

CHAPTER 39

Children as creative thinkers in music

Focus on composition

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THE study of creative thinking in music involves a complex combination of cognitive and affective variables, often executed at the highest levels of human thinking and feeling. This is such a complicated set of long-term engagements (composition, repeated music listening, or decisions about previously composed music in performance) or 'in the moment' engagements (improvisation and one-time listening), that it becomes quickly apparent why this field has not attracted more music researchers and why many feel the topic is hopelessly impregnable.

There are many reasons for optimism, however, as we are starting a new century of scholarship. The changes in education and the role of music in formal learning demands that we address creative thinking as best we can. The serious study of creative thinking from a psychological perspective is helpful to review as well. This chapter is designed to offer some perspective on these matters and to place in context the growing research literature in music completed by musicians. While it is generally acknowledged that children's creative thinking in music occurs as part of many music experiences such as listening, performance, conducting, and improvising (Reimer 2003), the focus here is on composition.

Education context

Since the beginning of the twentieth century in North America, music educators have seen themselves as largely teachers of music performance, especially in the secondary schools where

music study becomes centred on the 'talented' few (Mark 1996, p. 11). Many school systems require music instruction in the elementary and middle school grades for the entire school population with the curriculum often centring on singing, movement activities, and some listening. Attempts to include a wider variety of music experiences, including composition and improvisation at all grade levels, are only now beginning, inspired in part by the National Standards (Consortium of National Arts Education 1994) and arguments from music education philosophers and framers of curriculum (Reimer 2003). The situation in other English-speaking countries such as Australia and England has been qualitatively different. For some time, the emphasis in curriculum has slanted more toward compositional experiences or at least a more balanced approach that has addressed composition together with performance.

The English-language research literature on creative thinking in music for children, therefore, has been influenced in large part by these teaching traditions. Music psychologists interested in children's generative behaviour and unfamiliar with developments in music teaching and learning will find it necessary to understand this context.

One particularly powerful view of learning that has influenced the research is constructivism (Kafai and Resnick 1996). Constructionist thinking is not new to educational theory, with roots that can be traced to Dewey, Piaget, and others. This line of thought has been given a fresh perspective in writings on school reform

(Gardner 1999). The basic goals of constructivism are to place emphasis on creativeness and to motivate learning through activity. Learning is seen as more effective when *situated in activity* rather than received passively. In other words, children learn best when actively involved in creating things and not when asked to only memorize facts for later recall. Such memorization is important of course and must not be eliminated; rather, such learning should be partnered with creative activities that allow students to demonstrate command through action. Each child should be allowed to *construct* their own understanding with the expert help of the teacher. At the heart of these ideas is a shift away from thinking about education as being centred solely in the mind of the teacher to more of a partnership between teacher and student, with the teacher as the major architect of learning. Project-centred learning is celebrated with students solving problems.¹

Bases in psychological literature

J. Paul Guilford's 1950 keynote address to the American Psychological Association (Guilford 1950) is often cited as the commencement of the modern-day study of creativity. In the address, he noted the lack of attention paid to divergent thinking² and called for more systematic study. His work would evolve into the formation of a factor-of-intellect model of human intelligence that celebrated the intersection of product, operations and content (Guilford 1967). His subsequent factor analytic studies brought attention in psychology to a multiple intelligence theory that was meaningful. The specific model proposed came under fire by the research

¹ For an extensive treatment of constructivism and its role in music teaching and learning, see Wiggins *et al.* (2006) and the accompanying response by Webster.

² The concepts of 'divergent' and 'convergent' thinking are at the heart of much of my writing and thinking about creativeness. Divergent thinking is simply that kind of thinking for which the result has no single goal and a number of products may result—a kind of personal brainstorming. Convergent thinking is work that focuses on a final result. Creative work involves both kinds of thinking many times and in many complex ways.

community due to the problems inherent in factor analysis as an empirical methodology (Sternberg 1999), but the spirit and logic behind Guilford's work lives on in many guises.

Since that time, the growth of formal study of creativity has been slow, at least until most recently. There are two edited volumes published in the last few years that are excellent compilations on the subject of creativity. The first is by Finke *et al.* (1996). The book has 14 chapters aimed at offering a contemporary view of creativity in a cognition context. Topics such as insight, problem-solving, memory, and incubation are included, as well as an interesting opening chapter by the editors on cognitive processes in creative contexts. Attention is also paid to machine intelligence and on connectionism and neural nets.

