

A Helping Hand: Individually Prescribed Music Instruction (IPI)

Bernard W. Andrews¹

ARTICLE INFO

Available Online September 2014

Key words:

individualized instruction;
personal learning.

ABSTRACT

Individually Prescribed Instruction (IPI) is an approach to teaching that emphasizes the diagnosis of learning problems and the provision of prescriptive assignments to assist individual students overcome their difficulties. When this strategy is employed effectively, the teaching environment is highly adaptive. The teacher matches the students' abilities to alternate ways of learning, and also provides remedial assistance and positive reinforcement. Individually Prescribed Instruction has been shown to be effective across the school curriculum. This writer reviews the success of this strategy for assisting students overcome learning problems, and proposes a model for its implementation in music instruction.

Introduction

"The most unique feature of IPI is its requirement that each pupil's work be guided by written prescriptions prepared to meet his or her needs and interests."²

Robert Glaser

Music teachers have provided countless young people with a variety of musical experiences that have enriched their lives. However, there are also many students who are less than successful in a performance group and require more individual assistance to progress. The music classroom environment is often characterized by a high degree of teacher authority, ensemble discipline and technical proficiency.³ Upwards of 87.7 percent of the verbal behaviours in a music classroom are teacher-initiated (i.e., lecturing, informing, demonstrating or criticizing) rather than student-centred (e.g., questioning, probing, prompting or suggesting).⁴ Very little attention is given to individual learning needs and, as a consequence, many students are alienated and either become disruptive or leave the program.⁵ What the profession needs is a strategy for individualizing instruction and meeting the personal needs of students who experience frustration and limited success.⁶

¹ Faculty of Education, University of Ottawa, 145 Jean-Jacques Lussier, Ottawa, Ontario, Canada K1N 6N5, Tel: 613-562-5800 ex. 4028, Fax: 613-562-5146, E-mail: b.w.andrews@uottawa.ca

² Robert Glaser, *Preliminary Report: IPI Institute* (Philadelphia: Research for Better Schools, 1966), p. 4.

³ From a meta-analysis reported in Robert Erbes, "I used to direct my rehearsals like a drill sergeant!" *Music Educators Journal* 65, No. 2 (1978): 50-53. Refer also to Charles Benner, *From Research to the Music Classroom, No. 2* (Washington, D.C.: Music Educators National Conference, 1972); Harry Price, "The Effect of Conductor Academic Task Presentation, Conductor Reinforcement and Ensemble Practice on Performers' Musical Achievement, Attentiveness and Attitude," *Journal of Research in Music Education* 31, No. 4 (1983): 245-258; William Whitener, "Comparison of Two Approaches to Teaching Band," *Journal of Research in Music Education* 31, No. 1 (1983): 5-13; Lee Bartel, *Questioning the Music Education Paradigm* (Waterloo, ON: Canadian Music Educators Association, 2004); Scott C. Shuler, "Music Education for Life: The Three Artistic Processes-Paths to Lifelong 21st-Century Skills through Music," *Music Educators Journal*, 97, No. 4 (2011): 9-13; and Edwin Wasiak, *Teaching Instrumental Music in Canadian Schools*. Don Mills, ON: Oxford University Press, 2013: 232-234.

⁴ Robert Erbes, "I used to direct my rehearsals like a drill sergeant!" p. 53.

⁵ John Shepherd, "Conflict in Patterns of Socialization: The Role of the Classroom Music Teacher," *Canadian Review of Sociology and Anthropology* 20 (1983): 23. Refer also to Charles Ball, "Music Education's Missed Opportunities," *Design for Arts in Education* 91, No. 6 (1990): 49-52; David Elliott, *Music Matters: A New Philosophy of Music Education* (New York, NY: Oxford University, 1995); and David Williams, "The Elephant in the Room," *Music Educators Journal* 98, No. 1 (2011): 51-58.

