

Musical Notation Reading versus Alphabet Reading - Comparison and Implications for Teaching Music Reading to Students with Dyslexia

Ora Geiger

Abstract—This paper discusses the question whether a person diagnosed with dyslexia will necessarily have difficulty in reading musical notes. The author specifies the characteristics of alphabet reading in comparison to musical notation reading, and concludes that there should be no contra-indication for teaching standard music reading to children with dyslexia if an appropriate process is offered. This conclusion is based on a long term case study and relies on two main characteristics of music reading: (1) musical notation system is a systematic, logical, relative set of symbols written on a staff; and (2) music reading learning connected with playing a musical instrument is a multi-sensory activity that combines sight, hearing, touch, and movement. The paper describes music reading teaching procedures, using soprano recorders, and provides unique teaching methods that have been found to be effective for students who were diagnosed with dyslexia. It provides theoretical explanations in addition to guidelines for music education practices.

Keywords—Alphabet reading, music reading, multisensory teaching method, dyslexia, recorder playing.

I. INTRODUCTION

READING is a cognitive process of deciphering visual signs to produce meaning. During the reading process, written information of symbols and signs is received in the person's eye and processed in the brain. This definition is relevant to both the reading of letters and the reading of musical notation. However, while the letters of the alphabet are signs determined arbitrarily, notes are recorded systematically on a set of horizontal lines and spaces called staff, with the location of each note on the staff indicating its relative pitch.

Dyslexia is a learning disorder that makes it difficult to acquire alphabet-reading skills due to difficulties expressed in the identification of letters, spelling, and other language deciphering skills [1]. In order to read, one must be able to connect a symbol with a sound and to join the sounds into words. A person who has dyslexia finds it difficult to translate a graphic symbol into the sound that it represents. When teaching reading to children diagnosed with dyslexia, the multi-sensory approach, supporting the activation and involvement of some senses in the learning process, has been found to be particularly effective [2]. According to this

approach, when several senses participate in the reading learning process, it becomes more effective.

The research reported in this paper is based on the author's educational work with elementary school age children, teaching the early stages of playing the soprano (descant) recorder and reading music. On occasion, a child diagnosed as dyslexic arrived to the class, and the music educator was required to teach him or her to play by ear, without involving reading and writing music. At the beginning of this process, music was played during the lessons by ear and a recording device was used in order to record the music played. Later, additional teaching strategies to present the music were developed and applied.

This article begins with a case study report of a girl diagnosed as dyslexic, whom the author taught to play soprano recorder. It continues with findings, insights and principles discovered during this case study and have been used later in the educational work with additional dyslexic children. The article concludes with a theoretical explanation of the findings discovered in actual fieldwork. The author specifies characteristics of alphabet reading in comparison to musical notation reading, and discusses the question whether a person diagnosed with dyslexia will necessarily have difficulty in reading musical notes.

II. THE CASE STUDY

A. Background Information

Noam (an assumed name), an eight-year-old girl, was diagnosed as a child with dyslexia. She was a third grade student and had experienced significant difficulties with learning the alphabet. She also had difficulties with Math (dyscalculia), left and right distinctions, and orientation. For example, she experienced difficulties finding her way around in school, and in the neighborhood. Noam came to study soprano recorder with me on an individual basis. Since she had tremendous difficulties acquiring basic reading and writing skills, her language therapist and professionals who worked with her recommended that she should not be "burdened" with learning to read music, but should learn to play music relying solely on listening.

Noam appeared a very musical and intelligent girl, with a great imagination. Her spoken language was excellent, with a very rich vocabulary. She was very enthusiastic about studying to play the recorder and enjoyed the lessons very much.

O. Geiger is with the Music and Movement Department at Ohalo College of Education, P.O. Box 222, Katzrin 12900 Israel, and with The Kibbutzim College of Education Technology and the Arts, 149 Namir Road, Tel-Aviv 62507, Israel (e-mail: geigerora@gmail.com).

