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Disability Simulations and Information: Techniques for Modifying the Attitudes of Elementary School Music Students

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The purpose of this study was to determine the effect of different presentation formats (information and simulation) on the attitudes of elementary music students toward children with special needs. A questionnaire was initially administered to 11 elementary music classes (N = 198). Examination showed a 0.86 difference between highest and lowest rated disabilities on 6-point scale on the first administration. Females showed slightly more favorable attitudes than males for each of the 6 disability categories. Rank ordering indicated an identical ranking between genders with Learning Disabilities most accepted and Visual Impairments least accepted. Prior to the second administration, classes received different preparations: (a) information-based, (b) simulation-based, (c) contact-control. Results of the second administration showed no significant difference among treatment groups on gain scores with only a slight increase noted for the simulation-based treatment.

As more and more students with disabilities are being included in the regular classroom, teachers are observing a variety of interactions between these students and their non disabled peers. Some students are uncomfortable in this setting. Some are unsure as to how to enter into relationships with their disabled peers. Others naturally bond with these individuals, often taking on nurturing roles. For music therapists working in educational settings, facilitating successful interactions between clients and their non disabled peers, providing inservices for music educators, or leading

simulation training may be high priorities. Due to the reinforcing nature of the subject matter and the atmosphere of cooperation found in group music activities, the music classroom can be an effective environment for improving low or enhancing already positive attitudes toward inclusion.

The field of special education has long been concerned with how to affect attitudes toward individuals with disabilities. The effect of information on attitudes has been examined in recent years with inservice teachers (Dickens-Smith, 1995; Siegel & Jausovec, 1994), preservice teachers (Eichinger, Rizzo, & Sirotnik, 1991; Hastings, Hewes, Lock, & Witting, 1996; Reber, Marshak, & Glor-Scheib, 1995; Wilczenski, 1994), and young children (Favazza & Odom, 1997; Thios & Foster, 1991; Trepanier-Street & Romatowski, 1996).

Dickens-Smith (1995) found that information presented in an inservice session positively affected attitudes of both regular classroom teachers and special educators, underscoring the need for effective staff development for inservice teachers. Teachers were found to be open to inservice training in a study conducted by Siegel and Jausovec (1994). Three, 2-hour workshops were conducted with the researcher being available for additional consultation on three other days. At the conclusion, all teachers were more positive about planning for instruction, making modifications in instruction, and implementing modifications for students with disabilities. All indicated a better understanding of inclusion yet some expressed reservations about adopting full inclusion.

Eichinger et al. (1991) examined the effects on attitude of an introductory course in special education. Students received information, read persuasive messages (articles in books, media, position papers), and had contact with individuals with disabilities. Students in a control group received a general lecture of approximately 2 hours in length. Experimental group students displayed more positive attitudes following treatment, suggesting that systematic intervention can positively affect attitudes. All interventions were considered beneficial with contact being significantly more effective than information or persuasive messages.

Attitudes of preservice teachers at various stages in their training were examined by Wilczenski (1994). Subjects were education students in the beginning stage of their program, advanced students prior to student teaching, and advanced students in the student

teaching experience. The results of a survey administered at the beginning and end of the semester showed that advanced students prior to student teaching held the most positive attitudes. This suggests that increased knowledge through the program positively affected attitudes. Interestingly, attitudes of students completing their student teaching showed a decline, possibly due to an idealistic view just prior to student teaching.

Reber et al. (1995) examined three types of training in a study on attitudes. Subjects were students in three different types of academic preparation: (a) an overview course, (b) a self-directed study followed by a standardized exam, and (c) a guided practicum during student teaching. Students in the guided practicum expressed significantly more positive attitudes than students in the other two settings, in contrast with findings of Wilszenski (1994). In addition, in all three groups attitudes varied according to disability category. The most positive attitudes were expressed toward students with a physical disability while the least positive were toward individuals experiencing seizures and students with behavioral disorders.

The attitudes of young children toward individuals with disabilities have been shown to be impacted by information. The "New Friends" program (Thios & Foster, 1991) was conducted three times a week for 3 weeks. Preschool students in the treatment group received information on differences and similarities between themselves and students with disabilities, and information about hearing, physical, and learning impairments (mental retardation). Positive attitudes resulted in the areas of knowledge and attitude but no difference was seen in increased interaction with students with disabilities in the classroom.