⁶ Bernard W. Andrews, "An Alternate Approach to Music Instruction," *Teacher Education, No. 26* (1985): 68. Refer also to Andrea Rose, "Music in Education: A Critical Analysis of Reproduction, Production and Hegemony" (Ph.D. dissertation, University of Wisconsin-Madison, 1990); and Roger Mantie and Lynn Tucker, "Closing the gap: Does music-making have to stop upon graduation?," *International Journal of Community Music*, 7, No. 2 (2008): 217-227.

A teacher-led ensemble, inherently “top-down in nature” with students dutifully following directions always dictated from the podium, might not provide sufficient opportunities for the development of musical understandings, or allow students to be involved in any decision-making processes.⁷

Individually Prescribed Instruction (IPI) was developed by Robert Glaser and his associates at the Learning Research and Development Center at the University of Pittsburgh and first implemented in the Oakleaf Elementary School near Pittsburgh.⁸ This particular approach to individualized instruction emphasizes the diagnosis of learning problems, and the provision of prescriptive assignments to assist students overcome their difficulties. It is based on the premise that students acquire competencies in different ways, and display a wide range of skills, aptitudes and knowledge. Consequently, the teaching environment should be adaptive; that is, one that matches a student's abilities to alternate ways of learning.

There are several assumptions underlying Glaser's approach. He believes that students differ in the amount of time they require for mastery of subject-matter; each student should be able to work through the material at his or her own pace and with the proper amount of practice; students with the appropriate materials can learn with a minimum amount of direct teacher instruction; no student should be permitted to try a new unit until he or she has mastered the previous one; and the program should provide frequent evaluations for reinforcement.⁹ For IPI to function effectively, the teacher must correctly identify learning obstacles, formulate appropriate prescriptions, and develop reliable pretests and posttests to make valid diagnostic and summative evaluations.

IPI in the School Curriculum

In Individually Prescribed Instruction, the curriculum is divided into a series of work units. Each of these units contains a specified number of well-defined objectives with accompanying assignments. Prior to the beginning of a unit, the students undergo a pretest to determine their strengths and weaknesses. Based on the test results, a diagnosis is made to ascertain an appropriate assignment. Students are provided with self-study aids, such as pre-recorded cassettes and videos, library references, computer-assisted instruction, sample tests, or programmed learning modules. For example, prior to a unit on chordal analysis, the teacher would give the class a pretest to assess the level of proficiency in clef reading, interval recognition and chord construction. Those students that demonstrated competence in these prerequisite skills would proceed to analyze the chordal progressions as outlined in the unit. The remaining students would receive a prescription in which they would be expected "to do things in order to practice the ability that they are expected to acquire."¹⁰ It could consist of a series of exercises which give the student practice in clef reading and chord construction, or a pre-recorded tape which provides practice recognizing intervals. When a prescription is completed, the work is checked by the teacher, and if it is satisfactory, the student proceeds with the unit. At the end of each unit, the class completes a posttest before attempting the next unit. Those students who are unsuccessful once again work through a prescription until the required competence is attained.

Review of the Literature

An IPI classroom environment is highly responsive to individual differences and allows students to work at their own level of accomplishment.¹¹ The major goal of this form of instruction is "to permit pupils to proceed through a carefully sequenced set of objectives for a given subject at a pace that is determined by

⁷ Peter Webster, "Construction of music learning," in Richard Colwell and Peter Webster, eds., *MENC Handbook of Research on Music Learning*, Vol. 1 (New York, NY: Oxford University Press, 2011: 35).

⁸ Outlined in Robert Glaser, *The Program for Individually Prescribed Instruction*, Working paper No. 2 (Pittsburgh: Learning Research and Development Center, University of Pittsburgh, 1966).

⁹ Outlined In C. Mauritz Lindrall and John O. Bolvin, *Individually Prescribed Instruction: The Oakleaf Project*, Working Paper No. 8 (Pittsburgh: Learning Research and Development Center, University of Pittsburgh, 1966).

