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## **Music And Learning**

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### *Music all around*

The ideas and research that will be outlined and discussed here have been selected to show that music is more than a curriculum subject and that it can permeate many aspects of our lives and that it is important to our cognitive and physical development. Although the field of music education can sometimes be rather too focused on the development of young musicians, I am particularly interested in the development of young people and in ways that music can enhance and enrich their learning.

Many of us listen to music while travelling, doing household tasks, socialising and even studying. We hear music on the telephone, in the cinema, on television, in lifts, shops and even dental surgeries! There is a growing body of research suggesting that music can be of use in the relief of pain and that it can have beneficial effects on our health and wellbeing (Stacy et al, 2002). Few would doubt that music can help to relax us or even to alter our frame of mind.

There is evidence that music makes an impact on our consciousness even before we are born. Verney (1997) describes research which has explored the ability of the foetus to react to light and sound.

‘Hundreds of women have told me about their experiences with music during pregnancy. The one common denominator to these accounts is that the songs played prenatally provoked a very positive reaction in their babies after birth. The familiar music seemed to capture the attention of the infants and relax them, particularly when they were cranky, over tired or feverish’ (Verney, 1997, p.3).

It is suggested that expectant mothers should set aside twenty minutes a day to listen to music that is calming and relaxing, although they are advised to avoid ‘hard rock, acid rock, heavy metal, etc.’ (ibid.).

Boutin-Maloney (1999) cites the introduction of portable music players like the Sony Walkman as leading to studies on the effects of ante-natal music. In one study, music played to the unborn child seemed to produce a number of benefits including fewer babies delivered by Cesarean section, shorter labour, ‘and fewer non-traumatized births (babies with relaxed bodies, open eyes, unclenched hands and little or no crying)’ (Van de Car and Lehrer, 1986, cited in Boutin-Maloney, 1999, p.1).

In another study, Shetler (1989) found that ‘musically stimulated babies started talking an average of three to six months earlier than the unstimulated babies, and once in school, the musically stimulated children were also ahead of the unstimulated children in cognitive development’ (Boutin-Maloney, 1999, p.6).

### *Crying perception*

There have been many research studies investigating the ability of mothers to discern the different emotions being expressed by babies when they cry (Gustafson & Green, 1989; Zeskind & Marshall, 1988). One study involved playing a tape recording of a newborn’s cry to 10 mothers who were sleeping in a different room. The nine mothers whose children were not heard crying continued to sleep while the mother of the baby, whose cry was played, woke up. This is an example of the human brain’s capacity to handle what appears to be a very simple sound, in a complex way and which can be used by the infant to convey emotions such as distress, pain or discomfort, and hunger. Clearly, the mother’s ability to discern minute differences in the detail of their own baby’s cry is an important biological function. This is an ability that is used for musical purposes such as pitch discrimination, melody recognition and voice recognition.

### *Babies and language acquisition*

When we talk to babies, we tend to exaggerate the variety of pitches and rhythms that we use in everyday speech. This is variously known as ‘baby talk’, ‘motherese’ and IDS or Infant Directed Speech. Babies respond to a kind of speech which could also be described as ‘musical speech’. Try saying the following rhyme in a ‘grown up’, non-expressive way.

Round and round the garden  
Like a Teddy Bear  
One step, two step  
Tickly under there

If you read this in a rhythmic manner but with little expression, it still will not sound much like a playful children’s rhyme. In order to make this attractive to the infant, we have to exaggerate the peaks and troughs of the pitch. This Infant Directed Speech style is crucial in ensuring that infants begin to recognise the different sounds of speech. Rhythm is also important here as the infant begins to recognise repeated words. In the above example, repeated words such as ‘round’ and ‘step’ are also associated with touch and movements. The carer’s finger outlines a circle on the baby’s palm at the words ‘Round and round the garden’ and makes step like movements at ‘One step, two step’.