Attitudes of students in kindergarten and first grade were positively affected by children's literature and related activities in a study by Trepanier-Street and Romatowski (1996). An 8-week intervention which included reading six books focusing on different disabilities as well as activities such as class-created books, art experiences, use of puppets, and interaction with an invited speaker with a disability showed some positive change from pre- to posttest. The authors caution, however, that the intervention must be planned, intensive, purposeful, and sustained over time. A similar study (Favazza & Odom, 1997) examined the effects of contact with students with disabilities, books, and discussions on attitudes of kindergarten students. Results of this study indicate that the group

with the highest level of contact with students with disabilities showed significant gains in positive attitudes.

In music education, studies have been conducted to examine the effect of information on inservice teachers (Colwell & Williams, 1996), graduate students (Brittin, 1995, 1997; Colwell, 1999; Smith & Wilson, 1997; Wilson & McCrary, 1996), and elementary, junior and senior high students (Colwell, 1998; Darrow & Johnson, 1994; Johnson & Darrow, 1997).

Colwell and Williams (1996) conducted a three-part workshop for inservice teachers. Information was presented in lectures, handouts, and videotapes. Information included special education laws and responsibilities, characteristics of students with disabilities, and suggestions for adaptations for activities. No significant differences were found in gain scores on an attitude survey, although six of the seven participants showed improved attitudes.

Studies of graduate students in music education have shown that information can positively affect attitudes toward individuals with disabilities. Brittin (1995) documented attitude change during a one-month unit of instruction within a graduate course. Information in this unit included discussion, assigned readings, and viewings of videotapes of successful participation in instrumental music by mainstreamed students. This unit also included participation in an inclusive community chorus. Although in this study Brittin observed positive changes in attitudes, less change was noted in her 1997 study. This result was attributed to the fact that the 1997 study did not include participation in an inclusive chorus. The author suggests that this active participation was the strongest component of the unit in terms of changing attitudes.

Subjects in Wilson and McCrary's study (1996) participated in a summer course in music education for special learners. This 7-week class included legal information, a summarization of disabilities, structural differences for including special needs students, resources/strategies, videotape presentations, and simulations. Scores revealed a decrease in willingness to work with students with disabilities as well as a decrease in comfort level in interacting with these students. In this case, it was theorized that the information presented had given a more realistic view causing students to be less idealistic. It should be noted that treatment did not include direct contact with individuals with disabilities.

Smith and Wilson (1997) found that graduate students involved

in a summer course on special learners in music showed an increase in willingness to work with students with disabilities, an increase in comfortableness, and an increase in personal feelings of capability in working with special learners. This study involved a variety of in-class activities as well as a practicum. This finding seems to corroborate the studies of Brittin in that the practicum component appears to be a major factor in changing attitudes of preservice teachers.

Colwell (1999) also examined the effect a course entitled "Music in Special Education" had on the attitudes of graduate music education majors toward students with special needs. Participants were provided with a variety of activities throughout the semester: attending lectures, reading related articles, presenting on a disability, and preparing an inservice. Comparison of pre- to posttests measures (Mainstreaming/Inclusion terms test, Mainstreaming Questionnaire and adapted Disability Factor Scale) indicated an attitude shift due to treatment. Results indicated an increase in knowledge of terms, a difference in opinion when statements were phrased negatively in regards to mainstreaming, and an improved attitude toward 7 of 10 disability categories.

Two studies addressing attitude change in students in music involved band students (Colwell, 1998; Johnson & Darrow, 1997). Colwell compared three approaches to altering attitudes among elementary band students. One band viewed a videotape of special learners participating in musical activities, a second band viewed a videotape with labeling of disabilities, and a third band viewed the videotape with labeling with verbal attribution of successful participation. A fourth band proceeded with regular activities and no intervention. Findings revealed no significant differences among the bands. The least positive attitudes were found in the group viewing the videotape in which disability labels were provided with no positive attribution attached.

Johnson and Darrow (1997) looked at band students at all levels—elementary, junior high, and senior high. Information in this study was provided through a 30-minute video that showed students with disabilities involved in successful musical participation. Students in the treatment groups gave attitudinal statements that were significantly more positive than those in the control groups who did not view the videotape.