A more recent collection of writings was published by Cambridge University Press, edited by Sternberg (1999). This volume is perhaps the most comprehensive and definitive, single volume in the field of general creativity and contains 22 chapters written by many notable scholars in the field today. The book is important because it documents the recent upturn in interest among cognitive psychologists in the study of this difficult topic. Sternberg (2006) has also recently completed a retrospective analysis of his own work on creative thinking and it is highly recommended.

There are now major journals in psychology devoted to the topic of creativeness, including the *Journal of Creative Behavior* and the more recent *Thinking Skills and Creativity*. Two books on adult creativity have been written—one by Gardner (1997) and the other by Csikszentmihalyi (1997)—and each applies recent work to the explanation of genius.

Despite these developments, creativity as a construct (or as a set of complicated constructs) has largely been avoided in modern psychology. Sternberg and Lubart (1999) offer six possible reasons:

- 1 Mystic and spiritual roots of this topic which tends to put off the more scientific community
- 2 Its pragmatic, commercial nature exploited by those who offer popular accounts of the creative thinking process which are not based on theory and research

- 3 Early work on the subject that was not theoretically or methodologically central to the field of psychology, and, as such, not respected
- 4 Problems with definition and criteria that ‘put off’ the researcher who is looking for easier and perhaps more conceptually understood topics for tenure and promotion committees to understand
- 5 Approaches that have viewed creativity as an extraordinary part of an ordinary thing so as not to really need separate study, and
- 6 Unidisciplinary approaches to creativity that have tended to view a part of creativity as the whole phenomenon, trivializing or marginalizing the study (Sternberg 1999, p. 4).

Those researchers in general psychology that have been brave or inspired enough to deconstruct the general creative experience through empirical study have taken the following approaches (Mayer 1999):³

- ◆ *Psychometric*. Assessment work aimed at the creation of tools to measure specific traits or evaluate overall creative ability (Guilford, Torrance, McKinnon)
- ◆ *Experimental*. Traditional empirical paradigms designed to seek cause and effect relationships (Sternberg and Davidson, Collins and Amabile)
- ◆ *Biographical*. Studies that use historical data to understand the creative process and creative thinking (Wallace and Gruber, Gardner, Simonton)
- ◆ *Psychodynamic*. Writings based on clinical evidence and philosophical/psychological speculation about creativeness (Freud, Kris, Kubie)
- ◆ *Biological*. Data derived from physiological data (Martindale and Hines, Hudspith)
- ◆ *Computational*. Conceptual work based on mathematical and computer-based models and simulations (Boden, Shank)
- ◆ *Contextual*. More qualitative work based on the realities of social context (Csikszentmihalyi)

³ A complete review of each approach is not possible here but see Mayer (1999) for a more detailed description of each approach and for references to the scholar’s work whose names appear in this listing.

Each approach has strengths and inherent weakness. Selected reading of studies in each approach is highly recommended to gain a sense of the contemporary scene in the general literature before reviewing specific studies in music and music composition with children. In drawing implications for music teaching and learning, this literature helps to bolster the aspects of enabling conditions (both personal and culturally based) and enabling skills (personal competence) that are so critical for creative thought. Much of this literature, too, underscores the vital importance of divergency of thought and imagination in context with more convergent thinking that often involves just plain hard work. The vital role of social context is also apparent from this general literature.

Promising new research for music

When comparing the approaches in the general literature to music, the psychometric, experimental, and contextual approaches from Mayer’s listing are noticeable. A more ‘descriptive’ approach is emerging in music which places emphasis on the content analyses of the creative music experiences themselves. Hickey’s review (2002) of creativity research in music and other arts stressed the importance of what she called ‘confluence studies’ which bring together social/cultural contexts with historical forces, events and trends. These studies, which will be noted below, often focus on the musical decision-making processes and on more personal issues outside of the music itself such as confidence, peer-interaction, and self efficacy.

Over fifteen years ago, I published a review of the literature on creative thinking in music education (Webster 1992). I have continued to maintain an annotated bibliography that attempts to cover the field of music teaching and learning.⁴ My organizational model for this

⁴ For the most recent annotated bibliography, consult the following websites: <http://homepage.mac.com/peterwebster> or <http://musicalcreativity.com/?cat=3>.

literature includes studies organized in three major categories:

- 1 *Theoretical*, works based on philosophical or psychological arguments as well as review, standards and historical writings;
- 2 *Practical Application*, literature designed to inform praxis but not derived fundamentally from empirical evidence; and
- 3 *Empirical*, work from numerical or observational data.