¹⁰ Robert Glaser, *Preliminary Report: IPI Institute*, p. 5.

¹¹ Mitchell Robinson, "Music Teaching and Learning in a Time of Reform," *What Every Principal Needs to Know to Create Equitable and Excellent Schools* (2012): 89. See also, Joshua Boyd, "Idea Bank Progress through Incentives: How One Music Program Helps Students Progress to Higher Levels of Musicianship," *Music Educators Journal* 100, no. 1 (2013): 23-25.; and Karen Salvador, "Individualizing Elementary General Music Instruction: Case Studies of Assessment and Differentiation" (PhD dissertation, 2011).

individual abilities and interests."¹² It is a comprehensive approach that was developed in response to research that has shown that lectures fail because students are passive; teacher-dominated discussions are less effective than student discussions; students have different learning styles; learners need frequent reinforcement and their learning improves with frequency of reinforcement; retention increases with involvement; and audio-visual aids are more effective self-aids than teacher interviews.¹³ Individualized instruction has substantial benefits: students can pretest until the desired proficiency level is reached, move at their own pace, receive immediate feedback, receive more personal attention, attain grades on the basis of achievement only, and participate in a success-orientated environment; and, teachers can create multiple learning paths for their students, use a variety of media, increase the level of personal interaction, and certify the achievement of students.¹⁴ More recently, Joseph Lipson adapted IPI for the education of the handicapped, for home study use, and for industrial and military training;¹⁵ and John Bolvin demonstrated how it could be used to improve college reading levels.¹⁶ Jeanette Fleischer and Katherine Garnett reviewed IPI's success in assisting students with learning disabilities learn arithmetic;¹⁷ and Majorie Goldstein demonstrated how it can be used in planning programs in special education.¹⁸ A dissenting voice, Grace Scering argues that Individually Prescribed Instruction is a scientifically systematized curricular program that fosters personal gain and private control, and if not used sparingly, could impair the school's purpose in society (i.e., the common good).¹⁹

Research in music on individualized instruction has tended to focus on programmed learning. Certain aspects of this research are relevant to the development of IPI for music instruction. Albert Shaw found that programmed learning was effective for teaching basic motor skills in musical performance; Stephen Lawrence demonstrated that a self-instructional format was effective for developing facility in music reading for instrumental music students; Bernard Weiss developed programmed materials for band students but found implementation difficult and time-consuming; Michael Wagner discovered that the use of a precise recording system in individualized instruction may prove beneficial in objectifying many aspects of applied music study; and Douglas Greer concluded that the behavioural model concerned with assessing the frequency of learning represented a viable alternative to the traditional method of anecdotal reporting.²⁰

Individually Prescribed Instruction in Music

The application of IPI to music education could be accomplished directly in the non-performance studies area. Prescriptions, pretests and posttests could be developed for units in music theory, ear training, listening and history. But such an effort may be questionable when non-performance study generally constitutes ten to fifteen percent of a course and seldom reaches beyond twenty percent, even in the senior grades.²¹ Direct transfer to performance, however, cannot be so easily achieved within the framework of the conventional music classroom. Individual assignments cannot be carried out in a class setting without creating a cacophonous din. In addition, the accepted method of assigning marks for performance or

¹² C. Mauritz Lindrall and John O. Bolvin, *Individually Prescribed Instruction: The Oakleaf Project*, Working paper No. 8, p. 10.

¹³ John Harrisberger, "Self-Paced Individually Prescribed Instruction," *Journal of Engineering Education* 61, No. 6 (1971):508-516; and J. Gilmour Sherman, *Personalized System of Education*, pp. 202-205 (Don Mills, Ontario: W. A. Benjamin, 1974).

¹⁴ J. Gilmour Sherman, *Personalized System of Education*, p. 205.

