

DISTANCE LEARNING STRATEGIES FOR STRINGS

By Dr. Robin Kay Deverich

INTRODUCTION

There is a need for distance learning for strings. Opportunities are limited for string students who wish to begin or continue learning how to play stringed instruments outside of a school or studio environment, and time, distance, and access constraints inhibit music students from taking private lessons or participating in music courses in a traditional studio or classroom setting. Although the flexible nature of distance learning has the potential to resolve the unmet educational needs of string students, there are no models of distance learning for stringed instruments that address such issues as the design, content, and conceptual framework of a string distance learning program. This paper presents a framework of string distance learning with the following dimensions: a summary of fundamental principles of string technique and traditional models of string instruction, and a distance learning implementation framework with three instructional models, four levels of technologies, and sample modes of instruction and implementation.

A Selected Review of Literature and Technologies

Distance Education

Numerous books, articles, and research studies have been published in the field of distance education with practical and theoretical perspectives provided by leading distance education scholars such as Keegan (1993), Holmberg (1989), Bates (1995), and Lockwood (1995). Research which has examined the effectiveness of distance education has conclusively demonstrated that distance learning can be an effective mode of instruction (Moore, 1989; Willis, 1994).

Technology and Stringed Instrument Instruction

Various forms of technology have been used to assist in stringed instrument instruction such as radio, filmstrips, film, videotapes, broadcast television, computers and the Internet. The following selected list highlights a few of these examples.

Radio. In 1932 and 1948, noted string pedagogue Joseph Maddy taught thousands of string students by radio. A description of these classes can be found in a series of articles by Wassell (1965).

Filmstrips. The University of Nebraska (1949) utilized filmstrips to visually demonstrate fundamentals of stringed instrument playing and posture.

Film or Videotape. Numerous string pedagogues have produced films or videotapes for stringed instrument instruction such as Paul Rolland (1972). Videotapes were also utilized by Rees (1977), Burgess (1975) and Gillespie (1986, 1987) to create self-instructional programs.

Television. String telecourses have been used to provide distance string instruction for students in locations such as Georgia (Justice, 1964).

Computer. Strange (1991) developed a comprehensive violin curriculum using multimedia software, Ho (1991) devised a computer-assisted approach to teach violin tone production, Meyer (1994) created a computer program to assist violin students with intonation, and Mueller (1997) developed a hypermedia program to assist students with vibrato.

Internet. Varied uses of the Internet to teach stringed instruments have included: webcams and broadband connections being used to transmit live, two-way private lessons Belknap (2003); videoconferencing technologies being utilized to transmit master classes, webcasts and educational outreach programs featuring artists such as Pinchas Zukermann (Manhattan School of Music, 2002) and Lynn Harrell (National Arts Centre, 2004); and numerous websites have been designed to provide general fundamentals of instruction for stringed instruments (*e.g.* Hopkin's *The String Pedagogy Notebook*, *Internet Cello Society*, or Sassmannshaus's *Violin Masterclass*).

IMPLEMENTATION FRAMEWORK OF DISTANCE STRING INSTRUCTION

Curricular content may be applied to the following framework in order to construct a distance learning course for stringed instruments. This framework is comprised of the following sections:

1. A summary of fundamental principles of string instrumental technique and traditional models of string instruction.
2. Proposal of three distance learning instructional models which are designed to meet the varied learning needs and preferences of string students and instructors.
3. Presentation of four levels of delivery and instructional technologies which are used to demonstrate how teachers and students with varied access to technology could still participate in distance string education.
4. Sample implementations of the instructional models with the four levels of technologies.

Fundamental Principles of Traditional String Instruction

The following overview summarizes basic skills and principles of instrumental technique which is taught in varying degrees in all string instruction.

1. Instrument Care and Basic Directions

- a) Parts of the instrument.
- b) Instrument and equipment care.
- c) Proper tuning of the instrument.
- d) Suggestions for practicing

2. Playing Position

- a) Posture
- b) Stance
- c) Instrument hold

- d) Left arm
 - e) Placement of left hand and thumb
 - f) Bow hold
3. *Left Hand Technique*
- a) Fingering
 - b) Positions and shifting
 - c) Vibrato
 - d) Intonation
 - e) Miscellaneous (e.g., harmonics, trills, glissandos, left hand pizzicato)
4. *Right Hand Technique*
- a) Tone production (bow speed, pressure and placement)
 - b) Bow strokes (e.g., staccato, détaché, martelé, spiccato)
 - c) Additional skills (slurs, double stops, string crossings, pizzicato)
5. *Fundamentals of Music:*
- a) Reading music
 - b) Meter and time signatures
 - c) Musical terms
 - d) Musical symbols
 - e) Key signatures and basic harmony
 - f) Musical interpretation (style periods and music history)

The following section briefly summarizes traditional modes of string instruction.

