

# A theoretical framework for examining foundational instructional materials supporting the acquisition of performance skills

**Frank Heuser**

Department of Music, University of California, Los Angeles, USA

Conventional approaches to beginning instrumental performance instruction and the teaching materials supporting this process tend to stress technique acquisition and the ability to read written music. Available beginning level instructional materials tend to focus on skill development and note reading thereby doing little to facilitate the acquisition of functional aural skills, to create an awareness of tonality, or to help beginning students acquire the wide variety of conceptual understandings that might serve as a foundation to meaningful life-long engagement with music making. A framework mapping the multiple skills and concepts constituting musical knowledge and linking such maps to principles of instructional design might help music teachers construct more effective instructional materials. This paper uses concept mapping in developing such a theoretical framework.

*Keywords:* instructional design; music development; music learning; beginning instrument instruction; concept development

One of the paradoxes of music learning in the Western classical tradition is that the abilities required for performing and functioning in the aural art of music often rest on skills developed through decoding visual notation. Instrumental performance has a long history of instructing students through reading and practicing exercises in method books. The pedagogical materials in these books are sequentially and progressively arranged with the intention of helping the novice performer gradually acquire the motor skills necessary to play a wide range of repertoire. Performance skills are further refined as students are challenged by and progress through increasingly difficult pieces

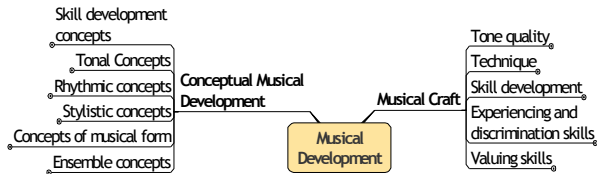
from the repertoire of the instrument which they are learning. If the instructional materials used with beginning students focus solely on acquiring the mechanical skills central to performing and do not support the development of aural, creative, and improvisational skills, students can easily develop the impression that music making is primarily a physical activity.

Meaningful performance, however, is the result of more than simply learning the mechanical actions necessary to play an instrument. Effective music making depends on conceptual understandings that direct the technical and expressive aspects of performing (Lehmann *et al.* 2007). These conceptual understandings are stored as mental representations that are refined and encoded in the cognitive system through interaction with and manipulation of a variety of musical materials. The acquisition of musical skills might be facilitated if instructional processes and teaching materials are designed to support the acquisition of mental representations central to musical understanding and performance. A major goal of this theoretical paper is to employ concept mapping to examine principles of instructional design and concepts from the emerging field of information architecture to develop a framework for analyzing the effectiveness of how pedagogical materials are presented, ordered, and sequenced in method books. Additionally, this exploration builds a visual map exploring the inter-relationships central to performance skills that the pedagogical literature suggests are central to music learning (e.g. aural skills, tonal awareness, rhythmic perception, stylistic awareness, practice skills, etc.).

### MAIN CONTRIBUTION

As the order and organization of learning activities influences the processing and retention of information (Reigeluth 2007), the effective presentation of instructional materials is central to the overall objective of supporting internal learning processes. Therefore, instruction might be envisioned as a “deliberately arranged set of external events designed to support internal learning processes” (Gagné 1992). The information to be delivered through this process should be designed within an architecture and/or framework allowing both the explicit and implicit messages of instruction to become apparent (Gilchrist 2003). The effective presentation of instructional materials is central to the overall objective of supporting internal learning processes.

An examination of beginning instrumental method books used in American schools (Weber 1945, 1962; Ployhar 1977; O’Reilly and Williams 1997; Feldstein and Clark 2001) suggests that the primary focus of these



*Figure 1.* Musical development. The craft and conceptual aspects of musical development are interrelated and co-dependent. Improvements in conceptual understandings can result in improved music making skills. Informed and aware skill development will impact conceptual musical understanding.

instructional materials is the sequential development of technique and reading skills rather than of conceptual musical understanding. The pedagogical literature associated with beginning instrumental instruction (Ramsey 2001, Dvorak and Floyd 2000) suggests that musical understanding requires a wide variety of skills and concepts. Literature on musical development in beginning band instruction suggests developing and refining the craft of music making should accompany and support the acquisition of performance skills. The interrelationship between music craft and musical concept development are outlined in Figure 1.