¹⁵ Joseph Lipson, "Experience with Individualized Instruction," *Journal of College Science Teaching* 11, No. 1 (1981): 42-44.

¹⁶ John Bolvin, "Individually Prescribed Instruction Reading Program," in Clay Ketcham, ed., *Proceedings of the College Reading Program*, Vol. 9 (College Reading Association, 1968). See also DeAnna N. Owens, "Key to College and Career Readiness" (PhD dissertation, 2013).

¹⁷ Jeannette Fleischmer and Katherine Garnett, "Arithmetic Learning Disabilities: A Literature Review," in *Research Review Series*, Vol. 4 (Research Institute for the Study of Learning Disabilities, Columbia University, 1979-80).

¹⁸ Marjorie Goldstein, "Curriculum: The Keystone to Instructional Planning in Special Education" (Paper presented at the Association for Educational Communications and Technology, Research and Theory Division, Dallas, Texas, 1982). See also, Donald F. Moores, "One size does not fit all: Individualized instruction in a standardized educational system," *American Annals of the Deaf* 158, No. 1 (2013): 98-103.

¹⁹ Grace Scering, "The Individualistic Enterprise of Education" (Paper presented at the Gergamo Conference on Curriculum Theory and Classroom Practice, Dayton, Ohio, 1987).

²⁰ Albert C. Shaw, "The Development and Evaluation of a Programmed Learning Approach in Teaching the Elements of Snare Drum Technique" (Doctoral thesis in Music Education, Indiana University, 1971); Stephen Logan Lawrence, "Development and Evaluation of a Self-Instructional Program in Music Reading for Instrumental Music Students" (Ph.D. thesis, University of Iowa, 1973); Bernard Weiss, "Preparation of Programmed Self-Instructional Material to Assist High School Band Members in Their Understanding of Musical Structure" (Ed. D. thesis, Columbia University, 1975); Michael J. Wagner, "The Effect of a Practice Report on Practice Time and Musical Performance," in *Research in Music Behaviour: Modifying Behaviour in the Classroom*, eds. Clifford Madsen, R. Douglas Green and Charles Madsen (New York: Teachers College Press, 1975), pp.125-130; and R. Douglas Greer, "Music Instruction as Behaviour Modification," in *Research in Music Behaviour: Modifying Behaviour in the Classroom*, pp. 3-11.

²¹ Arnold Walter, *Aspects of Music in Canada* (Toronto: University of Toronto Press, 1969), p. 270.

creative activities, that is testing one-at-a-time, is very time-consuming and mitigates against more frequent pretests and posttests which would impinge on instructional time.

It is this writer's suggestion, based on pilot trials with secondary music students that a more flexible interpretation would allow the essence of IPI to be utilized for both performance and non-performance without the necessity for extensive re-writing of the music curriculum. Essentially, Glaser's formula of pretest-prescription-posttest consists of the diagnosis of a problem, the provision of a work assignment, and the monitoring of the student's progress to ensure that the problem is solved. If these features - *diagnosis*, *prescription* and *monitoring* - are adopted as the basis of an instructional sequence, then a strategy can be formulated that offers the remedial functions of IPI on a broader scale.²² For example, during a class rehearsal the teacher may find that poor intonation in the clarinet section is caused by a certain student who is having difficulty crossing the break from the lower to the higher octave (diagnosis). A worksheet could be provided that takes the student through a series of exercises of increasing difficulty designed to improve his or her skill in crossing the break (prescription). The student would work on the exercises for homework, or in a practice studio during class time. When the student could play the exercises accurately for the teacher (monitoring), he or she would rejoin the section. In another instance, a class may be completing an instrument recognition quiz. Those students that had difficulty identifying the various instrumental timbres (diagnosis) could be provided with a cassette of Benjamin Britten's *A Young Person's Guide to the Orchestra* (prescription). After individual study at a listening center or at home, the students would redo the quiz to demonstrate their competence to the teacher (monitoring). Thus, by using the sequence of diagnosis-prescription-monitoring instead of the more restrictive and time-consuming pretest-prescription-posttest, IPI can be used to respond to problems as they emerge during large group instruction.

