VISUALIZATION AND VERBALIZATION IN THE USE OF SPECIAL MUSIC EDUCATION

Vizualizācija un verbalizācija speciālajā mūzikas izglītībā

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Abstract. *The goal of the present proposal is to present a series of techniques for teaching Music. Those techniques emerged during our music teaching sessions with mentally challenged individuals when it became imperative that we set the limitations to and framework of our teaching efforts. Lest we forget, when dealing with the framework described above, "music" becomes a term with multiple meanings for good reason: whether the teaching of music refers to the instruction process itself; or whether it touches on developing through music a series of skills such as memory, perception, and more, mentally challenged persons who have been taught music may be empowered to express themselves through some musical instrument and, by extension, participate in a musical ensemble and read sheet music with a view to reproducing a musical work or, ultimately, do both. The teaching method adopted was founded on the systematic clinical application of two (2) techniques: visualization and verbalization (e.g., of tempo and musical notes). Those two techniques had already been used within the framework of two Erasmus +KA2 European programs and were: (a) T.E.L.L. Through Music (Leader: Lithuania); and (b) M.E.L.O.S. (Leader: Greece). Additionally, they had been employed within the framework of the "Makris Method" on which the ME.L.O.S. Program was based presented at Rēzekne, Latvia (Makris, 2005). Results were highly encouraging and implemented during the course of the Erasmus + KA2 CAP European program "Cap sur l'école inclusive en Europe" (Leader: APJH – France).*
Keywords: *Visualisation, verbalisation, music special education, intellectual disabilities.*

Introduction

One of the main goals of Special Education is to assist individuals under its auspices to develop a range of dexterities (Macri & Makris, 2014a, b, c; Heward, 2011). Such dexterities are divided into cognitive ones (memory, thought, perception, attention, and language); kinetic ones (fine and gross motor skills); emotional skills, communication skills, and social skills (Makris & Macri, 2003). It is easier to teach those dexterities and skills to individuals whose mental challenge is mild than it is to teach them to those whose mental challenge is more acute (Miller, 1962). It stands to reason that teachers and trainers in the field of Special Education use a series of activities aiming at teaching those dexterities (Lee Heward, 2011). Most of the time, mentally challenged individuals can be taught such dexterities by mimicking the trainer. For instance, the trainer may show trainees how to do something and ask them to repeat it. However, teaching trainees a certain skill may also be carried out indirectly (Krumboltz, & Krumboltz, 1972). Teaching tempo, for instance, may lead to trainees learning how to count, in other words, learning mathematics. The arts – music, dance, theater, painting, are often a most significant tool in the hands of the trainers. Music, dance, painting, and acting can be broken down into smaller segments which can function discretely and thus encourage the development of specific skill areas (Makris, 2015). The pleasure an individual experiences by means of those factors may prove a powerful motive for participation. More specifically, in terms of music, it has been proved that the pleasure an individual derives from music (Makris & Mullet, 2003; Makris & Mullet & al., 2012), in tandem with melody, timbre, tonality, and tempo is cumulative, i.e., those factors are independent of one another. That comes to corroborate the view discussed above that those specific factors can be taken advantage of independently when developing discrete areas of skills.

Aim

The present article aims at presenting two techniques: (a) visualization of music; and (b) verbalization of music. We have been using both techniques for the past five years with spectacular results (Makris, 2016a, b). We have given them the characterization "new" techniques because during our search through expansive, online databases we encountered the term "visualization" in far too few scientific articles. What is more the use of "visualization" in those sources was not employed in the same manner we shall be describing in the present article.

The theoretical framework we selected for teaching and developing skills in our students was Mayer's Theory of Multimedia Literacy. Still, on the basis of our clinical work, we realized that in Working Memory there was one more factor that should be added: movement. In view of the table 1 above, we added to the Multimedia Literacy Theory's Working Memory component the Motor Model which, in essence, ensues from the repetition of specific movements and the sense of touch the students obtain from their musical instruments.