Steven Mithen, a leading figure in the development of ‘cognitive archaeology’, suggests that:

(w)e talk like this because human infants demonstrate an interest in, and sensitivity to, the rhythms, tempos and melodies of speech long before they are able to understand the meanings of words (Mithen, 2006, p.69).

Scientists believe that babies learn to decode the continuous stream of speech sounds by very rapidly analysing sounds that they hear and comparing them with sounds that they have heard before. In this way, the infant then learns to recognise new words very quickly. If you compare this to another activity, such as completing a word search grid, the baby's ability might be like finding words in the grid, by only hearing the nonsense words that are formed by the random collection of letters.

As an example, try finding a real three syllable word in this string of syllables.

Tibudopabikudaropigolatur robberyabiku

(adapted from Mithen, 2006, citing the work of Saffran, 2003)

Which nonsense word is repeated?

Children's 'babbling' along with parents and carers is also considered to be an important aspect of a child's development as it represents 'creative play with vocal sounds' (Papousek, 1996, p. 104).

Some websites which may be of interest. [Literacy Trust](#) , [Youth Music Bongoclub](#)

### *The importance of rhyme*

On Saturday 25 August, 2007, the front page of The Herald newspaper contained a story about Sarah Brown, the Prime Minister's wife, who had visited Edinburgh to support a reading scheme for children.

'She visited the city's Sighthill Library as youngsters took part in a weekly 'rhyme time' session. The session was part of a Scottish Executive programme to promote reading by providing free books to every child at the age of four months, 15 months, and three years. Parents and carers attend the sessions to sing songs and nursery rhymes to their children' (The Herald, 2007).

There is evidence that familiarity with rhymes from about the age of 3 leads to success in reading and spelling over the next three years (Bryant et al, 1989). Some research has also been carried out which suggests that music can be used in a variety of ways in the classroom to benefit children's language development (Fisher, 2001). In this study, Fisher (2001) concluded that 'it seems reasonable to suggest that teachers of young students (kindergarten) might consider using music during their morning opening, for listening stations, and for sustained word study activities.

In learning to read, the use of phonics is now widespread and teachers are advised to make use of the following classroom activities (Perkins & Goodwin, 2006, p. 55):

- Singing songs and nursery rhymes that accentuate sound patterns (for example, *Hickory, Dickory Dock* and *Humpty Dumpty*), which help children ‘tune’ in to speech sounds.
- Sharing books with lots of opportunities to join in, especially with exciting noises such as those made by the dogs in *Yip Yap Snap!* (Fuge, 2001) or the traffic in *Noisy Noises On the Road* (Wells, 1988).
- Playing skipping and clapping games, which encourage rhythmic movement accompanied by words.
- Talking about the sounds we hear around us every day. Asking questions such as ‘What sound does the cow make?’, ‘Can you hear the bell ring?’ and ‘Are you listening to the music?’, all of which introduce very young children to the vocabulary of sound and encourage them to talk about the quality of sounds. ‘That is a high sound.’ ‘That bell is ringing quickly.’ ‘That music makes me feel happy.’
- Listening to sounds and identifying and differentiating between those they hear. As they become more experienced, children will become more adept at hearing subtle differences between sounds.

Clearly, association with sounds is key to children’s developing language awareness and there are numerous ways in which musical activities can be integrated into the learning environment of the young child. Stories with music such as *Peter and the Wolf* by Prokofiev are both engaging and enchanting. Illustrating stories with sounds or playing simple musical games can be a lot of fun. Introducing actions into songs will help to introduce particular concepts such as ‘up’ and ‘down’ in *The Grand Old Duke of York* (Mortimer, 2006, p. 31).