While these studies have primarily focused on providing infor-

mation, several researchers have incorporated the simulation of various disabilities as an agent for heightening awareness and improving attitudes of people without disabilities (Dittmer, 1991; Grayson & Marini, 1996; Jones, Sowell, Jones, & Butler, 1981; Wilson & Alcorn, 1969; Wurst & Wolford, 1994). Furthermore, many non research-based articles have discussed the benefits of simulation for developing empathy toward people with disabilities (Bruce, Shade, & Cossairt, 1996; Chalfant & Foster, 1977; Glazzard, 1979; Hallenback & McMaster, 1991; Trent, 1993; Wesson & Mandell, 1989).

The majority of research including simulation activities has involved college subjects. Wilson and Alcorn (1969) administered an attitudinal scale to students enrolled in "Psychology of Exceptional Children." Following the pretest, 40 students were asked to simulate one of four disability conditions (blindness, deafness, loss of dominant hand, or confinement to a wheelchair) for an 8-hour period. Subjects in this group were also asked to keep a journal, noting specific frustrations or reactions to the assignment. One week following the simulation, the scale was administered a second time. Results indicated that the attitude of both groups improved with no significant difference between the two groups. Qualitative responses reflected students' feelings of frustration, embarrassment, and anxiety. Researchers concluded that while statistical tests were unable to discern differences between groups, the simulation experience was motivational and stimulated class discussion.

A similar study was conducted by Wurst and Wolford (1994) with college students enrolled in a course on perception. Subjects were given the choice to simulate an auditory disability or a visual impairment. Following the simulation, subjects responded to seven questions that used semantic differentials, such as, awkward/graceful. Subjects were also asked to respond to 10 open-ended questions about their reactions to the experience. For subjects in both groups, responses to the semantic differential questions were similar and tended to be negative. The responses to open-ended questions reflected empathy toward people with disabilities as well as feelings of being ignored, anxious, and isolated.

Graduate students enrolled in two different courses within a rehabilitation counseling program were involved in a study that was concerned with attitudes toward people with disabilities (Grayson & Marini, 1996). One class had no simulation experience while the

other class was asked to simulate a physical disability by traveling across campus while confined to a wheelchair. All students then completed a 14-item questionnaire. Comparison of responses revealed that students participating in the simulation scored significantly higher than the control group on five of the questionnaire items. Researchers concluded that one-time simulation experiences can be helpful in increasing awareness toward people with disabilities.

While these studies examined the effect of simulation on adult attitudes, two research studies have explored the use of simulations with children. In a study by Jones et al. (1981), 74 children, aged seven through nine were randomly assigned to one of two groups. Group A was given a pretest measure of their perceptions of people with disabilities. Following the pretest, Group A and B participated in two, 2 and ½ hour sessions that allowed the children to participate in activities intended to enhance awareness and sensitivity toward people with disabilities. Activities included conversations with people who had disabilities, experience with Braille code and sign language, and simulations of physical disabilities and visual impairments. Following the sessions, both groups were given a posttest. Results showed that Group A made significant, positive changes in their attitudes between pre- and posttests. Pretest scores of Group A were also compared with the posttest scores of Group B. This revealed that Group B gave significantly more positive responses as compared to pretest scores of Group A although there was no significant difference between the posttest scores of either group. Analysis was also conducted to determine if gender was a factor in posttest scores with girls giving significantly more positive responses than boys. Researchers concluded that simulations are a very practical way for teachers to foster sensitivity and awareness.

Simulation exercises have also been shown to be effective in shaping the attitudes of preschool children. Dittmer (1991) devised a test that used pictures of children with and without disabilities to assess the attitudes of children aged three to five years old. For both pre- and posttest measures, the children were asked to respond to eight questions such as, "Circle the pictures of the children you would like to play with at recess." The subjects of the experimental group participated in seven intervention activities including simulations of physical, mental, visual, and hearing impairments. Results indicated no significant difference between

groups; however, positive gains occurred in attitudes of all students. As with the previously mentioned study, (Jones et al., 1981) girls responded more positively than boys.