### **Principles of Instructional Design**

Attention to principles of instructional design has resulted in improvements to textbooks in mathematics and the physical sciences. These concepts offer principles for organizing and sequencing instructional materials as well as the principles involved in concept and skill acquisition. The principles suggest that instructional materials for music learning can be designed with an awareness of pre-attentive perceptual processing so that: (1) chunking of perceptual units is encouraged; (2) there is contiguity between the presentation of a concept and the information and exercises supporting that concept; (3) verbal coding of tonal and rhythmic concepts is emphasized; and (4) “emergent properties” of the music instruction process (i.e. warm-up and practice procedures) become apparent to the student.

### **General principles for evaluating instructional methods**

The conceptual maps in this study provide a rich matrix of issues to consider when evaluating instructional materials. In general:

- Attention to pre-attentive perceptual processing is central to effective instructional design. The physical proximity of elements affects how detected information is structured and interpreted, determines how memory is organized, and facilitates the formation of chunks. Additionally, effective grouping allows *emergent properties* of the instructional message to become evident.
- Effective design facilitates acquisition of conceptual prototypes which should develop from interaction with attributes rather than by learning definitions or rules.
- Placing relevant terms in contiguity with an example of each attribute facilitates concept acquisition.
- Effective design develops, maintains, and enhances skills and concepts.
- Verbal coding and mental rehearsal enhance learning.
- Generative activities allow content processing and encoding.
- Tasks requiring mental effort enhance mental skill acquisition.
- Text, pictures, and color serve learning and concept acquisition.

**Framework for evaluating method books**

From the above principles, the following specific questions can help in the examination of beginning instructional materials:

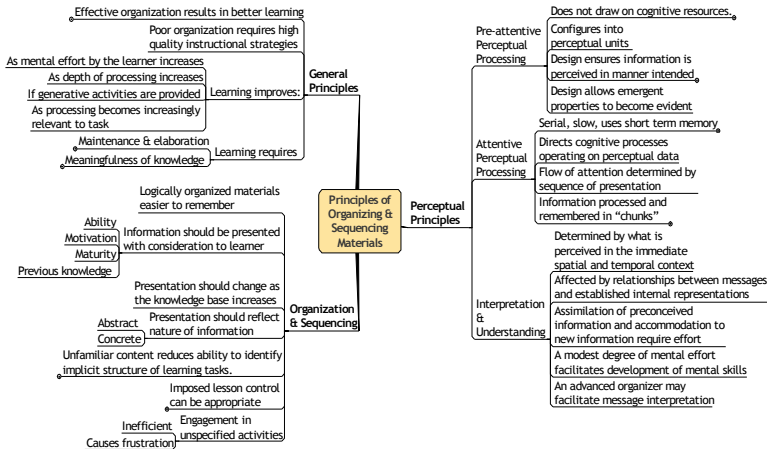


Figure 2. Principles of organizing and sequencing materials. Attention to perceptual principles and logical sequencing on materials influences the musical development of the student and can impact the pedagogical approach taken by the teacher.