This empirical category is the most complex, with studies that examine teaching strategies, assessment design, technology, relationship between variables in and outside music, and the actual creative experience. Work on collaboration and social context has gained a great deal of ground in the last few years. Work with technology and teaching strategies is growing quickly as well. The early literature model was based on less than 200 writings. A current review of this literature will reveal nearly three times this amount.

There are a number of trends that can be seen in the literature in the last 15 years. Here is a summary of the major developments noted in this new literature in terms of children's composition. Key references are noted to give the reader a start in exploring the body of work. A brief summary of this work follows.

- ◆ Adoption of the postmodern tendency to question the assumptions made by previous generations and to be concerned more completely with social context and more naturalistic settings and qualitative methodologies in studying data (Burnard 2006).
- ◆ Empowering children's voices about the composition experience and valuing the meaning that children describe (Barrett 2003; Burnard 2000; Stauffer 2003).
- ◆ Heighten interest in the young child's work with invented music notation and the child's discussion of the notation as a window to understanding knowledge (Gromko 1994).
- ◆ New approaches to assessment, including consensual techniques and peer assessment (Byrne *et al.* 2003; Hickey 2001; Hickey and Lipscomb 2006).
- ◆ Attention to the role of collaboration and group composition (Kaschub 1997; Odam

2000; Miller 2004; Faulkner 2003; Seddon 2006).

- ◆ Emergent thinking on the pedagogy of composition teaching (Hewitt 2002; Webster 2003; Stephens 2003; Berkley 2004; Strand 2006; Odena and Welch 2007).
- ◆ New speculation on and experimentation with the role of music technology (Hickey 1997; Nilsson and Folkestad 2005; Crow 2006; Ruthman 2007; Pachet 2006; Burnard 2007).
- ◆ Models of creative thinking in music from a variety of perspectives (Webster 2002; Burnard and Younker 2002; Hickey 2003; Wiggins 2003; Espeland 2003).

Shift in research paradigm

Burnard (2006) presented an informative retrospective of research approaches as a prelude to a chapter on children's meaning-making as composers. It characterizes a shift from the more 'positivist, large-scale studies aiming to measure creativity in children's composition towards ethnographic, qualitative approaches and to research focusing on the actual site of operations and practice' (p. 111). She argued that, with the development of socially centred theories, the need to study children in more natural settings doing more natural activities is more desirable. She further argued that more attention must be paid to the children's views, perspectives and accounts of process and product. Burnard's accounting of this shift in paradigm is reinforced as one studies many of the most recent research studies on children's composition noted in this chapter; however, it should be noted that more theoretical and positivist approaches continue as researchers seek better answers to assessment, teaching practice, and the description of what children actually produce musically.

Empowering children's voices

A good example of the literature that moves more toward Burnard's characterization is the work honouring the naturally expressed, child perspective on what it means to compose. Barrett (2003) has written eloquently about children's descriptions of composition and the function that it plays in the lives of children.

Of interest is less the musical content itself and more the way children internalize and deal with the request to compose music and the way they make meaning from the experience. It is reasoned that the more we understand this process, the more we understand learning. Burnard (2000) has explored this theme effectively in her examination of how children blend improvisation with composition in the classroom. Stauffer (2003) offered a perspective on identity and voice in her review of several years of compositional data among children using computers to compose music. The accent in her work is on observation of evolving musical thinking with minimal direction from the teacher/researcher.

Invented notation

One window into the minds of children when dealing with music composition is invented notation. Musical drawings offer a means for non-verbal communication of cognitive processing and representation. Gromko (1994) and others such as Barrett (1997) have explored this approach. Typically, children without formal notation understanding are asked to 'notate' their composed work so that others might understand it. After the invented notation is created, children might be asked to tell the researcher what the notation represents. This often leads to a better understanding of what drives or organizes the music composition. Such work leads to a better understanding of how children think in sound and how this changes with age and experience.

New approaches to assessment

Invented notation is one way to deconstruct the complexities of children's composition, but other approaches to assessment of both product and process have been explored. Byrne *et al.* (2003) have reported positive and significant correlations between levels of optimal experience of Csikszentmihalyi's 'flow' levels and quality of group compositions as measured by creativity ratings. Such work is very tentative to be sure and fraught with difficulties, but such experiments are worthy additions to the literature as a partner to more qualitative work.

Hickey (2001) and Hickey and Lipscomb (2006) have reported some success using the

consensual assessment technique made famous by Amabile. This approach is based on a theory that creativeness is best measured by experts in the domain of a field using global approaches and that the articulation of specific criteria is less valid.