Several nonresearch journals gave accounts of and suggestions for disability awareness programs that incorporated simulations (Bruce et al., 1996; Chalfant & Foster, 1977; Glazzard, 1979; Hallenback & McMaster, 1991; Trent, 1993; Wesson & Mandell, 1989). It is interesting to note that the reactions quoted in these articles were similar to the insights provided by subjects of the research studies. These articles endorsed simulation as an effective tool for promoting disability awareness.

Research has indicated that attitudes can be altered by intervention either through increased knowledge by information presentation or empathetic understanding through simulation. The purpose of this study was to determine the effect of different presentation formats (information and simulation) on the attitudes of elementary music students toward children with special needs.

Method

A questionnaire modeled after the Disability Factor Scale (DFS) (Siller, Ferguson, Vann, & Holland, 1967), adapted by Darrow and Johnson (1994) and used by Colwell (1998), was administered during the final month of school to 11-fourth and fifth grade music classes (N= 198, 95 females & 103 males) at two elementary schools (School A = 86, School B = 112) in a southwestern city. Six classes were from School A in a district comprised mostly of children from lower socioeconomic backgrounds. Five classes were from School B in a district comprised mostly of children from higher socioeconomic backgrounds. Only students who received written permission for participation from their parents were included in data analysis.

The questionnaire, designed to measure attitudes toward children with special needs, has 30 statements that reflect the categories commonly found among children with disabilities who are integrated in the public schools (5 statements for each category): Hearing Impairments, Learning Disabilities, Mental Retardation, Physical Disabilities, Visual Impairments, and Other Health Impairments. Fifteen statements were positive (I think if I became visually impaired I could learn to do things OK.) and 15 statements were negative (Children with learning disabilities are not as smart as other children.). Both positive and negative statements were

written for all categories. Questionnaire participants select a rating from 1 (strongly agree) to 6 (strongly disagree) to indicate level of agreement with these statements. A 6 represents the most positive attitude toward the disability, while a 1 represents the most negative attitude when statements are phrased negatively (vice versa for positive statements). Questionnaire statements are listed in Table 1.

Before the first administration of the questionnaire, no information was given other than instructions for completion. Intact music classes were randomly assigned to one of three treatment groups: (a) information-based, (b) simulation-based, (c) contact-control. Students participated in treatment one week after completion of the pretest questionnaire. Treatment sessions lasted for the length of one general music class, 45 minutes. During the week following treatment, students completed the questionnaire a second time. Total elapsed time for the study was 3 weeks.

Individuals in the information-based presentation (4 classes, 2 from School A, $n^{IA} = 27$ and 2 from School B, $n^{IB} = 43$) participated in the following activities: viewing a videotape of students with disabilities performing in a musical production, participating in a lecture and discussion of the three targeted disabilities (learning, visual, and physical), and viewing videotaped examples of students with disabilities successfully participating in music activities. The lecture and discussion portion of the treatment included defining the word "disability," reasons for occurrences of disabilities (genetic, disease/illness, accident), and a description of the disabilities and associated characteristics. The students were encouraged to ask questions and share their reactions to the information.

Individuals in the simulation-based presentation (4 classes, 2 from School A, $n^{SA} = 27$ and 2 from School B, $^{nSB} = 44$) participated in simulations of disabilities while engaged in musical activities. Extreme care was taken to insure that participants understood that the simulation was meant to enhance their awareness and sensitivity toward people with disabilities. Following each disability simulation, children were questioned regarding what they experienced, what difficulties they encountered, and how it made them feel.

The first disability simulated was Learning Disabilities. The students were taught a simple song by rote on the syllable "loo". Students were then divided into three groups with each group receiving a different version of the song text: a) altered slightly with letter reversals, (b) altered with song lines out of order, and (c) com-

