D
Music and Technology Demonstration Center Books and Videos

Title	Author	Publisher	Type
A Guide to Computer Music	Peter Donaldson	Sound Management	Book
An Overview of Electronic Musical Instuments featuring Don Muro	Muro	J.D. Wall	Video
ATMI Courseware Directory	Compilation	ATMI	Book
Commodore 64 and 128 Music Software Guide	Gilkes	Unsinn	Book
Master Musician Music Literacy Curriculum	Hermanson	TAP	Book
MIDI Guide	Jack Fishman	MacBeat	Book
MIDI for Musicians	Anderton	Amsco	Book
Music and the Apple II	Tom Rudolph	Unsinn	Book
Music and the Macintosh	Yelton	MIDI America	Book
Planning Guide to Successful Computer Instruction	Peters	ECS	Book
Promising Practice: High School General Music	Compilation	MENC	Book
The Complete Electronic Percussion Book	Crombie	Amsco	Book
The Electronic Music Dictionary	Anderton	MIX	Book
The New Complete Synthesizer	Crombie	Omnibus	Book
The MIDI Book	De Furia/Scacciaferro	Third Earth	Book

Appendix D
Music and Technology Demonstration Center Books and Videos

Title	Author	Publisher	Type
The MTNA Guide to Music Instruction Software	Compilation	MTNA	Book
Tips: Technology for Music Educators	Boody	MENC	Book
Yamaha Music in Education Information Kit	Compilation	Yamaha	Book/ Video

Appendix E
MIDI Equipment Manufacturers

Alesis
3630 Holdredge Avenue
Los Angeles, CA 90016
(213) 467-8000

Altech Systems
831 Kings Highway, Suite 200
Shreveport, LA 71104
(318) 226-1702

Apple Computer
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010

Applied Engineering
P.O. Box 798
Carrollton, TX 75006
(214) 492-2027

Bose Corporation
100 The Mountain Road
Framingham, MA 01701
(617) 879-7330

Bross Products
7200 Dominion Circle
Los Angeles, CA 90040
(213) 685-5141

Casio
570 Mt. Pleasant Avenue
Dover, NJ 07801
(201) 361-5400

E-mu Systems
1600 Green Hills Road
Scotts Valley, CA
(408) 438-1921

Ensoniq Corporation
155 Great Valley Parkway
Malvern, PA 19355
(215) 647-3930

Fostex
15431 Blackburn Avenue
Norwalk, CA 90650
(213) 921-1112

KAT
43 Meadow Road
Longmeadow, MA 01106
(413) 567-1395

Kawai America Corp.
2055 East University Drive
Compton, CA 90220
(213) 631-1771

Korg U.S.A.
89 Frost Street
Westbury, NY 11590
(516) 333-9100

Kurzweil Music Systems
411 Waverly Oaks Road
Waltham, MA 02154
(617) 893-5900

Music Quest, Inc.
P.O. Box 260963
Plano, TX 75074-5341
(214) 881-7408

Oberheim ECC
2015 Davie Avenue
Commerce, CA 90040
(213) 725-7870

Radio Shack
One Tandy Center
Fort Worth, TX 76102
(817) 390-3700

Roland Corportation US
7200 Dominion Circle
Los Angeles, CA 90040-3647
(213) 685-5141

Sonus
21430 Strathern Street, Suite H
Canoga Park, CA 91304
(818) 702-0992

Yamaha Music Corporation
6600 Orangethorpe Avenue
Buena Park, CA 90622
(714) 522-9011

Appendix F
Books and Periodical Publishers

Amsco Publications – Music Sales Corp.
24 East 22nd Street
New York, NY 10010

Computer Musicians Cooperative
3010 N. Sterling Ave.
Peoria, IL 61604
(800) 342-5246

International MIDI Association
5316 West 57th Avenue
Los Angeles, CA 90056
(213) 649-6434

MacBeat
320 Paseo de Peralta, Suite E
Santa Fe, NM 87501
(800) 622-2328

Mix Publications
2608 Ninth Street
Berkeley, CA 94710

Music Educators National Conference
1902 Association Drive
Reston, VA 22091
(800) 828-0229

Sound Management
P.O. Box 3053
Peabody, MA 01961
(800) 548-4907

Third Earth Productions
Distributed by Hal Leonard Books
P.O. Box 13819
Milwaukee, WI 53213

