

The Effects of an Early Intervention Music Curriculum on Prereading/Writing

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This study evaluated the effects of music sessions using a curriculum designed to enhance the prereading and writing skills of 25 children aged 4 to 5 years who were enrolled in Early Intervention and Exceptional Student Education programs. This study was a replication of the work of Standley and Hughes (1997) and utilized a larger sample size (n = 50) in order to evaluate the efficacy of a music curriculum designed specifically to teach prereading and writing skills versus one that focuses on all developmental areas. Both the experimental (n = 25) and control (n = 25) groups received two 30-minute sessions each week for an entire school year for a minimum of 60 sessions per group. The differentiating factors between the two groups were the structure and components of the musical activities. The fall sessions for the experimental group were focused primarily on writing skills while the spring sessions taught reading/book concepts. Music sessions for the control group were based purely on the thematic material, as determined by the classroom teacher with purposeful exclusion of all preliteracy concepts. All participants were pretested at the beginning of the school year and posttested before the school year ended. Overall, results demonstrated that music sessions significantly enhanced both groups' abilities to learn prewriting and print concepts. However, the experimental group showed significantly higher results on the logo identification posttest and the word recognition test. Implications for curriculum design and academic and social applications of music in Early Intervention programs are discussed.

Introduction

It is widely recognized that high quality early childhood education programs increase children's chances of achieving future success and becoming productive members of society (Gestwicki,

1999). For this reason Early Intervention (EI) programs have been established in the State of Florida to serve children who meet the eligibility requirements. These programs are comprised mainly of children who are at least 4 years old and who are considered economically disadvantaged, or who qualify for the free lunch program. Such students make up 75 percent of the students in an EI class. The remaining 25 percent of the class may include 3 and 4-year-old students who have a disability, have been abused, have been substance exposed, or reside in foster care. These students are then enrolled in a program that is developmentally appropriate for the age span of the children in the group. The National Association for the Education of Young Children (NAEYC) (1997) describes such a program as one in which all areas of a child's development are provided for through an integrated approach. An ideal program provides for play, requires planning based on the children's individual needs and developmental abilities, allows for a variety of cultural backgrounds and provides an environment where children learn through active exploration and interaction. Furthermore, the NAEYC states that the program should provide a balance of individual or quiet activities and active movement while allowing for the children to choose from a wide range of experiences that represent an array of developmental interests and abilities.

As supported by the NAEYC standards, Gestwicki (1999) states that "play is the absolute stuff from which cognitive development in preschool children occurs, allowing them to actively create and represent their developing understanding of the world." Language is an inseparable part of the play and learning of the preschool classroom. It is through this exploration of their environment and the desire to have their needs met that children seek to acquire and use language. Halliday (1975) states that as children's use of language grows so does their need to attach meaning to their words. It is this functionality that facilitates later success in literacy (Halliday, 1977).

Once children discover that communication meets their needs they are motivated to move further with reading and writing. Reading and writing are then viewed as part of a larger system for accomplishing their goals and the individual will find ways to represent their experiences both through play and action (Gestwicki, 1999). Once these behaviors are recognized it is important for the teacher to further enhance linguistic awareness by exposing chil-

dren to a print rich environment. This may include a variety of books used to teach the concepts of cover, title, author, top to bottom, and left to right. It is also important to call attention to what words look like (spacing, single letter versus word versus number) and to look for details in pictures and how they are related to print. (Healy, 1994)

Both oral and written language may be broken down into various measurable subsets. Oral language development includes phonology or production and comprehension of speech sounds, semantics, syntax and pragmatics. The written components include book handling, understanding function of print, knowledge of letters and words, gaining a sense of "story", writing forms, and "reading" (or verbally interpreting) one's own writing (McAfee & Leong, 1997). Weir (1989) states that providing a print rich environment where students are exposed to text "in association with oral language activities" helps children discriminate between printed letters, words, sentences and numbers. Furthermore, discussion and display of print models such as signs, charts, logos and labels promote understanding.

Kolb (1996) states that the spontaneous disposition children have toward rhythm and melody makes music an ideal tool for teaching the many facets of language: listening, speaking, reading, and writing. Additionally Cutietta (1995, 1996) looked at several unpublished doctoral dissertations that support the need for extensive investigation of the connection between music and the development of language and/or reading skills. While the findings compiled by Cutietta indicated significant growth in these areas, the studies he looked at included small numbers of subjects and should be replicated. However, participants of these studies had better discrimination skills for perceiving language, better articulation for speaking, and were able to make a positive transfer from music skills to the development of language skills.

The modalities of music and movement are not often emphasized in traditional instruction. However, creating a music curriculum that can incorporate music and the previously stated prereading/writing objectives allows children on all instructional levels to successfully participate. It should also be noted that by integrating music into the curriculum one can "provide the learner with one more way to construct knowledge . . . [while] giving the brain more data from which it will integrate internally" (Hart, Burts, &

Charlesworth, 1997). According to Standley and Hughes (1996), music therapy is "a viable means of including pre-Kindergarten children with widely disparate abilities in highly successful learning activities."