TABLE 1

*Questionnaire Statements**

Statement	Category	Positive/ negative
Children with learning disabilities are not as smart as other children.	LD	N
Children with learning disabilities should not be in the same classes as normal children.	LD	N
Children with learning disabilities learn the same things as other children—they just learn in different ways.	LD	P
Children with learning disabilities can do the same things other children do.	LD	P
If I find out my friend has a learning disability I still want to be his/her friend.	LD	P
Children with visual impairments can remember things better than other children.	VI	N
I would feel nervous with a child who was visually impaired because a lot of the time I wouldn't know the right thing to do.	VI	N
Children with visual impairments and normal children can't really understand each other.	VI	N
Seeing a child with a visual impairment makes me realize how easily I could lose my sight.	VI	P
I think if I became visually impaired I could learn to get along OK.	VI	P
When I see a child who is mentally disabled, I want to help him or her.	MR	P
Children who are mentally disabled are friendlier than other children.	MR	N
I get nervous around children who are mentally disabled because they talk funny and say strange things.	MR	N
When I see a child who is mentally disabled, I try to imagine what it would be like to be mentally disabled.	MR	P
Children who are mentally disabled learn the same things other children learn, it just takes them more time.	MR	P
I am sometimes afraid I will become orthopedically impaired and have to be in a wheelchair.	OI	N
I think if I were orthopedically impaired I would make a pretty good adjustment.	OI	P
Children who are orthopedically impaired become very bitter and angry.	OI	N
If I were orthopedically impaired I would feel like hiding and avoiding people.	OI	N
Children who are orthopedically impaired tend to become very smart.	OI	P
A child who has other health impairments can, with proper medication, function as well as a normal child.	OHI	P
Children with other health impairments are not as smart as normal children.	OHI	N
Children with other health impairments can do most things as well as anyone else.	OHI	P
When I see children with other health impairments I am afraid I might be like them someday.	OHI	N

TABLE 1
Continued

Statement	Category	Positive/ Negative
Children with other health impairments make me nervous because I don't know what to say to them when they are not well.	OHI	N
Children with a hearing impairment should not try to speak since they sound so different.	HI	N
Children with a hearing impairment shouldn't be in music class since they can't hear the music.	HI	N
When I know a child is hearing impaired, I feel like I want to be their friend.	HI	P
If I were hearing impaired I would be embarrassed to wear a hearing aid.	NI	N
Children with hearing impairments are kinder and more honest than other children.	NI	P

* Statements are listed by category, not in the random order found on the questionnaire.

pletely unintelligible. Students were asked to sing the song using these texts. Three body percussion ostinati were added to the song. Finally, three instrumental parts were added: a bass xylophone bordun, a soprano/alto xylophone part, and a rhythm instrument ostinato. On the Orff instruments, the letters on the bars were covered with masking tape and other nonsequential alphabet letters were written in their place. The rhythm instrument ostinato was written on a poster board but to simulate the difficulties of a student with a learning disability, the researcher taught the ostinato differently than what was written on the board (i.e., written = splashing rain [ti-ti ta] versus auditory = rain splashing [ta ti-ti]).

The second disability simulated was Visual Impairments. The class was divided into three groups: (a) wearing blindfolds, (b) wearing visual occluders to simulate retinitis pigmentosa (tunnel vision), and (c) wearing visual occluders to simulate low vision. Students received the second verse of the unaltered song text and were asked to sing the song while wearing the devices. The body percussion ostinati were added to the song and taught by visual modeling. The instrumental parts were added with the letters on the bars correctly labeled and the ostinato written accurately on a visual chart.

The third disability simulated was Physical Disabilities. The class was divided into three groups: (a) sitting in chairs to simulate wheelchairs, (b) wearing an arm in a sling to simulate a one arm amputation or hemiparesis, and (c) simulating an a upper body

TABLE 2

Means and Standard Deviations for all Disabilities (in Descending Order for Combined N)

	School A & B		School A		School B	
Disabilities	*M*	*SD*	*M*	*SD*	*M*	*SD*
Learning disabilities	4.50	0.84	4.18	0.84	4.74	0.76
Hearing impairments	4.27	0.82	4.07	0.72	4.41	0.87
Mental retardation	4.07	0.76	4.01	0.77	4.12	0.76
Physical disabilities	3.76	0.78	3.67	0.73	3.83	0.81
Other health impaired	3.73	0.84	3.52	0.80	3.89	0.83
Visual impairments	3.64	0.74	3.49	0.77	3.76	0.69

tremor similar to that found in some students with cerebral palsy or traumatic brain injury. Students received the written song text and were asked to sing the song. The body percussion ostinati, all involving bilateral upper body use, were added. The instrumental parts, all requiring two arms to play accurately, were also added.

Individuals assigned to the control group (3 classes, 2 from School A, $n^{CA} = 32$ and 1 from School B, $n^{CA} = 25$) participated in the music activities used as the basis for the simulation-based presentation but received no information or simulations.