ATMI
Ohio State Univ. School of Music
1866 College Road
Columbus, OH 43210

Electronic Musician
6400 Hollis Street, #12
Emeryville, CA 94608
(415) 653-3307

Keyboard Magazine
20085 Stevens Creek
Cupertino, CA 95014
(408) 446-1105

MIDI America
941 Heritage Hills
Atlanta, GA 30033
(404) 454-9646

MTNA
Suite 1432
617 Vine Street
Cincinnati, OH 45202-2434

Omnibus Press – Music Sales Corp.
24 East 22nd Street
New York, NY 10010

The Computer and Music Educator
807 E. Jericho Turnpike
Huntington Station, NY 11746

Appendix G
Original Grant Proposal

The Washington Music Educators Association (WMEA) has received a federal education block grant (Elementary and Secondary Improvement Amendment, Chapter 2), to coordinate with the Office of Superintendent of Public Instruction and the Educational Technology Center Program in improving the teaching and learning of music through technology. The grant includes two programs.

Program 1

- Create a resource guide for integrating technology into the K-12 Music classroom.
- Establish a preview center for any teacher in the state to explore music hardware and software.

Program 2

- Prepare nine trainers throughout the state in the use of these resources
- Establish pilot programs in their schools to demonstrate the use of technology in the traditional music classroom.

In the first program, a team comprised of WMEA members, Educational Technology Center (ETC) staff, and the Office of Superintendent of Public Instruction (OSPI) specialists met in the Spring of 1990 to prepare a document entitled Integrating Technology into the K-12 Music Classroom. This resource guide applies the guidelines presented in Visual and Performing Arts Curriculum Guidelines for Washington Schools to create a new and much needed resource for educators. The document provides a listing of current technological resources in music and actual lesson plans for classroom use. Listings include available hardware and software with explanations of their capabilities and a bibliography of reference materials. This document will be made available to all school districts through the Office of Superintendent of Public Instruction for distribution by August 1990. In addition, music hardware and software will be purchased to establish a statewide demonstration center of music and technology resources, which will be available for preview purposes and for training use by music teachers throughout the state.

In Program 2, nine music teachers (three elementary, three middle, and three high school level) will be selected to attend a "trainer of trainers" workshop during the summer of 1990. These nine teachers will become trainers who will conduct workshops within their regions for other music teachers, through the auspices of WMEA and the ETC Program. These teachers will also be supplied with music hardware and software, and their classrooms will serve as demonstration sites for the use of technology in the music classroom for teachers within their regions. The equipment will become the property of the teacher's school district after five years, provided it continues to be used for instructional purposes.

The following is a list of recognition for the nine trainers that have been selected to participate in Program 2:

Ken Wendt, ESD 101
Glen Hansen, ESD 112
James Hodgson, Olympic ESD 114
Linda Howell, ESD 123
Wanda Hill, Northwest ESD 189
Carl North, ESD 105
Paul Crowner, ESD 113
Holly Miller, Puget Sound ESD
Patricia Koehler, North Central ESD

Appendix H
MUSIC LITERACY SOFTWARE DESCRIPTION FORM

Program Name
Publisher
Author(s)
Copyright Date
Date of last update and version
Price
Reviewed by

Hardware

- Apple II+
- Apple IIc
- Apple IIe
- Apple IIgs
- Laser 128
- Mac Plus
- Mac SE
- Mac II
- Amiga
- Atari
- Commodore 64/128
- Networkable?
- Monochrome
- Monitor: Color
- Other
- Memory

IBM-Compatible

- XT/AT
- 286
- 386
- PS/2

Disk Drives

- 5 1/4"
- 3 1/2"
- Hard Drive

Monitor

- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

- How many voices does this program use?
- Internal Monophonic
- Internal Polyphonic
- MMI DAC board
- Apple IIgs chip
- Apple MIDI Out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI Out/internal
- IBM MusicFeature card
- Other sound production

Objectives and Content

Suggested (by manufacturer) age range

Educational objectives (as stated by manufacturer)

Appendix H

Objectives and Content (continued)

Educational objectives inferred

Does student need to be able to read to use this program? ☐

Thoroughly describe the program scope and content

Teacher Support

☐ Is documentation included?
☐ Does it provide pedagogical assistance?
☐ Does it detail the program content?
☐ Does it include operating instructions?
☐ Does it include scoring information?