In music, similar learning problems arise from year to year when undertaking performing, creating, and listening activities. In planning for IPI, it is incumbent upon the teacher to identify those problems and develop prescriptions that will provide individual study to overcome them. For example, a music teacher can predict with a reasonable degree of certainty that some beginning brass students will experience difficulty slurring wide intervals. This procedure requires a firm embouchure and good breath control, both of which take time and practice to develop. A slurring worksheet designed to achieve the precise motor control needed to slur wide intervals (outcome) could be developed and maintained in the teacher's file. The prescription would contain a series of exercises that gradually increase the distance slurred and the length of each phrase, thereby increasing lip endurance and breath control (refer to Table I).²³ Successful execution of the worksheet exercises (activity) would develop a student's slurring technique, and enable him or her to perform more musically.

When students first attempt slurring, the teacher identifies those students with a problem, provides each of them with a slurring prescription, and monitors their progress on a regular basis. With a prescription, the student controls the timing and pacing of the practice, whereas the focus of the learning is provided by the instructions accompanying the exercises. The teacher provides corrective feedback and reinforcement on a one-to-one basis, and checks that the exercises are completed. With this approach, evaluation is integral to the monitoring process. Transfer occurs when the individual applies the improved slurring technique in a musical setting.

It is helpful if the teacher at this point reinforces the learning through praise and a review of the fundamentals of slurring technique. The teacher can acknowledge a student's success with a nod, a smile or a comment, such as "Good, you've got it right!"; and restate the principles of effective slurring - a firm embouchure and good breath control - for the benefit of the individual and the class.

Concluding Comments

Individually Prescribed Instruction (IPI) is a highly structured approach to individual learning, but one which is appropriate for a wide range of learners. The student and teacher enter into a dialogue to solve a

²² This writer's suggestion (diagnosis-prescription-monitoring) is based on formative trials of Individually Prescribed Instruction (IPI) in school and teacher education settings.

²³ Table I represents a prescription designed for beginning instrumentalists. It has been field-tested in elementary and secondary settings, and used as an illustrative model in teacher education.

learning problem that cannot be dealt with in a large group setting.²⁴ The process of diagnosing a problem, providing a prescription, and monitoring student progress enables the music teacher to quickly respond to learning problems that emerge during instruction. The strategy is particularly useful for solving difficulties that recur from year to year, and it is most helpful for those students who need remedial assistance.

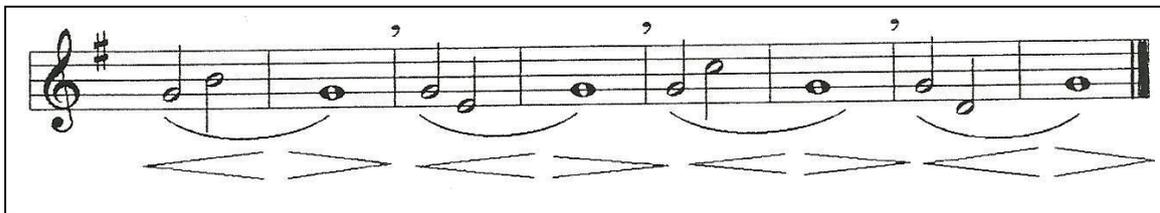
TABLE I: Individually Prescribed Instruction (IPI) Slurring Prescription

These exercises are designed to improve your slurring technique so that you are able to play musically.