B. Teaching Strategies

In the beginning, the procedure used during music lessons was playing the recorder using a variety of techniques: imitation, improvisation, and creating short melodies and lyrics. Since it was required that Noam will practice playing at home, the studied tunes were recorded for her to use during the week, between the lessons. At a certain point, the teacher was seeking other ways to "capture" and present the tunes played during the lessons. She decided to draw in music notebook samples of a recorder, and to fill in the appropriate circles (holes of the recorders' sketches) in accordance with the song tones (Fig. 1). Noam had no difficulties "reading" these sketches. So, the music teacher moved on and "wrote" complete songs using this technique.

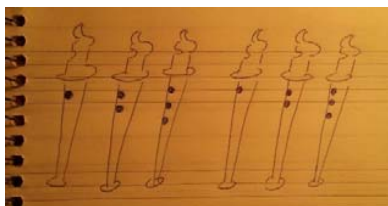


Fig. 1 Samples of recorders

In the next phase, she suggested that they skip the recorder drawing, as it was time consuming, and outline only the dark circles. Again, it became clear that Noam could play easily using this method. They created new melodies with these several notes, and "wrote" them in this unique way. Noam played them simply with no effort. Then, the teacher asked her if it would be OK not to draw all the circles, but just the bottom one. She agreed. This time the circles were drawn on the appropriate lines on the music staff just like "real" notes.

C. The Progression

Gradually and eventually, the transition to standard music reading took place. The shifts happened naturally and smoothly, according to Noam's progress. Noam began to play music from a regular standard recorder book. Usually the original method of first listening and playing by ear before reading was kept. She had a good memory for melodic lines and she memorized the musical line through listening. Nevertheless, gradually she moved to music that is more complex and to melodies with which she was not familiar. In these cases, she was relying more on reading.

At the same time Noam started her music lessons, an equivalent group of children of the same age also began learning to play soprano recorder with the same teacher. Noam did not join the group initially since it was believed that she would not be able to study with them because of her reading difficulties. After a few months, it turned out that the level of her music reading was equivalent to that of her peer group. Subsequently, Noam joined the group and played with them together at concerts and special occasions.

D. Difficulties

While learning the notes was relatively simple for Noam, she showed difficulty reading and figuring out rhythms. She had problems in understanding the mathematical relationship between rhythmic values, and frequently lost count. Often it seemed that when she read music she mostly focused on the pitch and paid almost no attention to the length of the notes. From time to time when played by ear she used to switch from one tune to another naturally, without being aware that she moved to a new tune.

In order to address her rhythmic difficulties, the teacher suggested a variety of techniques: clapping out the rhythms, moving, and singing.

E. Epilogue

Noam studied with the music specialist for 3 years, playing soprano and later alto recorders. She learned to read music, enjoyed musical experiences, and then decided to continue her musical education as a singer. She started to take professional singing lessons and joined the local conservatory youth choir, where she regularly sang solfège. This is an individual case and the author does not claim that it represents all cases; however, she believes that this experience may illustrate some aspects of the relation between dyslexia and music reading, and perhaps provide some practical tools for music educators.

III. LITERATURE REVIEW

The primary question this article focuses on is whether a person diagnosed as having dyslexia necessarily has difficulties in reading musical notation.

According to the British Dyslexia Association [3], in most cases dyslexia affects reading and learning music, since the skills required for music reading are those a student diagnosed as having dyslexia finds difficult.

Reference [4] also claimed that problems involved in teaching musical notation are basically similar to those involved in the teaching of reading, spelling, and mathematics. However, many dyslexic students still enjoy and succeed in music. Reference [5] found a strong relationship between musical discrimination abilities and language-related skills.