Additional comments about documentation?

Categories (check all that apply)

☐ Beginning Aural Discrimination
☐ Key Signatures
☐ Error Detection
☐ Scale Tunings
☐ Music History/Composers
☐ Pitch Identification
☐ Melody/Melodic Dictation
☐ Programs for Young Children
☐ Intervals
☐ Rhythm/Rhythmic Dictation
☐ Musical Symbols
☐ Musical Terms
☐ Testing and Evaluation
☐ Fingerings
☐ Transposition
☐ Scales/Modes
☐ Rhythm Sight-Reading
☐ Chords/Harmonic Dictation

Other Categories (list) ☐

Appendix H

Type of Presentation

- ☐ Drill and practice
- ☐ Tutorial
- ☐ Game
- ☐ Mixed

Summary

Overall strengths	
Overall weaknesses	
Evaluator's comments	

Appendix I
MUSIC COMPOSING/EDITING/PRINTING SOFTWARE EVALUATION FORM

Program Name
Publisher
Author(s)
Copyright Date
Date of last update and version
Price
Reviewed by

Hardware

- Apple II+
- Apple IIc
- Apple IIe
- Apple IIgs
- Laser 128
- Mac Plus
- Mac SE
- Mac II
- Amiga
- Atari
- Commodore 64/128
- Networkable?
- Monochrome
- Monitor: Color
- Other
- Memory

IBM-Compatible

- XT/AT
- 286
- 386
- PS/2

Disk Drives

- 5 1/4"
- 3 1/2"
- Hard Drive

Monitor

- CGA
- Hercules
- EGA
- VGA

Sound Source(s) used

- How many voices does this program use?
- Internal Monophonic
- Internal Polyphonic
- MMI DAC board
- Apple IIgs chip
- Apple MIDI out/external
- MIDI in and MIDI out
- MPU-401 (Roland) compatible
- Passport MIDI out/internal
- IBM MusicFeature card
- Other sound production

Categories (check all that apply)

- Suggested (by manufacturer) age range
- Composing (record and play back)
- Polyphonic playback?
- Sequencing (combine or play back individual tracks)
- Editing (change timbre, attack, decay, instruments, etc.)
- Printing using computer keyboard entry
- Printing using MIDI instrument entry
- Printing from sequencer entry

If yes, which sequencer(s)?

- Juke box (playing pre-recorded songs)

Appendix I

Features

- [ ] Does the program allow input from MIDI devices?
- [ ] If so, does it allow real-time input?
- [ ] Does it allow step-time input?
- [ ] Are the commands used primarily icon-based?
- [ ] Primarily text-based?
- [ ] Or do they allow for giving commands using either icons or text?
- [ ] Does the program allow you to transpose parts?
- [ ] If so, can you transpose parts independent of one another?
- [ ] Can you display a full score?
- [ ] Can you display individual parts?
- [ ] How would you describe the quality of the musical font?

What omissions did you find or difficulties did you encounter in displaying standard notation?

- [ ] Is on-screen help available?
- [ ] If so, rate the quality of the help
- [ ] Rate the ease of editing if errors must be corrected
- [ ] In editing, must you work with whole measures, or can you edit single notes?

What difficulties did you encounter while editing?

Documentation

- [ ] Was the documentation clear for accomplishing specific tasks?
- [ ] Is a quick features card provided?
- [ ] Does the documentation contain a tutorial section?
- [ ] Rate the thoroughness of the documentation
- [ ] Rate its indexing and organization of topics

Composing / Editing / Sequencing Software Features

- [ ] Can you playback and display simultaneously?
- [ ] Is a traditional display of notation used?
- [ ] Can you save a composition to a disk?
- [ ] Can you transport your composition to a printing program?
- [ ] Are printing capabilities built into the program?
- [ ] Are mixing capabilities built into the program?

Other sequencing or editing features

Appendix I

Printing Software Features

Can you add lyrics?

If so, rate the flexibility in working with lyrics

What is the maximum number of staves you can use?

Does the program allow a "fudge factor" (quantizing) for inexact keyboard playing?

Rate the quality of the printed output

Does this program support laser printer use?

Does this program support dot matrix printer use?

List other types of printers it can be used with, if any

Describe any difficulties you encountered displaying standard notation

---

Summary

Overall strengths

Overall weaknesses

Evaluator's comments

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