Private Studio Instruction

General Instructional Goals:

1. Increase the technical skills and musical abilities of string students.

2. Provide pupils with guided learning.
3. Assist students in the selection and preparation of music.
4. Extend opportunities for pupils to perform and participate in musical experiences.

Sample Learner Characteristics:

1. Young string students whose parents wish to enrich their children's lives through music.
2. Students supplementing skills learned in school music programs.
3. Amateur musicians playing an instrument for pleasure.
4. Pupils preparing for a professional career as a musician.

Sample Methods of Private String Instruction:

1. Private teacher-to-student instruction.
2. The instructor models the correct way to play the instrument, and the pupil imitates the instructor.
3. The pupil plays assigned exercises and pieces, and receives correction and suggestions for improvement from the teacher.
4. Master classes that supplement private instruction.

As a general observation, private instructors often begin students with graded collections of music such as the Royal Conservatory of Music's *Violin Series*, or the *Suzuki School Books 1-10* for violin, cello, viola and string bass. Traditional music literature is included in both of these series (*e.g.*, pieces by Bach, Vivaldi, Mendelssohn), and teachers generally supplement the music with scales and etudes which have been used to train professional musicians for the past century (*e.g.*, scales by Flesch or Hrimaly, and etudes and exercises by Sevcik, Wolfhart or Kreutzer). Some private teachers also utilize a beginning class method book to introduce fundamentals of music and technique (*e.g.* methods such as *All for Strings*, *Strictly Strings*, *Essential Elements for Strings* or *A Tune a Day*).

Due to the nature of private instruction, solo literature is emphasized, and ensemble music is infrequently used. Students who study privately at a conservatory, however, often are given opportunities to play ensemble music instead of solo literature exclusively. Chamber music is often a requirement for students at conservatories, and private instructors frequently assist as chamber music coaches.

The background of the private teacher often determines how comprehensive an approach towards music will be used in lessons. Although fundamental concepts of music such as note-reading, rhythm, and a basic understanding of musical terms are necessary in order to read music, the degree to which subjects such as theory, stylistic interpretations of music, and the social and historical context of music are taught vary considerably according to the teacher's background and training.

Group String Classes

General Instructional Goals:

1. Provide students with instruction regarding basic fundamentals of string performance.
2. Assist students in gaining new skills in a group setting.
3. Offer pupils assistance in the selection and preparation of music.
4. Teach learners rudiments of music.
5. Help students play assigned pieces, and in some instances, perform as a group.

Sample Learner Characteristics:

1. School children who want to learn the fundamentals of instrumental technique in order to participate in a school orchestra.
2. College music majors preparing for careers as school music teachers.

3. Music performance majors who are required to learn the basic skills of a secondary instrument.
4. Music teachers continuing their professional growth.
5. Amateur or professional musicians refreshing or gaining new skills at clinics or summer workshops.

Sample Ways String Classes are Conducted:

1. Beginning string classes in public schools serving as feeders for school orchestras. Such classes generally use method books with simple folk tunes and an overview of rudiments of theory and music history.
2. One or two semester string pedagogy classes at universities or conservatories teaching basic string skills and often surveying group string methodologies.
3. String classes offered by a variety of experts at summer workshops and clinics teaching specialized methodologies which are suitable for private or group instruction.

As a general observation, string classes teach the rudiments of instrumental technique and performance skills. String class instructors often start students with method books geared for group instruction, and rarely employ the etudes and solo literature predominately used in private studios. School string classes are often designed to prepare students for school orchestra experiences, and as the class learns more advanced skills, orchestra music is used. Group string classes offered in clinics or summer workshops often focus on specialized methodologies or performance styles and provide learners with opportunities to gain new skills in a group setting.

School of Music or Conservatory

General Instructional Goals:

1. Increase the technical skills and musical abilities of string students.
2. Provide guided learning to pupils.

3. Assist students in the selection and preparation of music.
4. Encourage learners to draw upon knowledge gained from their music classes to make informed choices regarding the interpretation of assigned music.
5. Provide opportunities for pupils to perform and participate in musical experiences.

