

Making it tangible

A process of translating early childhood music education activities into contemporary designs

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Abstract

In an increasingly digitized society resources that can serve new approaches in musical learning have become an important supplement to early childhood music education. The construction of these tools asks for a translation of regular musical practices combined with new ideas into new designs. The designs described in this article as well as the musical learning contexts are based on and reside in a western cultural context and consequently are subjected to the musical learning processes and symbolic understanding of the children within this context. We will describe our reflections and a number of outcomes of the genesis of a little box with activity cards and a CD, and a digital application containing musical game exercises for touch-screen mobile devices.

Keywords

Music education, young children 0-6, contemporary designs

Introduction

“Children in Western societies are encountering an ever-wider variety of media and symbolic artefacts and their exposure to these media begins at increasingly younger ages. Full participation in society requires that children begin to understand several kinds of symbolic media quite early in life” (DeLoache, 2002, p. 226)

The designs discussed in this article – the little box and the digital application – can both be understood as contemporary translations and explorations of educational musical equipment in early childhood. As such they are culturally bound artefacts aiming to provide a bridge between musical (symbolic) information and musical learning activities.

“Despite its presumed universality, as with other arts music is a cultural product imprinted with material and symbolic aspects of its point of production as well as the musical conventions prevalent in that time and place” (Leavy, 2009, p. 102)

The aim was to transform musical activities into an accessible format that would serve colleagues in the field but also parents at home, carers in day care centres and playgroups. In this process, years of practical experience and research outcomes were combined.

The Projects

The digital application

Using information technology is very challenging if not impossible for very young children with interfaces like keyboards, mice, and joysticks. In the last decade, the evolution of embedded technologies allowed the development of tangible interactive artefacts. However, the diffusion of specifically touchable screens in recent years makes it possible to embody in an application the key elements that engage children, thereby providing more learning opportunities at reasonable costs.

The application project is based on the translation of a number of musical activities normally used in music lessons. It is intended to be used by children aged 2-6. The exercises include the exploration of sound and other musical features like pitch and tone duration, rhythmic and melodic sequences and musical structure.

OK! Sing and play

The little box is specially developed to stimulate the musical development of children aged 0-6 through songs and musical learning activities and, like the digital application, is based on regular activities used in early childhood music education.

Designed as a manageable compact set of cards in a sturdy box accompanied by a CD, its size is similar to the regular size of computer tablets, thereby connecting to contemporary layout formats. The choice for cards was inspired by the aim for ease of handling, safety – rounded corners –, and washability – laminate. A small informal test among a group of young children was performed to determine the functionality and the musical learning possibilities prior to printing. Each card has a picture on the front side as a source of information to support the understanding of the song. On the back of the card the score of the song is printed, the musical game pertaining to the song is described and the activity aims for each developmental area are explained. The CD contains two versions of each song: a sung version with accompaniment and the instrumental version.

Work in progress

Though differing in appearance and use, both designs aim to contribute to musical learning and as such their properties and meaning had to be conceptualised in terms of symbolic dimensions that can represent music. The transformation of musical activities from a face-to-face situation into a mediated fashion was in fact a re-shaping into another mode.

“Virtually anything can be used to represent virtually anything else”
(DeLoache, 2004, p. 67).

The choice of symbols to promote musical interaction therefore demanded a solid underpinning informed by practice and research.

As a result the projects became a bridging construct between a child and her music learning.

The most prominent challenge that emerged was the question of how a child would interact with the tools. In our teaching practice we observed that manual exploration of objects is an important step in the process of symbolic interpretation. According to Vaesen (2012), the cognitive capacities crucial to tool use are the same as those that explain our ability for accumulate culture. These capacities include hand-eye coordination, body schema plasticity, function representation, executive control and causal reasoning but also social learning and teaching and, in particular, language. In reference to written notes, Walker (1992, as cited in Leavy, 2009, p. 102) explains that

“The visual, symbolic forms act as mnemonics for the physical actions necessary in the production of musical or spoken sounds”.

In view of the target audience, notes are not the primary source for musical reference although they are present in both designs. Therefore, apart from the presence of the accompanying CD and accompanying sounds in the application, the high level of abstraction inherent to music required visual and gestural analogies for sound in the shape of small narratives. These narratives are short pretend situations that allow children to experience the concrete dimensions of a particular musical feature, a musical activity or a musical exercise. They have to function as a representation, a link to the musical content therefore the use of language in both designs had to be reduced to a minimum.

Choices had to be made based on the symbolic level of development of young children and their ability to recognise shapes, not only pictorial but also movement shapes that would represent musical information. Using touchable interfaces reduces the distance between the digital (virtual) and physical world because of the possibility of

interacting directly through hands and gesture, providing a way to develop from enactive through iconic to symbolic stages of knowledge (Bruner, 1981).

