

Music Learning Online: Evaluating the Promise

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Abstract

A summary of some new technologies for distance learning is provided, with illustrations of possible applications of these technologies in schools of music. Two examples of distance learning technologies under development at Indiana University are presented. Finally, a number of issues that need to be considered before adopting a distance learning approach are discussed.

I. Introduction

We carry out many kinds of tasks, both instructional and non-instructional, in the course of our activities. In only a few of these, however, does technology-based interaction from remote locations play an active role. In this paper, I will examine the potential uses of distance learning technologies to enhance some of these tasks. After making some general observations, I will describe two projects under development at Indiana University which illustrate two different uses of technology in instruction. I will conclude by discussing some of the issues that must be considered when evaluating possible investments in instructional technologies.

II. Distance Learning Technologies

The term “distance learning” is very general and encompasses a number of approaches. The traditional (pre-Internet) model involves a student purchasing course materials (such as a textbook, course packet, or a set of tapes), then mailing assignments to an instructor who grades them and provides limited feedback. For a number of reasons, this model is wholly inadequate for most musical activities.

The Internet improves the picture considerably. It provides a number of new options for students to access content and to interact with an instructor and other students. Some of these are listed below. It is worth noting that these technologies are not mutually

exclusive—in some cases they may be combined in various ways, depending on the needs of the application.

Streaming audio and video, in which pre-recorded or live media are delivered to a user’s computer; in the case of video, the resolution (image size) is quite small; the expense of this technology is relatively modest; a limited amount of interactivity with individual users is now possible with low-cost web cams

Interactive video, in which cameras, microphones, and monitors are installed in two or more locations and interaction can take place; this technology is more expensive than streaming video, and requires specialized hardware at both ends; video quality can vary, but is typically rather jumpy; schools with access to Internet 2 or dedicated fiber-optic networks (such as an in-state network connecting college/university and high school campuses) can expect better quality

Web-based course management systems, which provide the ability to post syllabi, calendars, assignments, readings and images, and links to web resources; most also support discussion forums and live chat, and provide tools for sharing documents among groups of students; examples include LearningSpace, Blackboard, or WebCT

Web-based delivery of content; much information can be simply posted online in based HTML format; the user’s experience is largely passive, similar to reading a book, but with the possibility of multimedia (graphics, hyperlinks, as well as streaming audio and video). More sophisticated presentations can be made using animation software, such as Shockwave or Flash. If interaction is needed, then a programming environment is needed. This might include the use of Java, JavaScript, Director, or Authorware.

III. Music Activities

Many of the tasks schools of music perform can be transformed, enhanced, or extended through the use of the technologies described above. Our core task, of course, is

the direct instruction of our students. Musical instruction occurs in a variety of settings

- individual instruction in applied study and composition;
- the collaborative environments of large and chamber ensembles;
- classroom-based courses devoted to the development of aural, keyboard, performance, analytic, and historical-compositional skills (i.e., harmony, counterpoint); and
- more traditionally structured lecture or seminar courses in areas such as history, literature, education, and theory

Computer-based instruction has been used for many years for practice in music rudiments, aural skills and, to a lesser extent, the study of harmony. For the study specific works of music literature, a number of innovative CD-ROMs were published in the early 1990s with extensive historical and analytical discussions of various compositions. These are local approaches, however, involving locally installed software, and generally used as a supplement to a traditional course—they do not involve distance learning.

The most common use of distance learning technologies is in classes that are most like typical classes in other disciplines—those that make use of readings, research, and discussion. Such courses can take advantage of general-purpose courseware management systems (WebCT, and others mentioned above), which have been developed for use across a wide variety of disciplines. Courses using these technologies can make it easier for teachers looking for professional development opportunities, and can be useful in reaching the still largely untapped audience of “adult learners”—those wanting to learn something about music but not interested in study at the major level (more on this below).

Distance learning involving courses such as music theory, aural skills, and to some extent music history is complicated, however, by special problems found in music: the need to listen to recordings, to view and edit scores, and to work with idiosyncratic character sets, such as figured bass symbols. Much music theory instruction involves skill-building, both compositional and aural, which requires a much higher degree of interaction is supported by the classroom management programs mentioned above. The software simply doesn't exist right now to effectively handle the kinds of music notation required in these classes (Roman numbers, figured bass). Even when music notation files can be submitted to an instructor, the feedback-revision cycle is relatively slow. In short, this approach is not particularly effective in such skill-oriented classes. The Music Fundamentals Online project described below illustrates one approach to distance learning that addresses some of these concerns.