Sample Learner Characteristics:

1. Music performance majors preparing for a professional career as a musician.
2. Music performance majors who are expected to learn a secondary instrument.
3. Non-performance music majors desiring to expand their musicality.
4. Music education majors who are required to take string pedagogy courses or private instruction in preparation for school music teacher careers.

Sample Ways String Instruction is Conducted at a School of Music:

1. Private teacher-to-student instruction.
2. The instructor models the correct way to play the instrument, and pupils imitate the instructor.
3. Master classes which supplement private instruction.
4. String classes for music education majors preparing for school music teacher careers.
5. String classes for music majors with secondary instrument requirements.
6. String classes for performance majors who want to expand their understanding of group string pedagogy.
7. Instructors or conductors providing coaching and direction through ensemble experiences such as chamber music groups and orchestras.

As a general observation, string students who study at a school of music or conservatory instead of simply through a private studio have many opportunities to broaden their musicality and understanding of music beyond performance skills and instrumental technique. Requirements for

music majors generally include a comprehensive selection of music courses, for instance, music theory, music history, composition, and ear training are frequently required courses. String instructors at music schools may then ask students to draw upon the broad knowledge they have gained through such classes in order to do tasks including: interpret music stylistically; analyze the structure of pieces; and edit, transcribe and compose music.

Students at a school of music or conservatory have the opportunity to benefit from many modes of instruction: private instruction for their primary instrument; group instruction for secondary instruments or to prepare for a career as a school music teacher; comprehensive music courses designed to broaden their understanding of music; master classes with professional musicians; and lectures or demonstrations with subject matter experts. These students also enjoy the advantages of a wide variety of performance opportunities, and are often required to participate in chamber music groups and orchestras where they receive additional guidance and instruction from chamber music coaches and conductors.

Implementation Framework Instructional Models

The following overview of three proposed distance learning instructional models highlights key aspects of each approach.

Apprentice Model

Instruction is one-on-one in this instructional model, and follows the traditional apprentice model used in private studios with a master teacher mentoring individual students. Distance learning applications of this model may require the assistance of advanced pupils or local tutors in the learner's community when cost or geographical access limits the use of technology. This approach is well suited for individuals and instructors who prefer private instruction.

String Class Model

Patterned after group string classes used in schools and summer workshops, this model favors a group approach towards instruction. The instructor can assist many students at once in synchronous and asynchronous string classes, coaching sessions, master classes, and group performances. Opportunities are provided for class members to communicate with one another for discussion groups, group projects, and chamber music experiences. This model is best suited for learners and instructors who favor a group approach to learning.

Global Music School Model

This model offers a comprehensive approach towards music instruction, and provides learners with a wide variety of educational courses, learning experiences, and performance opportunities. The provision of numerous instructional choices and courses could be achieved either through affiliation with an educational institution, or by individual instructors joining forces with other musicians and experts to form online guilds. The instructor functions as a facilitator of knowledge in this model, and some of the forms of interaction include: instructor to student; instructor to many students; tutor to student; student to student, and experts to student. The ideal central meeting point for learning interactions is an online global meeting place with a multitude of learning options available: synchronous and asynchronous string classes or private instruction; master classes with guest artists; lectures and discussions with subject experts; music history learning experiences and courses; virtual field trips; ongoing discussion groups and opportunities to participate in group projects and assignments; access to a theory lab with music theory and composition learning experiences; tutoring assistance with an online lab tutor; access to a string technique database; access to an online practice room for students to practice assigned pieces and receive needed assistance from tutors; performance opportunities at group practice sessions, concerts and recitals; access to a global selection of courses, instructors and resources.

Delivery Levels of Technology

The following four levels of technology are used to demonstrate the varied ways distance string instruction could be implemented. Those students and instructors with limited access to technology could participate in a distance string program using the inexpensive, widely available level one technologies: print and audio; whereas, teachers and pupils with access to level four technologies: print, audio, video, computer, and Internet access, could benefit from an optimum level of interaction between instructors and students.

Level One – Print & Audio

Equipment needed: Audio cassette, CD or DVD player; radio; camera; telephone.

Level Two - Print, Audio & Video

Equipment needed: Level one technologies; television; instructional television fixed site (ITFS); cable or satellite connection; video cassette or DVD player connected to a television; video camera.