Results

A questionnaire was administered during the final month of school to 11 fourth and fifth grade music classes at two elementary schools in a southwestern city. The questionnaire, designed to measure attitudes toward children with special needs, has 30 statements that reflect the categories commonly found among children with disabilities who are integrated in the public schools: Hearing Impairments, Learning Disabilities, Mental Retardation, Physical Disabilities, Visual Impairments, and Other Health Impairments. Questionnaire participants selected a rating from 1 (strongly agree) to 6 (strongly disagree) to indicate level of agreement with these statements. A 6 represents the most positive attitude toward the disability, while a 1 represents the most negative attitude when statements are negatively phrased (vice versus for positive statements). Appropriate adjustments were made to the data set for analysis.

There was less than a 1.00 point difference between the highest and lowest rated means on the pretest (4.50 and 3.64). The most positive attitude was toward students with Learning Disabilities

TABLE 3

Mean and Standard Deviations for all Disabilities for Male and Female Subjects

	School A & B					School A					School B				
	Female		Male			Female		Male			Female		Male		
	M	*SD*	*M*	*SD*	*p*	*M*	*SD*	*M*	*SD*	*p*	*M*	*SD*	*M*	*SD*	*p*
HI	4.36	0.77	4.18	0.86	.13	4.10	0.74	4.05	0.71	.72	4.57	0.73	4.27	0.95	.07
LD	4.60	0.69	4.41	0.78	.11	4.21	0.90	4.15	0.79	.76	4.92	0.65	4.59	0.83	.02*
PD	3.79	0.85	3.73	0.83	.10	3.69	0.76	3.66	0.71	.84	3.88	0.73	3.79	0.87	.56
MR	4.18	0.74	3.97	0.81	.59	4.08	0.75	3.93	0.80	.36	4.26	0.71	4.00	0.79	.08
OHI	3.77	0.81	3.70	0.86	.56	3.50	0.80	3.55	0.82	.77	3.99	0.77	3.80	0.88	.24
VI	3.65	0.73	3.63	0.79	.06	3.43	0.77	3.54	0.79	.55	3.83	0.56	3.70	0.78	.33

* Indicates a significant difference.

while the least positive attitude was toward students with Visual Impairments. When examining the schools separately, similar results were observed. Overall mean and standard deviation scores for each disability are found in Table 2.

Responses on the pretest were also examined according to students' gender. Although there was no significant difference in attitude between females and males, females were slightly more positive than males for each of the six disabilities for the combined schools. Males showed slightly more positive attitudes than females for two of the six disabilities for School A, a result that is inconsistent with previous research (Colwell, 1998; Darrow & Johnson, 1994; Eichinger, 1992; Elliott & Sins, 1981/1982). For School B, females were consistently more positive than males, significantly so toward students with learning disabilities ($p = .02$). Gender mean and standard deviation scores are reported in Table 3. A rank ordering from the most to the least accepted disabilities indicated identical ranking between gender groups (Learning Disabilities, Hearing Impairments, Mental Retardation, Physical Disabilities, Other Health Impaired, and Visual Impairments) for the combined group and for School A. There was a slight variation in this ranking for School B with Other Health Impaired ranked higher than Physical Disabilities.

Following the pretest, students participated in one of three treatments: (a) information-based, (b) simulation-based, and (c) contact-control. Students completed the questionnaire a second time during the week following treatment. There was a significant difference among treatment groups on the pretest with students in the inservice group more positive than those in the control group.

Due to this result, pretest scores were used as a covariate in a MANCOVA. Results indicated no significant difference among groups ($p \geq .05$) for the combined schools. There was also a significant difference among treatment groups on the pretest for School A with students in the inservice group more positive than those in the simulation group. MANCOVA results indicated no significant difference among groups on the posttest ($p \geq .05$). There was no significant difference among treatment groups for School B.

There was a significant difference between schools on the pretest ($p = .0003$) and the posttest ($p = .004$) with students from higher socioeconomic backgrounds (School B) more positive than students from lower socioeconomic backgrounds (School A). When the pretest was used as a covariate in a MANCOVA there was no significant difference between the two schools on the posttest ($p > .05$). Attitudes reported by School A decreased from 3.82 to 3.79 while attitudes of students at School B decreased from 4.08 to 4.01. When breaking the scores down by disability category, the students from School B were consistently more positive, although not significantly so, than students from School A.