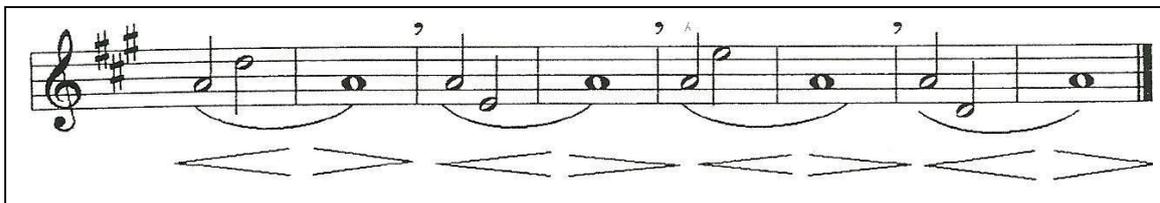
1. Play the examples very slowly and pay attention to the breath marks.



2. In the following examples, notice that dynamic markings have been added.



3. The wider the interval the more air you need. Concentrate on your airflow and on how it feels.



4. Let's do this exercise (no. 3) again and concentrate on the embouchure. Make sure that you keep it steady. Resist the temptation to drop the jaw or pinch the lips.

Acknowledgements

The author wishes to recognize the editorial support of Maia Giesbrecht, PhD candidate in the Faculty of Education at the University of Ottawa, Ottawa, Ontario, Canada.

References

Andrews, Bernard W. "An Alternate Approach to Music Instruction." *Teacher Education*, No. 26 (1985): 60-70.

Ball, Charles. "Music Missed Opportunities." *Design for Arts in Education* 91, No. 6 (1990): 49-52.

²⁴ Matthew Frederickson, "The National Standards for Music Education: A Transdisciplinary Approach in the Applied Studio," *Music Educators Journal* 97, no. 2 (2010): 44-50.

- Bartel, Lee. *Questioning the Music Education Paradigm*. Waterloo, ON: Canadian Music Educators Association, 2004.
- Benner, Charles. *From Research to the Music Classroom No. 2*. Washington, D.C.: Music Educators National Conference, 1972.
- Bolvin, John. "Individually Prescribed Instruction Reading Program," in Clay Ketcham, ed., *Proceedings of the College Reading Program*, Vol. 9. College Reading Association, 1968.
- Boyd, Joshua. "Idea Bank Progress through Incentives: How One Music Program Helps Students Progress to Higher Levels of Musicianship." *Music Educators Journal* 100, No. 1 (2013): 23-25.
- Elliott, David. *Music Matters: A New Philosophy of Education*. New York, NY: Oxford University Press, 1995.
- Erbes, Robert. "I used to direct my rehearsals like a drill sergeant!" *Music Educators Journal* 65, No. 2 (1978): 50-53.
- Fleischmer, Jeannette and Garnett, Katherine. "Arithmetic Learning Disabilities: A Literature Review," in *Research Review Series*, Vol. 4. Research Institute for the Study of Learning Disabilities, Columbia University, 1979-80.
- Frederickson, Matthew L. "The National Standards for Music Education: A Transdisciplinary Approach in the Applied Studio." *Music Educators Journal* 97, No. 2 (2010): 44-50.
- Glaser, Robert. *Preliminary Report: IPI Institute*. Philadelphia, PN: Research for Better Schools, 1966.
- Glaser, Robert. *The Program for Individually Prescribed Instruction*, Working paper No. 2. Pittsburgh: Learning Research and Development Center, University of Pittsburgh, 1966.
- Goldstein, Marjorie. "Curriculum: The Keystone to Instructional Planning in Special Education." Paper presented at the Association for Educational Communications and Technology, Research and Theory Division, Dallas, Texas, 1982.
- Greer, R. Douglas. "Music Instruction as Behaviour Modification," in *Research in Music Behaviour: Modifying Behaviour in the Classroom*, eds. Clifford Madsen, R. Douglas Green and Charles Madsen. New York: Teachers College Press, 1975: 3-11.
- Harrisberger, John. "Self-Paced Individually Prescribed Instruction." *Journal of Engineering Education* 61, No. 6 (1971): 508-516.
- Lipson, Joseph. "Experience with Individualized Instruction." *Journal of College Science Teaching* 11, No. 1 (1981): 42-44.
- Lawrence, Stephen Logan. "Development and Evaluation of a Self-Instructional Program in Music Reading for Instrumental Music Students." PhD thesis, University of Iowa, 1973.
- Lindrall, C. Mauritz and Bolvin, John O. *Individually Prescribed Instruction: The Oakleaf Project*. Working Paper No. 8. Pittsburgh, PA: Learning Research and Development Center, University of Pittsburgh, 1966.
- Mantie, Roger, and Tucker, Lynn. "Closing the gap: Does music-making have to stop upon graduation?" *International Journal of Community Music*, 7, No. 2 (2008): 217-227.
- Moore, Donald F. "One size does not fit all: Individualized instruction in a standardized educational system." *American Annals of the Deaf* 158, No. 1 (2013): 98-103.
- Owens, DeAnna N. "Key to College and Career Readiness." PhD dissertation, 2013.