Collaboration and group composition

One interesting facet of recent study of children's composition is the effectiveness of collaborative and group composition. Kaschub (1997) profiled the processes of two composition projects, one with six sections of sixth-grade general music students and one with a high school choir. In each case, a composer worked with the groups to create a process cooperatively. The article is rich with examples of how children gained a stronger understanding of music. Seddon (2006) reported success in using composition as a group activity with computer-mediated collaboration over a distance. Similarly positive experiences were reported by Faulkner (2003) in working with group composition involving 6–16-year-olds in a rural school in Iceland; however, his study also identified some causes for concern in terms of group work. Odam (2000) published a critical perspective on group composition as it was implemented in certain schools in England and Wales as part of obligatory Key Stage 3 curriculum; he noted that too many teachers used inappropriate methods and much time was wasted. Miller (2004) contributed an action research study that featured group composition in an elementary school. This study is noteworthy because it was based on a careful review of the literature and featured the story of a teacher who was employing compositional experiences for the first time.

Pedagogy of composition

Of interest to those that teach or are planning to teach, this recent development in the literature deserves special attention. Examples include the work by Hewitt (2002) and Odena and Welch (2007) which demonstrated a direct link between success in teaching composition and past experience with music and compositional thinking. Implications for teacher-preparation programmes seem obvious. Berkley (2004) contributed data on approaching the teaching

of composition as a problem-solving activity that should be presented in a positive atmosphere of student autonomy. Stephens (2003) presented several techniques that have been shown to be effective in teaching and stressed the importance of melodic ideas, technique, musical structure, and personal voice. In writing about the judicious use of revision, I have tried to argue for a balance between complete freedom in teacher direction and dominate control (Webster 2003). An extensive survey study by Strand (2006) of music teachers in Indiana revealed no consistent definition of composition and no real consistency in activities that purported to be compositionally based. Much work remains to be done on the preparation of music teachers to lead successful teaching sequences in composition that is inspired by both the more qualitative and quantitative studies described here.

Role of music technology

Advances in music technology have profoundly affected the research and practice of children's compositional engagement. We have already mentioned the work of Seddon and Stauffer in this regard. The case studies by Hickey (1997) of individuals working with computer technology are important models. The work by Nilsson and Folkestad (2005) is yet another example of a set of investigations of how computer-based technology can be used to study the creative process; noteworthy was their desire to study product and process as an organic whole and to do so with a focus on social/process issues together with music content. On the other hand, Crow (2006) provided a more critical perspective on the implementation of certain music technology and fault was found not only with the materials but the techniques that employed them. Ruthman (2006) documented the use of social computing software applications and online collaboration techniques which promise to make a major advancement in music teaching. Pachet (2006) provided a more pessimistic view of common hardware and software applications and favoured interactive, reflexive music systems. One such system, The Continuator-I, developed at the Sony Computer Science Laboratories in France, allows the user to

perform gestures on a music keyboard with an answer returned in such a way that a musical dialogue can be established. Implications for this system in encouraging and studying creative thinking in music are great.

One of the most interesting contributions to the literature concerning the nexus of technology and creative thinking in music is from Burnard (2007). She provided a set of theoretical constructs for the consideration of technology as a pedagogic change agent.

Models of creative thinking

Finally, model building related to children's creative thinking in music continues to flourish. My own model (Webster 2002) has been newly revised based on much of the literature cited here. The model argues for a central process of staged thinking with music materials that represent the interplay of divergent and convergent processes—all informed by enabling skills and conditions. The work by Burnard and Younker (2002) on the pathways that children follow in the creative process is supportive of this model and extends it in fascinating ways. Espeland (2003) has contributed a model for compositional process that features personal and compositional actions in the context of school. Hickey (2003) has offered a componential model based in part on the work of Amabile; it stresses the critical role of social and intrinsic motivation and the nature of instructional set. Inspired by her own extensive teaching and the recent socially based literature on learning, Wiggins (2003) has provided a powerful 'frame' for understanding creative process for individuals and groups. Embedded in the frame is a carefully conceived interplay between teacher and student that stresses a safe and rich environment and a shared understanding of culture, curriculum, and compositional problem.

Conclusion

This chapter has taken a decidedly 'teaching and learning' approach in summarizing the many studies on creative thinking in music. This has been purposeful on my part because some of the best work in this field is done by researchers interested in the developing minds of children

and the best way to educate them in this rich and complex century. Chapters such as this are difficult to write as much good work is not mentioned. The hope is that this sampling of recent studies may convince the reader to delve deeper into this topic, design and execute research, and apply the ideas in practice.

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