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This paper presents salient results of Hopkins’ research into the use of computers to teach musical concepts, the focus in this article being the comparison between the expository (defined as methods of instruction where the teacher explains what students are to learn and supplies the student with the necessary content and series of steps to learn and take in order to accomplish a particular task) and discovery (an alternative method of instruction that engage student in discovering what it is to be learned without being given the explicit content by a teacher) methods of instruction. For this research Hopkins developed two versions of computer-based instructional (CBI) software called Theme and Variations (TAV) using IncWell SuperCard 3.5. One version arranged the instructional sequence informed by the expository method of instruction, while the other arranged the instructional sequence in line with the discovery method. Both pre- and post-tests were developed for use prior to and immediately following the use of the software, as was a retention test that was given to students six weeks following the experience with the software.

Hopkins’ findings are interesting. First, he reports no significant difference in prior musical knowledge between the two groups, as measured by the pre-instructional test; no significant difference between the two groups as measured by the post-instructional test; and no significant difference between the groups with respect to the retention test. Hopkins does note, however, that both groups experienced significant improvement from the pre-test to the post-test, as well as similar changes over time, as measured by the retention test. Second, Hopkins concludes that the advantage of the expository method is that it requires “considerable less time to cover the same amount of instructional material,” while the advantage of the discovery method “may offer some instructional advantages over the expository method” in providing classroom teachers “greater insight into the extent to which students are learning.” His findings also suggest that “the discovery method may be highly appropriate for some students but not for others.” Third, Hopkins’ findings indicate that both versions of the software he developed proved to be of value in teaching musical concepts and, in this case, that the use of the computer helped control the multitude of variables found in prior research in music education.

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While Hopkins cautions against generalizing the findings in his study, it seems to me that his work gives impetus to ponder aspects of the use of technology in music education. The first is his finding that the use of the computer in teaching carefully selected musical concepts can be successful. For almost a thousand years the art/craft of music has been passed on and furthered primarily through an intimate teacher/student relationship, an apprenticeship, if you will. For approximately half this time the study of music in the form of written notation has been an important aspect of a musician’s training, but never to the degree of displacing that central master-to-apprentice relationship. The invention of sound recording near the end of the 19th century and the subsequent dissemination of music of all
manner and times and places has had a profound effect on music education that we are perhaps only beginning to realize fully. Likewise, the invention of the modern personal computer and the only-recently begun development of software for the purpose of music education and creation contains, to some degree, the potential of spurring new and effective means of approaching and enlivening the process of music education. While music educators are, I think, not resistant to these new possibilities, they are carefully pondering how and to what degree to integrate technology into what they know is an overwhelmingly humanistic enterprise, and looking for evidence of areas where computer-based music instruction can prove most beneficial. Hopkins’ work adds another check in the positive column for music educators: computer-based music instruction can be successful.

A second aspect of Hopkins’ work that may prove helpful to music educators regarding the use of CBI is that software based on either the expository or discovery methods of teaching musical concepts can be effective, and that some number of students will respond quite positively to the discovery method. For example, several commercially available software programs exist with the explicit purpose of teaching aural and theoretical aspects of music such as chord and interval recognition, basic counterpoint — even fundamental composition. Both the nature of the content and the medium of technology would logically tend to foster the methodological approach of these programs as expository. On the other hand, in recent years music software has been created that more and more offers the opportunity to “play” with music and in the process learn many fundamental concepts of rhythm, melody, harmony, and form. Both audio/MIDI sequencers as well as astonishingly capable notation programs that actually contain samples to play back the music one writes, offering immediate aural and visual feedback, come to mind. Hopkins’ work provides evidence that both approaches work, depending on the student and, presumably, on the task at hand. So a new part of a music educator’s job is to be able to evaluate this new technology in terms of its usefulness in achieving the goals the teacher has for his or her students, as well as the methods adopted by the programs to achieve the desired learning outcomes.