Level Three - Print, Audio, Video and Computer (fixed-base)

Equipment needed: Level one and two technologies; multimedia computer with a CD-ROM or DVD-ROM player; software for intelligent accompaniments; fax modem; computer printer; satellite or cable links.

Level Four - Print, Audio, Video, Computer, Internet Connection

Equipment needed: Level one, two and three technologies; Internet access (ideally, via a broadband connection); display monitor (television or computer monitor); software for multimedia video or audio conferencing systems; camera and microphone mounted on computer (webcam).

Sample Implementation of Instructional Models

It is recommended that implementation of all instructional models include the following three general dimensions:

1. Review and teach fundamental instrumental technique skills.
2. Utilize a comprehensive musicianship approach.
3. Provide the learner with opportunities for a variety of musical experiences.

The following section illustrates various ways the four described levels of technology could be used to implement the proposed instructional models.

Instructional Model Implementation - Level One Technologies

Media Resources:

Print. *All models-* method book with illustrations, music and printed instructions; correspondence. *String Class & Global Music School models-* course materials.

Audio. *All models-* Recorded music and instruction via audio cassette, CD or DVD; telephone tutoring. *String Class & Global Music School models-* course instruction geared to groups via broadcast or recordings.

Equipment Needed: Audio cassette, CD or DVD audio player; telephone; camera, radio.

Sample Instructional Implementation:

1. Programmed self-tutorial lessons.
2. Printed method book and music with explicit directions and audio accompaniments.
3. Telephone and correspondence communication.

4. Students record themselves with cassette tapes or digital recordings, take pictures of their playing position, and mail audio recordings and pictures to the instructor for feedback and correction.
5. Radio classes and audio recorded course instructional materials (*String Class & Global Music School models*).
6. Course materials that provide an overview of the fundamentals of music and discuss the historical context of the music (*Global Music School* model).

Since two-way communication is limited in this instructional model, it is recommended that occasional face-to-face sessions be conducted with instructors or tutors. Local advanced pupils could also be recruited to help provided needed tutoring assistance; and if available, the learner could receive additional instruction at regional workshops or online access sites. Additional musicianship opportunities could be provided by encouraging *String Class* and *Global Music School* students to join with other pupils in their community for group practice sessions and chamber music experiences.

Instructional Model Implementation - Level Two Technologies

Media Resources: Level one print and audio media resources.

Video. *All models-* video instruction that correlates with the method book and music; students self-record with a video camera. *String Class & Global Music School models-* television, cable or satellite broadcast programs.

Equipment needed: Level one technologies; television; video or DVD player. *String Class & Global Music School models-* cable or satellite connection; Instruction Television Fixed Site (ITFS) equipment and link through a phone line (television out, phone line in), or fiber-optic cables.

Sample Instructional Uses:

1. Programmed self-tutorial lessons.
2. Simple arrangements of music with explicit directions and audio accompaniments.
3. Video instruction tailored to the needs and level of the learner.
4. Students record themselves with video tapes; mail to instructor for feedback and correction.
5. Instructor feedback transmitted through phone, correspondence, and video.
6. Video cassette or DVD programmed course materials and instruction (*String Class & Global Music School models*).
7. String telecourses via broadcast television, cable or satellite with instructor feedback (*String Class & Global Music School models*).
8. Reading materials, workbooks and videos that present the historical context of the music, fundamentals of music theory and composition (*Global Music School model*).

Instructional Model Implementation - Level Three Technologies

Media Resources: Levels one and two print, audio and video media resources.

Computer (*fixed base*). *All models*- Digital method book; CD-ROM or DVD-ROM multimedia music software programs; pitch recognition software; intelligent accompaniments; data transmission through fax modem. *String Class & Global Music School models* - satellite or cable links.

Equipment needed: Level one and two technologies; multimedia computer with a CD-ROM or DVD-ROM player; fax modem; computer printer.

Possible Distance Learning Uses:

1. Printed method book, music and audio accompaniment.
2. Digital method book for interactive, self-tutorial learning.
3. Pitch recognition software to track and graph intonation.
4. Intelligent accompaniments to use with assigned pieces.
5. Three-dimensional modeling of playing position to enable learners to see multiple perspectives of the proper playing position.
6. Video clips to demonstrate various aspects of technique.
7. Instructor feedback achieved through video, fax, telephone, and correspondence.
8. ITFS interactive television or satellite video conferencing (*String Class & Global Music School models*).