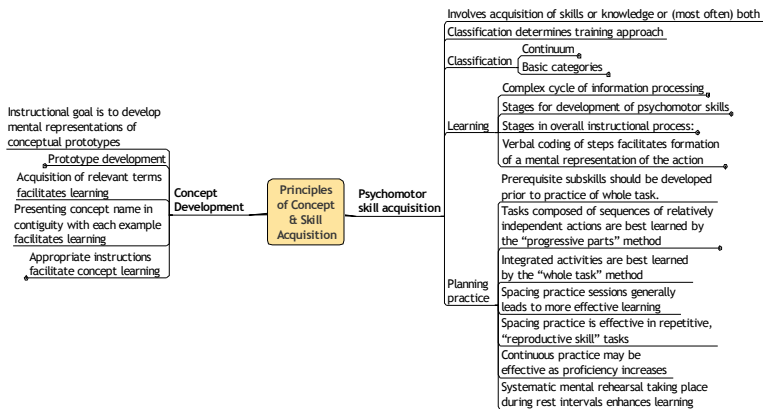


Figure 3. Principles of concept and skill acquisition. Information for these maps was drawn from the following: Fleming and Levie (1993), Gagné *et al.* (1992), Gilchrist and Mahon (2003), Jacobson (2000), Lachnit (2003), Schmidt (1991).

- How are tonal and rhythmic concepts presented and developed?
- Is verbal coding used to enhance these concepts?
- How are motor skills presented and developed?
- How does the method co-develop the mechanical (motor control) and conceptual (tonal/rhythmic) aspects of music?
- Are concepts labeled in contiguity with musical examples?
- Does the arrangement of the materials guide the student into establishing effective learning strategies and sequences?
- Do the tasks require mental effort that might enhance learning?

## IMPLICATIONS

The task of creating instructional materials that might facilitate the acquisition of the multiple skills and concepts constituting musical knowledge presents numerous challenges. The conceptual maps and principles developed in this study offer a theoretical structure for examining the conceptual content of pedagogical materials and for analyzing how such materials might be designed to enhance and sustain the internal learning processes supporting musical performance.

### Address for correspondence

Frank Heuser, Department of Music, University of California, Los Angeles, Box 951616, Los Angeles, California, 90095-1616, USA; *Email*: fheuser@ucla.edu

### References

- Douglas W. (1953). *The Belwin Band Builder: Part 1*. Miami, Florida, USA: Belwin-Mills Publishing.
- Dvorak T. L. and Floyd R. L. (2000). *Best Music for Beginning Band*. Brooklyn, New York, USA: Manhattan Beach Music.
- Feldstein S. and Clark L. (2001). *The Yamaha Advantage*. New York: Carl Fischer.
- Fleming M. and Levie H. W. (1993) *Instructional Message Design*. Englewood Cliffs, California, USA: Educational Technology Publications.
- Gagné R. M., Briggs L. J., and Wager W. W. (1992). *Principles of Instructional Design*. Forth Worth, Texas, USA: Harcourt Brace Jovanovich.
- Gilchrist A. and Mahon B. (2003). *Information Architecture: Designing Information Environments for Purpose*. New York: Neal-Schuman Publishers.
- Jacobson R. (2000). *Information Design*. Cambridge, Massachusetts, USA: MIT Press.
- Lachnit H. (2003) The principle of contiguity. In R. H. Kluwe, G. Lüer, and F. Rösler (eds.), *Principles of Learning and Memory*. Basel, Switzerland: Birkhauser Verlag.
- Lehmann A. C., Sloboda J. A., and Woody R. H. (2007). *Psychology for Musicians*. Oxford: Oxford University Press.
- O'Reilly J. and Williams M. (1997). *Accent on Achievement: Book 1*. Van Nuys, California, USA: Alfred Publishing Company.
- Reigeluth C. M. (2007). Order, first step to mastery: An introduction to sequencing in instructional design. In F. E. Ritter, J. Nerb, E. Lehtinen, and T. M. O'Shea (eds.), *In Order to Learn: How the Sequence of Topics Influences Learning* (pp. 19-40). Oxford: Oxford University Press.
- Ramsey D. S. (2001) Beginning band—goals and objectives: Teaching music through performance in band—beginning band. In R. Miles and T. Dvorak (eds.). *Teaching Music Through Performance in Band*. Chicago: GIA Publications.
- Schmidt R. A. (1991). *Motor Learning and Performance*. Champaign, Illinois, USA: Human Kinetics.
- Weber F. (1945) *Belwin Elementary Band Method*. Miami, Florida, USA: Belwin-Mills Publishing.