*What can teachers do?*

As educators, we play a key role in the development of young people and we can do a lot to ensure that music plays an important part in the life of our schools. There are many simple activities involving music that we can all do, regardless of our prior musical training. Whether we consider ourselves to be musical or not, and we can question what we think the word ‘musical’ might mean, most of us can probably sing along to a song or hum our favourite television programme’s theme music. We can also make use of our extensive knowledge of music built up over our lives. Most of us are consumers of music and we will regularly make choices as to what type of music we listen to either through buying music in shops, downloads or playing music in the home. Just as the unborn baby in the womb can remember music, so we are also able to recognise music that we have heard before. Most of us could probably annotate our own lives with the

music that we heard when we were very young, as teenagers and as young adults. We associate music with specific occasions such as summer holidays, high school, friends' parties and hearing a particular song or piece of music can immediately remind us of our emotions and thoughts on a specific event or experience. Music has been described as a 'soundtrack to our lives' (MacDonald, 2000), referring to the significance we attach to music as part of our identities.

### *Claims made for music and the arts*

Winner & Hetland (2001) warn that we should not attempt to justify the benefits of arts education on the basis of what the arts can do for other subject areas. They stress that '(a)rts educators should never allow the arts to be justified wholly or even primarily in terms of what the arts can do for mathematics or reading. The arts must be justified in terms of what the arts can teach that no other subject can teach' (Winner & Hetland, 2001).

Let's stop requiring more of the arts than of other subjects. The arts are the only school subjects that have been challenged to demonstrate transfer as a justification for their usefulness. If we required physical education to demonstrate transfer to science, the results might be no better, and probably would be worse. So, it is notable that the arts can demonstrate any transfer at all. Perhaps with more attention to how the arts foster transfer, we can understand how to exploit that capacity further. But even when the relationships are understood, we still maintain that the justification for arts programs must be based on their inherent merit (ibid).

### *Music and feeling good*

(Extract from Byrne, C., MacDonald, R. A. R. and Carlton, L. (2003) Assessing creativity in musical compositions: flow as an assessment tool. *British Journal of Music Education*, 20(3), 277-290. )

'Flow' or Optimal Experience may be described as the effortless involvement with everyday life and may occur when a person is engaged in absorbing and enjoyable activities. The universal precondition for flow is that a person should perceive that there is something for him or her to do, and that he or she is capable of doing it. In other words, optimal experience requires a balance between the challenges perceived in a given situation and the skills a person brings to it. (Csikszentmihalyi, 1988: 30)

The characteristics of flow are clearly recognizable in many worthwhile pursuits and activities including sports, hobbies (Csikszentmihalyi, 1992) and musical performance (O'Neill, 1999). Csikszentmihalyi (1996) describes nine components of enjoyment that many people experience when engaged in activities such as sports and hobbies. Activities which ensure that 'there is no worry of failure', provide 'clear goals every step of the way' and instant feedback on the performance during the activity and which contain a balance between challenge and skill often provide individuals with the exhilarating feeling that is optimal experience, or flow. In addition, such pursuits also provide a

feeling of time being altered and a state in which distractions are excluded from consciousness. Actions or decisions become automatic and feelings of self-consciousness disappear. Such pursuits and activities are also described as being 'autotelic' in nature since they provide their own goals and are therefore worth doing for their own sake. Activities can become rewarding experiences if 'the activity is structured right and if one's skills are matched with the challenges of the action. In this optimal condition, people enjoy even work, extreme danger, and stress' (Csikszentmihalyi, 1975: xiii).

The study of optimal experience (Csikszentmihalyi, 1988) in everyday life has extended to performance in sport (Jackson & Marsh, 1996) and in musical activities (O'Neill, 1999; Custodero, 1999). O'Neill's (1999) study made use of the flow model to explore and examine the motivational and social factors involved in learning to play a musical instrument. A method of observing young children's flow experience while engaged in musical activities has been developed by Custodero (1999). Studies of flow typically involve participants in completing self-report forms seven or eight times a day when contacted by radio pagers that are activated according to a random schedule. Information on respondents' awareness of dimensions of consciousness and personal experience are gathered over the course of a number of days (Massimini & Carli, 1988). Byrne & Sheridan (2000) have described a model for music education which utilizes the flow concept, and it has also been suggested (MacDonald, Byrne & Carlton, 2006 - updated reference) that the creative output of musicians can be positively correlated with levels of flow.