Instructional Model Implementation - Level Four Technologies

Media Resources: Level one, two and three print, audio, video and fixed-base computer media resources.

Computer: Access to online instruction and databases; synchronous and asynchronous electronic communication such as e-mail, discussion groups, and data transmission; computer conferencing software; digital method book; interactive computer software; pitch recognition software; intelligent accompaniments.

Equipment needed: Level one, two and three technologies; Internet access (preferably high speed connection); software for multimedia video or audio conferencing systems; webcam. *Global Music School model:* for optimum security, an Intranet could be implemented and used.

Possible Distance Learning Uses:

1. Online, synchronous or asynchronous instruction with the instructor.
2. Synchronous or asynchronous online group classes and master classes.
3. Online tutoring opportunities (including a practice room monitored by tutors).
4. Online asynchronous print and video instructions on a WWW site.
5. Video databank of past classes or lessons, instructional tips, and technique database with video clips and 3-D modeling of playing position and technique.
6. Online digital method book for interactive, self-tutorial learning.
7. Online pitch recognition software and intelligent accompaniments.
8. Ability to print online method book and sheet music and play along with music accompaniments.
9. Instructor feedback achieved through e-mail, electronic bulletin boards, online video and data transmissions, fax, telephone, pictures, and correspondence.
10. Electronic class discussion groups and group projects (*String Class & Global Music School models*).
11. Online chamber music and group performance opportunities (*String Class & Global Music School models*).
12. Private and group coaching sessions (*String Class & Global Music School models*).

13. Music courses in related areas such as music history, music theory and composition (*Global Music School model*).
14. Virtual musical excursions to play chamber music in virtual world settings which replicate the social and cultural time the music was created (*Global Music School model*).
15. Music theory lab with an online lab assistant (*Global Music School model*).
16. Webcasts of lectures, masterclasses and concerts throughout the world (*Global Music School model*).
17. Online music library (*Global Music School model*).

In addition to instrumental instruction, distance string courses might include some of the following possibilities:

1. A chronological survey of western art music for strings.
2. Specialized music courses that focus on stringed music from a country or region such as the Middle East, Asia, Poland, Hungary or Russia.
3. A music appreciation course teaching fundamental string skills as students explore the chronological development of instrumental concert music.
4. A chamber music course teaching basic string skills while focusing on a particular style period or on works composed by a specific composer.
5. Specialized technique development, such as a course specifically devoted to vibrato or bowing technique.
6. An early music performance style course.
7. An improvisation class focusing on a variety of styles such as blues, jazz, New Age, rock, and experimentation with electronics.

8. A stringed instrument music survey course that enables learners to play and learn about the social and historical context of such styles as fiddle (Irish, bluegrass, Cajun or Tex/Mexican), Hungarian gypsy, Indian ragas, Mexican mariachi, Jewish klezmer music, jazz or folk tunes.

CONCLUSION

Distance education research has conclusively determined that distance learning can be an effective and viable form of education. A distance learning form of string instruction has the potential to meet the time, distance, and access constraints of string students, and provide lifelong learning opportunities for those who otherwise would be unable to continue their growth in music. This paper has presented a framework of distance learning strategies to assist those who would like to teach stringed instruments at a distance. Through distance learning, string students can gain needed skills and experiences in order to actively create music throughout their lives.