Table 1

Revised Theory of Multimedia Literacy by Ioannis Makris
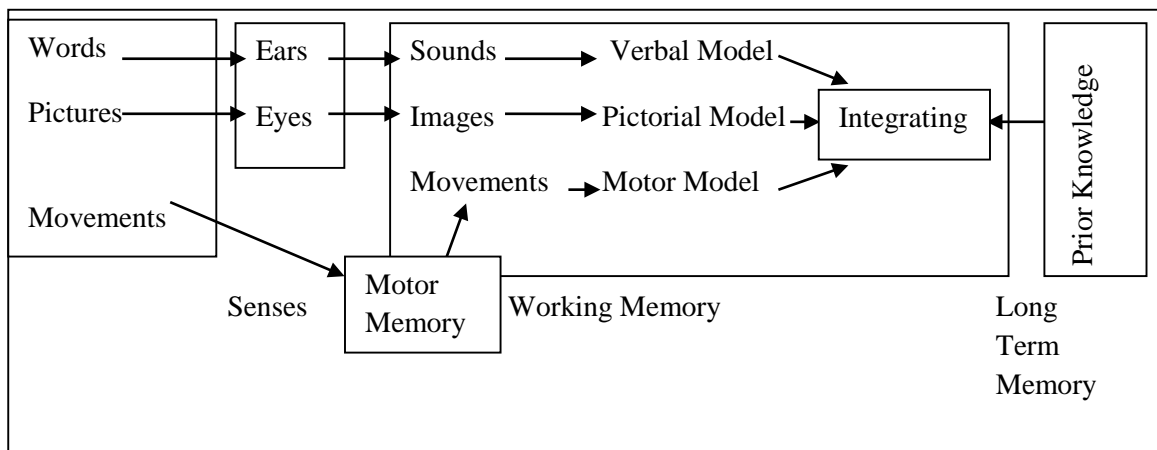
Through visualization and verbalization, in other words, by creating audiovisual representations we create a sort of model for tempo and/or melody. According to Mayer's Cognitive Theory of Multimedia Literacy (2008), words and images are perceived through the senses and are linked to preexisting knowledge via the long–term memory. As a result, the Verbal Model and the Pictorial Model both co–exist in the working memory. During our clinical activities we used that model as the basis of our work but, quite soon, we realized that the working memory also includes the Motor memory which is also linked to preexisting knowledge through the long–term memory. Consequently, the repetition and practice patterns carried out at every session also contribute to sensory memory tactile stimuli which, in turn, provide the opportunity for exercising movement and strengthening the students' muscles with a view to obtaining the best possible performance.

Our methodology is grounded on the fact that the teaching of melody, or of chords, or of tempo can differ. In earlier studies, the subject of chords has been extensively discussed (Makris, 2015; Makris, 2016b). The present article shall discuss in detail the subjects of tempo and melody with a few references to the subject of chords.

Methodology

In each clinical case, what matters in terms of tempo and melody is the ability of the student/trainee to distinguish colors, shapes, and the names of those colors and shapes (Makris & al, 2017). If that proves not to be feasible, the trainer in charge of the students/trainees

unable to perform those tasks must proceed to teaching them the relevant concepts. As part of our clinical work we first used cards made from cardboard in various colors. During the second stage we used shapes and during the third stage we used both shapes (e.g., circle, triangle, square) and colors. Thus, during the initial stage, trainees were assigned the task of first grouping the cards into categories based on the cards' color and then express verbally the color of each category. During the second stage, the trainees' task involves first grouping the cards according to their shape and then verbally expressing the name of those shapes. Trainees entering the third stage are taught to first group the cards either on the basis of color or on the basis of shape and then verbally express the name of the color or of the shape the card category bears.

(A) With regard to rhythm (tempo): So as to accomplish first visualization and then verbalization we organized our work in the following manner:

Visualization Phase (Vilkeliene &, Makris & al., 2017; Makris, 2016a):

(1)   The materials we used were ordinary objects: glasses, sipping straws, pens, and markers.
(2)   We placed a number of glasses before each trainee.
(3)   We asked trainees to count the number of glasses placed before them (one, two, etc., depending on how many glasses we had placed before each trainee each time).
(4)   In some of the glasses, we placed one straw.
(5)   We asked trainees to clap their hands only when seeing glasses with a straw in them. In this visualization model, the straw had the value of a quarter note (crotchet), the pen that of a half note (minim), the marker had the value of a whole note (semibreve), while two straws together counted as an eighth note (quaver).
(6)   Next, we asked trainees to play on some percussion instrument the rhythm they saw before them.
(7)   We chose to have two different colors for the straws, pens, and markers: red and yellow. Objects in red served in teaching trainees to use their left hand and objects in yellow taught trainees to use their right hand.

Verbalization Phase (Makris, 2016a)

(1)   We replaced the glasses with the words (a) "Doum", corresponding to the rap of the hand on the center of the percussion instrument's membrane; and (b) "Te", corresponding to the rap of the hand at the edge of the percussion instrument's membrane. Due to the fact that quite often verbalization does not suffice when unassisted by visualization, during the second stage, we used squares to represent the "doum" rap, and triangles to represent the "Te" rap.
(2)   During our clinical process, there were some trainees who felt strong enough to continue. To those, we taught more complex rhythms and techniques on the percussion instruments (e.g., trillos).
(3)   We worked exhaustively on improvisation based on specific forms of rhythm.