In the area of applied music study, two-way video can be used to do a certain amount of coaching from remote locations. This will never be as satisfactory as live instruction because that often involves physical repositioning of the body (posture, hand position, etc.). Nevertheless, for occasional use, it could be a convenience in certain situations. For example, Linkages between on- and off-campus multimedia studios would permit master classes between recruits and faculty, which could enhance a school's ability to recruit from a wider geographical area. It could also enable master classes between current students and master teachers across the country or overseas. Auditions conducted from remote locations could be sent to faculty audition committees by video link, rather than by a cassette. A live video exchange involving the Indiana University International Vocal Ensemble and a group in eastern Europe provided a kind of cultural exchange that would otherwise have been impossible (short of planning an overseas trip for the ensemble's many dozen members).

Performance activities are, of course, the hardest to project into a distance learning environment. The special kinds of collaboration involved in chamber music and larger ensembles are virtually impossible to duplicate outside the immediate proximity of one's musical partners. This doesn't mean that some kinds of experimental musical collaboration are not possible using, say, interactive video, but it is safe to assume that such activities will remain the almost exclusive province of our rehearsal halls.

More modest technologies such as one-way audio and video streaming can be effective tools. In addition to providing adjuncts for traditional courses, this technology will be a necessary component of any web-based instruction involving music literature (see the description of the Indiana University Digital Music Library project below). Streaming audio or video can be used for other functions as well. For example, recruiting and admissions could benefit from the delivery of multimedia presentations highlighting our institutions, virtual reality tours of facilities, and streaming audio highlighting ensemble and faculty performances.

III. Music Fundamentals Online

Music Fundamentals Online is a course being developed at Indiana University which is aimed primarily at pre-college music students. It is intended to improve the preparation of incoming music majors for the rigorous music core curriculum. This improved preparation will reduce or eliminate the need to provide remedial instruction in the music rudiments at the college level. Such remediation is currently done either as a separate course, or as a substantial chunk taken from the first semester course in the core curriculum. In either case there are either

financial or pedagogical costs to both the student and the institution. Requiring students to arrive with a mastery of music rudiments will help ensure that the preparation level of students beginning the core curriculum is more consistent, and will make it easier to get to more advanced topics in the curriculum. It will also save us diverting space and personnel resources to remedial instruction, and save the students (and their parents and the state that is underwriting in-state tuition) the cost of paying for that remediation.

Music Fundamentals Online is a self-contained course, meaning there is no instructor. It is web-based, so it is available to any student with Internet access. It is modular, so that students need complete only those parts of the course they do not already have mastered. It is therefore also self-pacing. Perhaps the most distinctive feature of MFO is its emphasis on active learning. Rather than simply presenting information which the student reads passively, MFO engages the student with animations that illustrate points, and it mixes the presentation of concepts with highly interactive activities. These activities engage students in mastery-based skill-building interactions, in which difficult levels are carefully planned and feedback is designed to lead students to an understanding of the cause of their mistakes.

Although informal testing has verified that the approach taken in MFO seems to be highly effective, it has certain limitations. First, it generalizes only in part to topics in the core curriculum itself. Though it could be extended to cover some skills and topics covered in the music theory core, it is not a general-purpose solution. A second limitation is the high development cost associated with this kind of instruction. Seeded with a generous federal grant, it has taken several years to get the course to near completion. In addition, the lack of human interaction may prove to be a stumbling block for some students. It is well documented that students lose motivation when engaged in long-range, self-paced activities, and they also benefit from working together with others. Therefore strategies need to be devised to help students remain on-task and to have a sense of “community”—things that are not inherently present in the MFO approach.

At this time, MFO is still under development. It is expected to go online in early spring, 2002. A pair of demonstration lessons is available at the MFO web site, <http://theory.music.indiana.edu/mfo/>.

IV. IU Digital Music Library

The Indiana University Digital Music Library project is a major research initiative with broad potential for both on-campus teaching and distance learning. Its goal is to establish a digital library testbed system for music. It is

being built on the VARIATIONS project, which delivers high-quality digital audio to computer workstations and classrooms, replacing reserve cassettes and CDs. A multi-disciplinary effort, the DML project involves faculty from the university’s Bloomington and Indianapolis campuses in the departments of Music, Information Science, Law, and Computer Science, as well as librarians and technologists from the Indiana University Libraries and University IT Services.

Though the project involves multidisciplinary research in areas such as usability, metadata, intellectual property, and networking, its most visible manifestation will be the development of user interface applications for music library and music instruction applications. It is aimed at a variety of user types, including library patrons, students in classes on campus and off, and instructors. During the development process we are working with a number of satellite sites in the U.S. and abroad (Illinois, Massachusetts, Northwestern, Kings College–London, Loughborough, Oxford, Waseda) to assess both technical and programmatic aspects of the project.