The pictures on the cards depict the songs thereby referring to concrete objects in the real world children will know. The digital application uses known daily situations that are transformed into musical experiences. For example, a fire truck drawing refers to the fire truck's sound presented in the song. The underlying musical aim is voice formation, meaning to experience the use of the voice in a certain way.

Gestural analogies appear in the shape of different movements that support the musical expression, meaning and understanding of the songs and exercises (Retra, 2010). We consider movement to be an organised action to accomplish a musical objective and an important form of kinaesthetic representation through which young children can come to understand and learn different aspects of music. This way the musical learning process contains stimulation for motor learning.

Gestures have an order and an orientation, and their use not only requires the logical culturally bound application of common rules like "reading" from left to right, but also the clear presentation of their graphical information. In particular, designing a digital application requires focusing not only on the content one wants to convey, it also addresses issues of development of fine motor skills to handle the device and to interact with the screen and the way an adult handles the device to communicate with a child. Children almost 2 years of age have reached the touch-related behaviours needed to interact correctly with a multi-touch screen (Buckleiter 2010).

Focussing on the actual use of the cards addressed practical ways of handling. The design of the cards can provide a way to support representation of a song. Children can see the accompanying picture on the back of the card at the same time the adult is reading the text or singing the song. Children can also hold the card themselves because of their manageable and safe construction.

Towards musical learning

In order to start musical learning, children will first have to “figure out through experience” (DeLoache, 2004, p. 68) the meaning of the symbols used in the designs. The development of symbolic understanding incorporates the amount of experience young children acquire with concrete objects and language, with the guidance of adults in their specific cultural context.

“Cultural differences in caring for the young includes who cares for the children, their availability, the kind of interactions, communication and activities in which care is provided. Cultural traditions as well as economic and political factors shape structural differences in children's living arrangements” (Booker & Woodhead, 2010, p. 12).

Social signals show what can be learned, when something can be learned and in what way. Imitation, shared attention and empathic understanding are the social skills foundational to human development (Meltzoff, Kuhl, Movellan & Sejnowski, 2009), making humans unique regarding the ability to apply skills as a highly effective learning strategy. As explained by Tomasello and Carpenter (2007), other species also have the ability to imitate (meaning to “copy”), but only humans are able to teach others by demonstrating intentionally what they should do through modelling and to share a joint intentional framework within a cooperative target.

“From the very start of their lives children are immersed in influences and become participants in their progress, the most important element of

which is the nature of their relationships with the people surrounding them" (Fabian & Mould, 2009, p. 10)

In the actual designs, these relationships take shape in the form of partnerships in which a child is a co-constructor of its own knowledge and the adult serves as a mediator (Torres Vigoya, 2005). For both designs an incentive is needed provided by the adult to explore and engage in the musical activities and benefit from them. Independent use is possible but only when children are older and have had ample guided experience.

Outcomes and implications

More questions and information than expected germinated from the creation of the designs. Also the designing process reflected highly on our daily practice in early childhood music education. Things we took for granted appeared to be in need of in-depth reflection and would benefit from further research, for example our observed excessive use of verbal commands in practice. Reflecting on the use of language in the designs made us more aware of the function of verbal instructions in a regular face-to-face setting: to be clear and precise and to convey the necessary information in a concise and understandable form.

The musical exercises and activities used in the designs had to be studied both in terms of their usability and how they would create the desired musical learning effect. This resulted in improved observation skills of the musical responses of the children during regular face-to-face classes.

Describing the use of the accompanying CD made us aware of how recorded music could function in an early childhood music class. In particular, the way a song on the CD is presented during a lesson. The

recorded music is more than just a support to synchronise movement in order to experience a pulse. Intentional or planned use can extend musical learning experiences giving deeper meaning to the songs.

We experienced that every choice we made is a result of our music cultural upbringing and education, putting restraints on our wish to reach many children. Designing educational materials therefore comprises thoughts about how and where to distribute it. It is important to understand local expectations of children's musical behaviour and participation, and to be mindful of the space there is in the daily routine for stimulation of musical development.

We propose the ideation of designing activities for contemporary media inside a teacher-training course similar to those included in our designs, because they might serve as good tasks that can incite students to think deeply about musical learning processes in early childhood.

Both designs can be particularly useful in meeting individual musical learning needs because the accompanying adult can make appropriate choices that will suit a child.

Contemporary musical learning designs, especially touchable (mobile) devices, are in the very first stages of development. Nevertheless, the first results are emerging. Also, teachers, carers and parents who want to use these tools will most likely benefit from extra support. To provide advice about the content and use of the designs, and to provide information about the underlying research supporting the methodological choices, websites for both products are under construction.

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