Minimal changes were reported from pre- to posttest for the three treatment groups in the combined schools. The control and information groups' mean scores decreased slightly while the simulation group's mean score increased slightly. Similar results were observed when examining the two schools separately. Minimal changes were reported from pre- to posttest for genders with attitudes decreasing slightly for the combined data and when examined separately by school.

Scores examined by gender and group revealed only boys' attitudes in the simulation group increased. For School A, scores revealed that girls' attitudes in the simulation and information groups slightly increased. For School B, only boys' attitudes in the simulation group increased. Mean and standard deviation for pretest and posttest scores for male and female subjects by treatment is reported in Table 4.

The questionnaire examined six disability categories: Hearing Impairments, Learning Disabilities, Mental Retardation, Physical Disabilities, Visual Impairments, and Other Health Impairments. Both the simulation group and the subjects receiving the disability information were given specific information about Learning Disabilities, Visual Impairments, and Physical Disabilities. When ex-

TABLE 4

Mean and Standard Deviations for Pretest and Posttest Scores for Male and Female Subjects by Treatment (Control, Information, Simulation)

		Sch A & B				Sch A				Sch B			
		Pre		Post		Pre		Post		Pre		Post	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
	C	3.88	0.46	3.78	0.48	3.80	0.44	3.71	0.44	3.99	0.48	3.86	0.53
	I	4.10	0.51	4.00	0.57	3.98	0.46	3.95	0.40	4.18	0.57	4.03	0.63
	S	3.91	0.50	3.95	0.56	3.69	0.35	3.73	0.40	4.04	0.51	4.08	0.61
Male		3.91	0.55	3.86	0.59	3.81	0.46	3.72	0.44	3.99	0.60	3.96	0.67
Female		4.03	0.43	3.98	0.49	3.84	0.40	3.86	0.43	4.19	0.40	4.07	0.52
Male	C	3.83	0.55	3.72	0.50	3.75	0.48	3.63	0.41	3.92	0.62	3.82	0.58
	I	4.07	0.57	3.91	0.64	3.99	0.49	3.88	0.50	4.12	0.62	3.94	0.72
	S	3.82	0.52	3.93	0.61	3.66	0.33	3.63	0.36	3.89	0.58	4.08	0.66
Female	C	3.94	0.35	3.84	0.47	3.85	0.40	3.79	0.47	4.06	0.21	3.92	0.48
	I	4.14	0.45	4.10	0.46	3.97	0.27	4.03	0.41	4.24	0.51	4.15	0.49
	S	4.00	0.47	3.97	0.52	3.71	0.46	3.81	0.39	4.21	0.36	4.08	0.58

amining the disability categories individually, there was a slight increase in attitude scores from pre- to posttest for those students in the simulation group toward individuals with Visual Impairments, Learning Disabilities, Mental Retardation, and Other Health Impaired. There was also increase in positive attitudes toward students with Visual Impairments from students participating in the information session.

Discussion

As children with special needs are more frequently included in elementary music classes, concerns over successful participation and appropriate interactions among students arise. Music classes are filled with activities that require a variety of skills for successful participation. Singing requires the ability to phonate, read text, reproduce melodic phrases, and maintain breath support. Playing instruments requires the ability to use palmar or pincer grasps or gross motor movements of the upper extremities. Moving to music requires the ability to use lower as well as upper extremity gross motor movement, bilateral coordination, and independence of limbs. If a student with a disability attempts to participate in these activities, a myriad of difficulties may occur. A student with a hearing impairment may have difficulty reproducing a modeled melodic phrase during rote song teaching while an individual with cerebral palsy may not be able to use his/her palmar grasp to hold xylophone mallets to play a bordun. A child with a visual impairment may not be able to follow the dance steps in a circle game while the child with a learning disability may have difficulty processing any of the auditory or visual information presented by the teacher. These difficulties, as well as many others that become evident in the school environment, can affect how nondisabled children view, interact with, and treat their disabled peers.