The IU DML will provide integrated access to music in multiple formats (audio, high-resolution score images, encoded scores, and eventually video). It will support delivery of content to a wide range of users over a wide variety of networks (from high-speed Internet 2 down to dial-up modems). Through the Multimedia Music Theory Teaching Project, it will support the creation of classroom presentations and student lessons. These lessons will integrate and synchronize the DML holdings, a music notation editor, form diagrams and other music visualization techniques, and support the ability to pose questions and accept and evaluate answers. The DML will support teaching in both traditional courses and in courses that are perhaps entirely online.

The DML is being implemented in stages, with updates scheduled for release approximately every six months until the end of the project in October 2004. For more information, visit <http://dml.indiana.edu/>.

V. Some Issues

It is prudent to proceed intentionally when considering implementing a distance learning approach. In this section, I summarize what I believe to be the major issues to keep in mind.

Reasons to Consider Distance Learning

If the answer to any of the following questions is yes, then it is worth considering a distance learning solution for a new or current program.

Will it improve access to an existing program? People who cannot participate in a program because of time or geography might be able to, given a distance learning environment.

Will it help reach new audiences? Distance learning technologies can help reach students who wouldn't know about a program, including those in other parts of the country, international students, and non-traditional students.

Will it improve the effectiveness of an existing task? In some cases, computer-based solutions can improve a task currently done another way.

Will it generate new income, save cost, or both? The attraction of favorable financial returns is self-evident.

Questions to Ask

To help determine if a distance solution is appropriate and practical, a number of questions need to be considered.

Is the intended audience, whether new or existing, important to my school's mission? This is a strategic decision no different than what one undertakes for any new initiative.

Will the audience have the required technology? A great idea that cannot be used by the target users because the technical requirements are unrealistic is of no use.

Is there an existing solution to the problem you are trying to solve? There are few enough people working on distance learning problems that it is foolish to duplicate work someone has already done unless you can do it better, or in a way that is uniquely suited to your situation.

Have you accurately assessed the costs versus the benefits? Up-front expenses for technology-based projects can be high. Will the solution be usable long enough, or does it provide a sufficiently valuable result, to make it worth the expenditure?

What help can I get from other units at my institution? Many schools have units already in place to support some kinds of distance learning. Many schools provide courseware management software campus-wide. There may be units that can provide free support for digitizing content. The campus may already have the ability to deliver streaming audio or video, and may already support two-way video conferencing. Take advantage of their expertise and technical infrastructure as much as possible.

Are strategic partnerships possible? A consortium of institutions can sometimes do things more efficiently than

one can alone. Partnerships with state educational institutions can yield startup funding for innovative projects.

Is there sufficient faculty interest to sustain the project? Imposing a solution without having faculty on board simply to support and carry out a project doesn't work.

Are adequate resources earmarked for development? It is easy to underestimate the costs to get a project going. A realistic assessment is essential.

Have adequate support and maintenance resources been provided for? Consider the cost of labs, network infrastructure, studio equipment, servers, software, etc. Also, technology solutions require ongoing support; a realistic assessment and commitment to providing this is essential.

Is the proposed technology appropriate? Many approaches are available for different circumstances. Make sure the approach chosen will be effective.

Have intellectual property issues been studied? The legal issues involved in the online use of copyrighted materials for instructional purposes are complex and undergoing continuing refinement. In any solution involving the transmission of copyrighted materials, it is prudent to ask your institution's attorneys to review your plans.

Other Considerations

A murky topic in the area of distance learning is the intellectual property rights of the content itself. Particularly if faculty are developing content (whether instructional or in a recording), there should be agreement on who owns the rights to that content—the developer or the institution.

Developing a distance learning program can be time-consuming. Can you assure the faculty involved in its development that their efforts will be considered as valuable as their other teaching or research responsibilities?

VI. Resources for Ideas

Many resources are available with ideas for distance learning in music specifically and in general. The proceedings of the annual Technological Directions in Music Learning conference (held in San Antonio each January) are available online (<http://music.utsa.edu/tdml/>). The Association for Technology in Music Instruction publishes a Technology Directory each year, hosts a conference that meets jointly with the College Music Society, as well as an active email discussion list

(<http://www.music.org/atmi/>). Finally, the following book describes approaches to technology-based instruction across a variety of disciplines, formats, and styles: *Teaching with Technology: Seventy-Five Professors from Eight Universities Tell Their Stories*, ed. David G. Brown (Bolton, Mass.: Anker, 2000).

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