(B) With regard to Melody (Makris, 2016a): We used the verbalization in order to teach trainees concerning the position of the notes on a keyboard and the order of the notes follow in a simple melody. Next, we used the Visualization technique to teach trainees notes and duration and, last, we taught trainees notes and duration in combination so as to help them practice on complete melodies. More specifically:
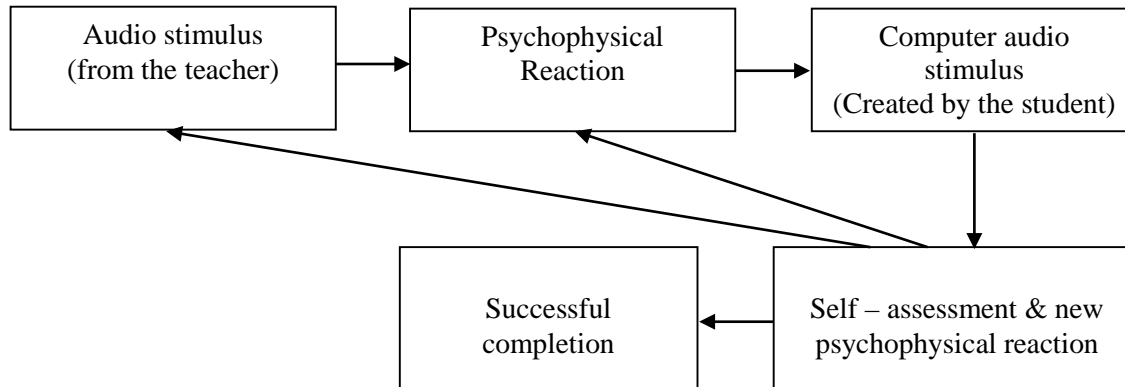
Verbalization

(1)   Using a Digital Audio Workstation (D.A.W.) we (a) sampled (a) a male voice (low octave) and a female voice (high octave), each singing the notes; (b) we matched each key with the corresponding note. The next step was to request trainees to play the notes we asked them to play each time. The cognitive process that takes place each time is depicted below on the graph we developed within the framework of the TELL program.

(2) The process must be repeated again and again so that, by practicing, trainees will succeed in learning the notes. We follow a similar routine when it comes to instruments other than percussion ones, the only difference being that, in this case, the computer – based tasks are taken over by an assistant.

Table 2

Cognitive process using Computer audio stimulus (Method T.E.L.L.)

Visualization
(1) We make cardboard cards in a different color and size for each note. For example: (a) 4x2 cm cards correspond to the sixteenth note; (b) 4x4 cm cards correspond to the eighth note; (c) 4x8 cm cards correspond to the quarter note; and (d) 4x32 cm cards correspond to the whole note.
(2) We match each note of the octave to a color.
(3) We place on the keys stickers in the corresponding color and create simple melodies. Last, we ask trainees to perform those melodies. By looking at the order in which the cards have been positioned, trainees respond accordingly.
Visualization and Verbalization
(1) Visualization is accomplished by selecting the MIDI mapping function of a DAW. That allows us to listen at the same time to the sampled notes and accomplish verbalization as well.
(C) With regard to the chord: The subject has been discussed in other studies and we have found that visualization of a chord can be accomplished only via some color produced by an optical signal generator (Makris, 2015).

Materials

The project discussed above necessitates the following materials: A Digital Audio Workstation; an optical signal generator; two speakers; cardboard; sipping straws; pens; markers; the musical instrument to be used during the training station; and stickers to be affixed on specific positions on the musical instrument.

Results

For the past five years, we clinically applied the Visualization and Verbalization techniques for teaching Music within the framework of Special Education to approximately forty cases. The process has shown that participating trainees:
– Were keenly interested in participating
– Greatly improved their cognitive, motor, emotional, communication, and social skills.

- − Gained in self–confidence.
- − In most cases, were helped during the training sessions in developing their musical skills, a fact that leads us to conclude that the improved model of Mayer's Cognitive Theory of Multimedia Literacy Model is highly effective.

We wanted to extend and test the musical potential of our trainees within the framework of the European Program *Cap sur l'Ecole Inclusive* (Leader: APJH, France). To that purpose we organized a musical event of joint training. The musical ensemble comprised eighteen, mentally challenged musicians–trainees and a choir of twenty members from an ordinary neighborhood school. Through that concert which, as far as we know, had been organized for the first time on that scale, the musicians–trainees demonstrated true professionalism while the benefits the participating school's choir members derived were equally significant.

Summary

Overall, both visualization and verbalization can also be applied to artistic fields other than music, such as dance, the theater, etc. We believe that visualization can greatly help hearing–impaired individuals to develop their artistic potential. In turn, verbalization can help the visually impaired to learn how to play a musical instrument such as the flute, clarinet, etc or develop other artistic skills. Defining and codifying at the outset the contributing factors through objects, colors, or words is a process that needs careful consideration. Moreover, our parallel experience with pre–school children has helped us realize that visualization and verbalization are powerful pre–school education tools. We sincerely hope that the present article may potentially become the springboard of a number of subsequent studies and clinical applications.

Kopsavilkums. *Šajā rakstā autors piedāvā dažādas mūzikas mācīšanas tehnikas. Tās tika attīstītas, strādajot mūzikas nodarbībās ar cilvēkiem, kuriem ir intelektuālās attīstības traucējumi. Mācību metode balstās uz divām tehnikām – vizualizāciju un verbalizāciju. Šīs tehnikas var pielietot arī citās mākslas nozarēs, piemēram, dejas vai teātra mākslā.*

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