Method

Music sessions were provided to four existing pre-kindergarten classes and two different schools that included both exceptional education and early intervention students aged 4 to 5 years. The control and experimental groups were divided among the two schools, allowing for one of each group at each facility. While there were a total of 61 children who were pretested for this study, only those in each group who were present for at least 80% of the sessions were analyzed. Of those 61, a total of 50 participants (25 in each of the two groups) completed both the pre and posttests, were present for at least 24 of the 30 sessions and completed the necessary journals (when applicable). Each group consisted of 14 females and 11 males. The mean age for all 50 participants was 55.5 months, with a range in age from 49 to 66 months.

Of the 25 students in the control group 23 were considered EI. Seven of those were receiving weekly speech therapy, either individually or in small groups (2-3 children). Comparatively, 24 of the students in the experimental group were admitted through the EI program. Eight of those 25 students were receiving services for speech and language deficiencies.

This study was designed to measure the efficacy of a music therapy curriculum that focused primarily on prereading and writing skills. Treatment conditions for both groups lasted for a total of 30 weeks and included two 30-minute music lessons per week for a total of 60 lessons. The experimental group received music therapy sessions specifically designed to teach and/or reinforce prereading/writing concepts while the control condition included music therapy for the same amount of time but with no emphasis in teaching prereading/writing skills. Both groups were given pre and posttests to determine progress in the targeted skill areas.

The pre and posttesting included three different measures of oral and written language skills. The Print Awareness Test for Logos (Freeman & Whitesell, 1985; Thomas, Rinehart, & Wampler, 1992) consisted of 10 logos that were considered ubiquitous in the children's environment due to frequent advertising or use in their

culture. These included logos for fast food restaurants, sports teams, food items, and credit cards. Each item was presented twice, first with the commercial print and then with the print omitted. Students received one point per item for specific identification of the product and one-half point per item for general identification.

The Print Awareness Test of Word Identification (Standley & Hughes, 1997) consisted of 23 items including words that were printed, words in cursive, single letters and numbers. Children were asked to identify (with a yes or no response) if "this is a word that can be read." Each item was isolated so as not to confuse the child. The test was discontinued after five consecutive wrong answers in assumption that the items were beyond the abilities of the child.

The Print Concepts Checklist was adapted from the Concepts About Print Test (Clay, 1985) and was used to assess book manipulation (i.e., front/back, page turning) and prereading skills. This test consisted of 25 items with a score of one point given for each correct response. As with the Print Awareness Test of Word Identification, this test was discontinued after five consecutive wrong answers in assumption that the items were beyond the abilities of the child. The book *What's Up in the Attic?* (Alexander, 1987) was used to test these concepts as it was new to the children and had not been a part of previous music or pre-Kindergarten curricula.

Following the pretesting of both groups, music sessions were conducted with each group twice weekly. During the first 15 weeks, students in the experimental group were asked to "journal" immediately after music sessions by drawing (on a blank sheet of paper) a picture of something that they did in music that day. An explanation of the drawing was dictated by the child to the classroom teacher or paraprofessional and written directly on the drawing along with the child's name and date. These "journals" were collected once a week. During the second 15-week period students compiled a songbook comprised of the words to several songs that were used in music time. Students were given one song per week and were asked to provide illustrations for the song. They also used these during the course of the week to practice print/book concepts. Because these measures were used to reinforce and evaluate reading and print concepts, the control group was not asked to provide these postsession writings.

All of the student's writing samples were collected and the Developmental Writing and Language Skills Checklist (Thomas et al.,

TABLE 1
Pre and Post Group Means for Each Dependent Variable

	Control		Experimental	
	Pretest	Posttest	Pretest	Posttest
LOGO ID	3.88	4.82	4.62	7.18
WORD ID	3.12	3.20	2.04	10.76
PRINT CONCEPT	1.40	3.92	3.20	6.88
	<i>n</i> = 25		<i>n</i> = 25	

1992) was used to assess the written language skills in four different categories. Their postmusic drawings were analyzed for code (pictorial, scribbling, mock letters, & letter production), language level (alphabet to written sentences), directional principles (top/bottom, left/right), and message quality (relevance of drawing/writing to that day's activities). Items were arranged in order of developmental significance with points awarded according to developmental progress. The maximum number of points awarded was 15.

The control group received developmental music therapy twice a week utilizing a variety of activities in an effort to promote cognitive skills, socialization, and movement. Activities that promoted prereading and writing skills were intentionally excluded. Likewise, the control group was not asked to participate in creating postsession drawings as this was intended to be a measure of recall and preliteracy concepts taught in the experimental group procedure.

The experimental group curriculum utilized plans from a study conducted by Standley and Hughes (1997) as well as additional/subsequent lessons in a similar format. This included the use of books, word and letter cards, charts and other visuals that reinforced the targeted skills.