Boutin-Maloney, A. (1999) *Why Wait For the Newborn?*  
<http://www.agsd.ca/sedley/portfolios/efolio/writing/files/Why%20Wait%20For%20the%20Newborn.pdf>. (Retrieved, 26 August, 2007)

Bryant, P. E., Bradley, L., MacLean, M. and Crossland, J. (1989) Nursery rhymes, phonological skills and reading. *Journal of Child Development*, **16**, 407-428.

Byrne, C., MacDonald, R. A. R. and Carlton, L. (2003) Assessing creativity in musical compositions: flow as an assessment tool. *British Journal of Music Education*, 20(3), 277-290.

Csikszentmihalyi, M. (1988) The flow experience of human psychology. In M. Csikszentmihalyi, & I. Csikszentmihalyi (Eds) *Optimal Experience: Psychological Studies of Flow in Consciousness*. Cambridge: Cambridge University Press, pp. 15-35.

Custodero, L. A. (1998) Observing Flow in Young Children's Music Learning. *General Music Today*, 12,1, 21-27.

Fuge, C. (2001) *Yip Yap Snap*. Berkeley, CA: Tricycle Press.

Gustafson, G. E. & Green, J. A. (1989) On the Importance of Fundamental Frequency and Other Acoustic Features in Cry Perception and Infant Development. *Child Development*, **60**, 4, 772-780.

MacDonald, R.A.R. (2000). Popular music: a persuasive and neglected art form? Paper presented at The 6th International Conference Music Perception and Cognition. Keele: Keele University, United Kingdom.

Massimini, F. & Carli, M. (1988) The systematic assessment of flow in daily experience. In M. Csikszentmihalyi & I. Csikszentmihalyi (Eds) *Optimal experience: Psychological studies of flow in consciousness* (pp. 266-287). Cambridge: Cambridge University Press.

Mithen, S. (2006) *The Singing Neanderthals*. London: Orion Books.

Mortimer, H. (2006) *Music Makers: Music circle times to include everyone*. Stafford: QEd.

Perkins, M. and Goodwin, P. (2006) 'Play and planning: A Sound Pathway to Pleasurable and Purposeful Reading', in M. Lewis and S. Ellis (Eds) *Phonics: practice, research and policy*. London: Paul Chapman Publishing.

Saffran, J. (2003) Absolute pitch in infancy and adulthood: the role of tonal structure. *Developmental Science*, **6**, 35, 35-47.

Shetler, D. (1985) Prenatal music experiences. *Music Educators Journal*, **71**, 7, 26-27.

Stacy, R., Brittain, K. and Kerr, S. (2002) Singing for health: an exploration of the issues. *Health Education*, **4**, 156-162.

Van de Car, F. and Lehrer, M. (1986) Enhancing early speech, parental bonding and infant development using prenatal intervention in standard obstetric practice. *Pre and Peri-natal Psychology Journal*, **1**, 20-30.

Verney, T. R. (1997) *Some Aspects of Prenatal Parenting*. University of Utah, Health Sciences Center.

Wells, T. S. (1988) *Noisy Noises On the Road*, London: Walker Books.

Winner, E. & Hetland, L. (2001) The Arts and Academic Improvement: What the Evidence Shows. Executive Summary, Harvard Project Zero: Reviewing Education and The Arts Programme (REAP). [http://csmp.ucop.edu/tcap/news/08\\_29\\_00.html](http://csmp.ucop.edu/tcap/news/08_29_00.html)



Zeskind, P. S. and Marshall, T. R.. (1988) The Relation between Variations in Pitch and Maternal Perceptions of Infant Crying. *Child Development*, **59**,1,193-196.

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