The British Dyslexia Association in its information booklet "Music and inclusive teaching" [6], specifies some commonly reported difficulties with music among dyslexic students such as:

- Difficulties in the reading of music, particularly sight-reading without adequate preparation
- Aural tests, particularly those involving memory, such as dictation
- The understanding and production of written material (text/language and music)
- Work in music theory: understanding and de-coding information
- Analysis of music and the use of examples in written work
- The organization of evaluative written work: evaluation of performances by self and others

- Difficulties with the sequencing of material; decisions about what is important/relevant; choice of wording for answers, both verbal and written
- Organization of complex and non-regular timetables of lessons, rehearsals and concerts and organization of relevant material: music, strings, reeds etc.
- Organization of personal practice.

Regarding the matter of rhythm, [7] argues that there is evidence for rhythmic perceptual difficulties in developmental dyslexia. Using a battery of behavioral tasks, the authors explore, among other tasks, relations between Metric musical perception, phonological awareness (PA) and reading in a sample of 64 typically-developing children and children with developmental dyslexia. Their results show that musical metrical sensitivity predicts PA and reading development, accounting for over 60% of variance in reading along with age and I.Q. The authors conclude that difficulties in metrical processing, such as music notes, are associated with basic auditory rise time processing difficulties, suggesting a primary sensory impairment in developmental dyslexia in tracking the lower-frequency modulations in the speech envelope.

Reference [8] points to dyslexic children that showed difficulties with musical timing skills while showing no difficulties with pitch skills. He provides some evidence suggesting that the language and literacy problems experienced by dyslexics are caused by deficits in various sensory, cognitive and motor processes. Several theories on the underlying cause of these deficits hint that the fundamental problems stem from abnormal "temporal processing". Reference [8] reports some preliminary work showing that music training, requiring very accurate timing skills, can offer a medium for the development and improvement of temporal processing ability, and thus may provide an extra form of remediation for dyslexic children.

Reference [9] continues this line of research, on the premise that music lessons, based on singing and rhythm games, might provide a valuable multisensory support tool for dyslexic children by encouraging the development of important auditory and motor timing skills and subsequently language skills. In order to explore this hypothesis further, a collection of musical aptitude tests (MATs) was designed specifically for dyslexic children, in order to distinguish between a variety of musical skills and sub-skills. 15 dyslexic children (age 7–11) and 11 control children of similar ages took MATs, and their scores were compared. Results showed that the dyslexic group scored higher than the control group on 3 tests of pitch skills (possibly attributable to slightly greater musical experience), but lower than the control group on 7 out of 9 tests of timing skills. Particular difficulties were noted on one of the tests involving rapid temporal processing. These results support, according to the authors, suggestions that timing is a difficulty area for dyslexic children, and that rhythm skills and rapid skills may need particular attention in musical training with dyslexics.

For non-dyslexic musicians, rhythm is generally counted and sequenced in time. However, for musicians with dyslexia, rhythm is often felt rather than counted, and it is learned

through listening [10].

In general, [3] attributes a unique role to the private music teacher who meets the dyslexic child in a one-to-one, close, on-going situation, and has the opportunity of being especially meaningful to the child:

"An instrumental music teacher, teaching in a one-to-one situation, is in a unique position to build up a student's self-esteem. It is possible, in fact probable, that the student may discover things about himself and his ability that surprises him ... with the right teaching those with dyslexia has been successful in music".

IV. FINDINGS AND DISCUSSION

As demonstrated in the literature review, researchers often agree that reading alphabet and reading musical notation use closely related skills and therefore a person that experiences difficulties in the latter task is likely to have difficulties in the former.

As noted above, Noam's case study shows that a child having dyslexia can learn to read music notation and reach high standards in musical education despite difficulties in learning to read. Findings also show that while Noam successfully coped with reading musical notes, she had significant difficulties regarding rhythms, as described in [8]. Evidently, dyslexia is a broad phenomenon that covers a large spectrum, and no case is identical to another. However, in general, an individual who was diagnosed as having dyslexia has difficulties in translating a graphic symbol into the sound that it represents.