Bibliography

- Allen, M., Gillespie, R. and Hayes, P. T. (1994). *Essential Elements for Strings*. Milwaukee, WI: Hal Leonard Corporation.
- Anderson, G.E. and Frost, R. S. (1985). *All for Strings*. 3 vols. San Diego: Kjos Music Co.
- Bates, A. W. (1995). *Technology, open learning and distance education*. London: Routledge.
- Belknap, M. (2003). *The Violin Site*. [WWW site]. URL <http://www.theviolinsite.com> (August, 2005).
- Burgess, N. E. (1975). The application of a self-instructional multimedia approach to teaching violin in a college string techniques course. (Doctoral dissertation, Indiana University, 1974). *Dissertation Abstracts International*, 35(07), 4219A.
- Deverich, R. K. (1999). Distance education strategies for strings: A framework of violin instruction for adult amateurs. (Doctoral dissertation, University of Southern California, 1998). *Dissertation Abstracts International*, 59(08), 2897A.
- Dillon, J., Kjelland, J. and O'Reilly, J. (1992). *Strictly Strings*. Van Nuys, CA: Highland/Etling Publishing.
- Gillespie, R. A. (1986). *Violin bowing diagnostic skills program* [videotape]. Columbus, Ohio: American String Teachers Association.
- Gillespie, R. A. (1987). *The violin left hand and instrument position diagnostic skills training program* [videotape]. Columbus, Ohio: American String Teachers Association.
- Herfurth, C. P. (rev. ed, 1960). *A Tune A Day*. Boston: The Boston Music Co., rev., 1960.
- Ho, T. (1991). The development of a computer-assisted approach to the teaching of violin tone production. (Doctoral dissertation, Columbia University Teachers College, 1990). *Dissertation Abstracts International*, 51 (07), 2306A.
- Holmberg, B. (1989). *Theory and practice of distance education*. New York: Routledge.
- Hopkins, M. (1995). *The string pedagogy notebook: A resource for teachers and performers*. [WWW site]. URL <http://www.uvm.edu/~mhopkins/string/> (August, 2005).
- Internet Cello Society* (1995). [WWW site]. URL <http://www.cello.org> (August, 2005).

- Justice, E. (1964, October). "TV plays major role in new teaching technique for violin and cello." *The School Musician*, 36, 38-40.
- Keegan, D. (1993). *Theoretical principles of distance education*. London: Routledge.
- Leong, T. (2004, Fall). Using Technology as a Vehicle to Enhance Musical Performance. *Canadian Music Educator*, 46 (1), 30-33.
- Lockwood, F. (Ed.). (1995). *Open and distance learning today*. London: Routledge.
- Manhattan School of Music (1996). *Manhattan School of Music: Distance Learning*. [WWW site]. URL <http://www.msmnyc.edu/special/video/> (June, 2002).
- Meyer, H. S. (1994). A computer system to improve violin intonation. (Doctoral dissertation, Columbia University Teachers College, 1993). *Dissertation Abstracts International*, 54 (12), 4384A.
- Moore, M. G. (1989). *The effects of distance learning: A summary of the literature*. Paper for the Congress of the United States, Office of Technology Assessment. Washington, D.C.
- Mueller, R. (1997). The development and pilot testing of a hypermedia program to supplement undergraduate string techniques class instruction in upper string vibrato (Doctoral dissertation, University of Illinois at Urbana-Champaign, 1997). *Dissertation Abstracts International*, 57 (12), 5093A.
- National Arts Centre (2004). *Arts Alive: Broadband Videoconferencing and Internet Webcasts*. [WWW site]. URL <http://www.artsalive.ca/en/mus/musicresources/webcasts.html> (January, 2004).
- Rapoport, K., Skelton, R., eds. (1999). *Violin Series*. 9 vols. 2nd ed. Official Examination Repertoire of the Royal Conservatory of Music. Toronto, Ontario: Frederick Harris Music.
- Rees, F. J., & Downs, D. A. (1995, September). Interactive television and distance learning. *Music Educators Journal*, 82 (2), 21-25.
- Rees, F. J. (1977). *An exploratory study into the development and evaluation of a self-instructional supplemental videotape program for the beginning double bass player*. (Doctoral dissertation, University of Southern California, 1976). *Dissertation Abstracts International*, 37 (11), 6833A.
- Rolland, P. (1972). The teaching of action in string playing [film series]. *University of Illinois String Research Project*. Bryn Mawr, Pa.: Theodore Presser, 1972.

- Sassmannshaus, K. (2004). *Violin Masterclass*. [WWW site]. URL <http://www.violinmasterclass.com> (August, 2005).
- Strange, C. M. (1991). The development of a beginning violin curriculum integrating a computer music station with the principles of comprehensive musicianship. (Doctoral dissertation, Columbia University Teachers College, 1990). *Dissertation Abstracts International*, 51 (07), 2309A.
- Suzuki Violin School* (1980). 10 vols. Princeton, New Jersey: Summy-Birchard.
- University of Nebraska, Music Department. (1949). *The fundamentals of stringed instruments* [filmstrip].
- Wassell, A. W. (1965, Winter, Spring) Class string instruction in America: A History and an evaluation. *American String Teacher*, 40-42, 47.
- Willis, B. (Ed.). (1994). *Distance education strategies and tools*. Englewood Cliffs, New Jersey. Educational Technology Publications.