For both music educators and music therapists, managing these interpersonal interactions can prove to be more challenging than the curricular modifications needed to make the student successful in musical tasks. Creating an awareness of these difficulties through information and simulation, in an effort to promote empathetic understanding, may alter nondisabled students' attitudes toward their peers with special needs. Because music therapists are trained to work with children with disabilities, they can function as excellent resources for the general music teacher either as consultants

or as facilitators of simulation or information training. The music therapist can either provide the experience directly to the children or can train the educator on how best to provide a disability simulation and/or information sharing series of sessions.

The purpose of this study was to determine the effect of different presentation formats (information and simulation) on the attitudes of elementary music students toward children with special needs. Results of this study indicate that these different formats did not significantly affect attitudes of elementary music students toward children with special needs. Likewise, there was no difference between the attitudes of girls and boys in relation to children with special needs nor was there a difference in responses to specific disabilities.

Means scores declined slightly in most areas examined although initial attitudes of students as shown on the pretest were moderately positive, with a mean of 3.97 on a 6.00 scale. The minimal decline from pre- to posttest scores may indicate that students' initial responses were more positive due to their inexperience with the areas of disabilities. It is possible that the presentation offered a more realistic picture of disabilities and how children are affected by disabilities. The treatment may have countered initial responses which may have been more optimistic. Perhaps this increased knowledge about disabilities set up a fear factor in these elementary students which, in turn, may have affected attitudes.

When examining the results by disability, the most positive attitudes were displayed toward Learning Disabilities on both pre- and posttest. It may be that students have a more positive attitude towards students with learning disabilities because it is not a "visible" disability. It is also possible that many of these children or their friends may have a learning disability of which they are aware and may feel that it does not affect the kind of person they are. Conversely, because it is not visible, it is possible students simply do not associate learning disabilities in the same category in which they may recognize someone in a wheelchair.

Visual disabilities, lowest in both pre- and posttest, may seem more frightening to children. While conducting the simulations, there was more reaction from the students who were participating in the visual impairment simulation than when simulating the other disabilities. They frequently made comments such as "How are we supposed to do this when we can't see?" Also, the visually im-

paired student in the video clip that was presented to the students in the information group moved his head a great deal while speaking. Each group of students who viewed the tape specifically asked why the child was doing that. Their discomfort with this characteristic may have carried over to their posttest responses.

Due to the verbal responsiveness of the students participating in the simulations, the researchers feel this program is worthy of further examination. The researchers feel that more time for group discussion and personal reflection than was possible in the current study would be beneficial. In future programs, the number of disabilities could be reduced or spread out across successive class periods. Other factors that may have affected the outcome include the time of year (the last weeks of the school year), the presence of substitute teachers, and a high percentage of ESL students who may, even with an interpreter, have had difficulty with the questionnaire. Certainly these factors would need to be considered in future research.

Positive aspects of this study were the verbal responses and participation level of the individuals in this study. Researchers found that the children took the task quite seriously and asked a great deal of questions both about the material presented and about ideas being triggered by the information given. Children responded appropriately during the simulations and the question/answer and discussion portions of the interventions. As is reflected in the simulation research, the activities, both simulation and information sharing, generated meaningful dialogue between the students and presenters. Although the results of this study were not significant, the benefit of this type of activity may become apparent when the children actually encounter a person with a disability.

The large amount of discussion generated through this short treatment holds implications for music educators and music therapists employed in educational settings. While the goals listed on the IEP are of primary importance, it may be equally important to facilitate attitudinal shifts for the student's nondisabled classmates to make the inclusion process more successful. It may be that inclusion goals for the student with disabilities can only be truly realized through this behavior change of their nondisabled peers.

Recommendations for future research include repeating the study with a larger sample while possibly examining differences be-

tween grade levels. It would also be important to replicate the study comparing students in inclusive classrooms and those in noninclusive classrooms. As the data for this study was collected during the final weeks of school, the researchers suggest that time of year should also be considered in repeating this study. In addition, a third measure of attitude could be taken after children work with someone with a disability to see if the information presented in previous research is supported by the interaction between students and their peers with special needs. Focus on how the simulation activities are presented needs to be addressed with consideration for diversity of experiences and time devoted to each experience when attempting to alter attitudes. Finally, the co-leading with or training of the classroom music teacher by the music therapist to facilitate these simulation and/or information sharing experiences is an area to examine further.

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