Reading is a cognitive process of deciphering visual signs to produce meaning. During the reading process, written information of symbols and signs is received in the person's eye and processed in the brain. This definition is relevant to both the reading of letters and the reading of musical notation. However, while the alphabet letters were determined with no systematic order, one might say arbitrary, notes are recorded systematically on a staff with the location of each note on the staff indicating its relative pitch. Additionally, musical notes are usually played physically on a musical instrument. In the case study described above, when Noam played the recorder, she figured out that as she goes down the recorder with her fingers the appropriate notes go down the staff accordingly and she could hear that the music goes down. The relationship between the fingering, the notations and the sounds is clear (Fig. 2). This connection is particularly strong in playing soprano recorders, because of the fingering of this specific instrument and the vertical (upright) position that the player holds it. That makes the recorder an excellent instrument choice for this purpose.

When teaching reading to children diagnosed with dyslexia, the multi-sensory approach, supporting the activation and involvement of most of the senses in the learning process, has been found to be mostly effective. According to this approach, when some senses participate in the reading learning process, it becomes more effective.

As described above learning music reading while studying to play a musical instrument is a multi-sensory experience by

its nature. The senses involved are: sight, hearing, touch, and the kinesthetic sense (motion), which provides the brain with information on the relative positions of the body. In this way, probably, the learner experiences simultaneously visual, auditory, tactile, and kinesthetic impressions.

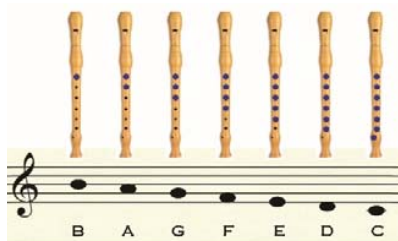


Fig. 2 A recorder fingering chart

V.CONCLUSIONS

Based on initial assumptions and on guidance of language specialists and professionals, the opening strategy for teaching music to dyslectic children in this presented case was to avoid musical notation reading and to focus solely on playing by ear. This approach was supported by the literature, as researchers claim that similar skills are required for both alphabet reading and music reading. However, reality proved otherwise. During years of experience as a music specialist, the author found that it is possible for a dyslectic child to achieve and succeed in music at the same pace and level as his non-dyslectic peers.

In summary, it is concluded that there should be no contraindication for teaching standard music reading for children with dyslexia if an appropriate process is offered.

While experts recommend teaching alphabet reading for children with dyslexia using a multi-sensory teaching approach, i.e. using a number of different senses in order to learn, studying to read and play music is indeed inherently a multi-sensory activity: visual, auditory, and kinesthetic, as you see the notes, hear the sounds, and touch and feel the instrument. Therefore, because of the nature of music reading, a child with dyslexia who experiences difficulties reading the alphabet will not necessarily experience significant difficulties learning to read music.

The unique characteristics of musical notations, which are systematic and relative set of symbols written on a staff, and the fact that reading and playing them involve multiple senses, might offer the dyslexic child better conditions for reading musical notations than reading alphabet letters.

The findings described in this paper contribute to knowledge in the area of music education focusing on the possibility of teaching music reading to dyslectic children. The paper contributes insights regarding this context, and provides practical suggestions and tools that may be used in similar situations. This article is based on the author's years of experience teaching music to children. During the years, she studied the subject theoretically and practically. However, she believes that the area under discussion is broad and complex and there are many additional features to discover and directions for further study.

Recommendations for future research on this area can be:

- (1) to compare the music-reading learning process of dyslectic children who study music using the method described in this paper to those who study by the "regular" orthodox approach;
- (2) to return to the dyslectic students after years and examine their progress and involvement with music as adults.

ACKNOWLEDGMENT

The author sends her deepest thanks to the students whom she taught music and recorder playing over several decades, in individual classes, public schools, and in the music conservatory. The group and individual meetings with each student obligated her to employ an array of methods to cater for individual learning needs and styles, thus improve her teaching. As reflected in a well-known quote:

"I have learnt much from my teachers, and from my colleagues more than from my teachers, but from my disciples more than from them all" (Babylonian Talmud tractate Ta'anit 7a).

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