Results

All pre and posttest scores were compared using a two-tailed paired samples *t*-test. Table 1 indicates means for both the control and experimental groups for each of the pre and posttests that were conducted. Results indicated that there were no significant differences between the experimental and control groups on the logo identification pretest ($t = -1.62$, $df = 24$, $p > .05$). Therefore, both groups were considered to be at a comparable performance level. The comparison of differences in scores from pre to posttest for

TABLE 2

Results of ANOVA on Three Post Session Drawings of Experimental Group

	SS	df	MS	F	p
Between groups	11.760	2	5.880	1.074	.347
Within groups	394.240	72	5.476		
Total	406.000	74			

both the control and experimental groups on the logo identification test also showed significant difference ($t = -2.878$, $df = 24$, $p < .05$).

In comparing the experimental and control group pretest scores for the Print Awareness Test for Word Identification no significant differences were found ($t = -0.101$, $df = 24$, $p < .05$). As with the previous measure, both groups were performing at a similar level. The comparison of differences from pre to posttest for both the control and experimental groups was significant ($t = -5.319$, $df = 24$, $p < .05$).

The control and experimental pretest scores for the concepts of print test were significantly different ($t = -2.449$, $df = 24$, $p < .05$). Upon completion of the study, the control group scored significantly better on the posttest ($t = -5.794$, $df = 24$, $p < .05$) while the comparison of the experimental group's pre and posttest scores indicated no significant change ($t = -0.104$, $df = 24$, $p < .05$). Caution should be used in interpreting these results due to the experimental group pretest score being significantly higher at the commencement of the study. Additionally, the comparison of the control and experimental group differences from pre to posttest did not indicate a significant difference ($t = -1.993$, $df = 24$, $p < .05$).

Due to the inconsistency of student attendance and inconsistent teacher implementation of the "journaling" measure, three time periods were selected for analysis (Period 1-week 1 or 2, Period 2-week 6 or 7, Period 3-week 14 or 15). One picture and one song sheet for each student in the experimental group was randomly selected from each period. Preference was given to weeks 1, 7, and 15 as they best represented the beginning, middle and end of each term. The scores on the Developmental Writing and Language Skills Checklist were compared for the three select post session drawings and three select song sheets using a One-Way Analysis of Variance (Tables 2 & 3). Post-hoc Tukey HSD tests on means (Table 4) for both the pictures and the song sheets indicated that there were no

TABLE 3
Results of ANOVA of Three Post Session Song Sheet Drawings of Experimental Group

	SS	df	MS	F	p
Between groups	88.747	2	44.373	7.241	.001
Within groups	441.200	72	6.128		
Total	529.947	74			

significant differences between the three postsession drawings. However, results from this same test indicated that Song Sheet 1 was significantly different from 2 ($p < .02$) and 3 ($p < .001$) but that 2 and 3 were not significantly different from one another ($p < .05$). This indicates that the greatest progress for developmental writing occurred early in the sessions. While these results showed progress across time, the progress cannot be completely attributed to the music as there was no comparable measure conducted with the control group.

Discussion

Results of this study reinforce the previously substantiated statement that music "significantly enhanced print concepts and prewriting skills of four year old children" as indicated by Standley and Hughes (1997). Furthermore, results provided evidence that music sessions designed with specific academic measures in mind were more effective than sessions that provided general music activities.

Reading and writing are critical skills. The use of a specified curriculum like that in this study may help to pinpoint problem areas

TABLE 4
Post Hoc Analysis Tukey HSD-Table of Means

Trial	M
Picture 1	4.92
Picture 2	5.28
Picture 3	5.76
Song sheet 1	7.20
Song sheet 2	9.12
Song sheet 3	9.76

as well as promote development of literacy skills. For example, the results of the Print Awareness Test for Word Identification outlined in the previous section indicated some inconsistencies in the experimental group's progress over the course of the year. Therefore, a music therapist engaging in further preliteracy work with this particular class might wish to focus on additional activities that help children practice number, letter; and word differentiation. This systematic use of music in the early childhood classroom would provide another venue to teach critical skills.

In applied studies with existing educational groups, it is important to note the difficulty in controlling instructional or therapeutic services provided to students, which may alter relevant variables. While classroom teachers were provided with specific instructions, both written and oral, it appeared that a myriad of circumstances may have hindered the manner in which the instructions were carried out. Examples of such difficulties include staffing changes, schedule changes, absence or tardiness and behavior issues. In further studies it may be helpful to include an in-service training for teachers before the study commences. Additionally, providing a method by which teachers and staff keep track of how often they use activities provided by the music therapist would allow for more accountability.

The primary message that this study sends to music therapists is the need to develop a focused curriculum or therapeutic plan for the treatment group. Balancing activities that focused on all forms of language competence (reading, listening, speaking, & writing) and working closely with the classroom teacher and paraprofessionals contributed to the success of this program (Weir, 1989). Though it was not included in this research design, the author suggests tracking the teacher's use and reinforcement of music activities in the regular daily classroom schedule. This suggestion is supported by previous research (Thomas & Rinehart, 1990) that stated the crucial role of adults in fostering a child's language growth and development. This role includes facilitating meaningful conversation between adult and child, provision of opportunities for language experiences and successful interaction with print materials. Such collaboration between all educators and therapists involved with the students coupled with successful student/teacher interaction may further increase student outcomes.

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