- Price, Harry. "The Effect of Conductor Academic Task Presentation, Conductor Reinforcement and Ensemble Practice on Performers' Musical Achievement, Attentiveness and Attitude." *Journal of Research in Music Education* 31, No. 4 (1983): 245-258.
- Robinson, Mitchell. "Music Teaching and Learning in a Time of Reform." *What Every Principal Needs to Know to Create Equitable and Excellent Schools* (2012): 89 – 109.
- Rose, Andrea. "Music in Education: A Critical Analysis of Reproduction, Production and Hegemony." Ph.D. dissertation, University of Wisconsin-Madison, 1990.
- Salvador, Karen. "Individualizing Elementary General Music Instruction: Case Studies of Assessment and Differentiation." PhD dissertation, 2011.
- Scering, Grace. "The Individualistic Enterprise of Education." Paper presented at the Gergamo Conference on Curriculum Theory and Classroom Practice, Dayton, Ohio, 1987.
- Shaw, Albert C. "The Development and Evaluation of a Programmed Learning Approach in Teaching the Elements of Snare Drum Technique." Doctoral thesis in Music Education, Indiana University, 1971.
- Shepherd, John. "Conflict in Patterns of Socialization: The Role of the Classroom Music Teacher." *Canadian Review of Sociology and Anthropology* 20 (1983): 23.
- Sherman, J. Gilmour *Personalized System of Education*. Don Mills, Ontario: W. A. Benjamin, 1974.
- Shuler, Scott C. "Music Education for Life: The Three Artistic Processes-Paths to Lifelong 21st-Century Skills through Music." *Music Educators Journal*, 97, No. 4 (2011): 9-13.
- Wagner, Michael J. "The Effect of a Practice Report on Practice Time and Musical Performance," in *Research in Music Behaviour: Modifying Behaviour in the Classroom*, eds. Clifford Madsen, R. Douglas Green and Charles Madsen. New York: Teachers College Press, 1975: 125-130.
- Walter, Arnold. *Aspects of Music in Canada*. Toronto: University of Toronto Press, 1969.
- Wasiak, Edwin. *Teaching Instrumental Music in Canadian Schools*. Don Mills, ON: Oxford University Press, 2013.
- Webster, Peter. "Construction of Music Learning," in Richard Colwell and Peter Webster, eds., *MENC Handbook of Research on Music Learning*, Vol. 1: Strategies. New York, NY: Oxford University Press, 2011: 35 - 83.
- Weiss, Bernard. "Preparation of Programmed Self-Instructional Material to Assist High School Band Members in Their Understanding of Musical Structure." Ed. D. thesis, Columbia University, 1975.
- Whitener, William. "Comparison of Two Approaches to Teaching Band." *Journal of Research in Music Education* 31, No. 1 (1983): 5-13.
- Williams, David. "The Elephant in the Room." *Music Educators Journal* 98, No. 1 (2011): 51-58.