Visual Distractions in the Integrated Classroom

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Abstract. Many children with learning and developmental disorders, including those with autism, are extremely sensitive to the colors and textures in their environment. For this study, projected presentations (Microsoft PowerPoint) were used with various backgrounds as a focal point of social studies lessons taught in an integrated (containing both regular education and special education students) classroom. One lesson utilized projections with colorful, patterned backgrounds; the other lesson utilized projections with blank, white backgrounds. The efficacy of each lesson was assessed with short-answer tests and the scores from each assessment were compared. In the lesson taught with colorful backgrounds, the special education students did significantly worse on assessments than the regular education students. Contrarily, in the lesson taught with white backgrounds, the special education students and the regular education students had similar scores. These observations suggest that integrated and special education classrooms should be designed with fewer visual distractions.

Keywords – pervasive developmental disorder, autism, integrated classroom

INTRODUCTION

Today, many students with a learning disorder or a developmental disorder have the opportunity to learn in a classroom alongside regular education students [1]. A classroom of this kind is referred to as an integrated classroom. There are many aspects of the classroom that could be bothersome or distracting to a person with a developmental or learning disorder. For example, Cermak et.al. [2] have shown that in autistic children, food selectivity can be affected by the texture or color of a food. Texture and color are two of the leading factors that influence children with autism spectrum disorders [3]. Their sensitivity to color and texture might also influence how they perform in the classroom. This study aimed to explore this potential sensitivity in an integrated high school classroom.

METHODS

An integrated social studies class in a large suburban New York State high school was selected. There were two teachers, as is typical of integrated classrooms. One teacher was a specialist for the special education students and the other teacher was a regular education teacher. Two related lessons were developed around visually projected presentations (Microsoft PowerPoint). For the first lesson, projected PowerPoint backgrounds of various patterns, textures, and objects (called “distracting” in this study) were used. For the second lesson, projected PowerPoint backgrounds of plain white (called “calm” in this study) were used. Following each lesson, the students were administered tests on the presented material to evaluate how well the lesson was understood. The paper and pencil tests were composed of four short response questions, requiring the student to write the answer to the questions using a few sentences. The results from the two evaluations, scored by the teachers as percentages, were compared and evaluated.

RESULTS

Table 1

Type of Background	Score Averages: Regular Ed.	Score Averages: Special Ed.	Difference in Score Averages	Standard Deviation	Difference Divided By Standard Deviation
Distracting	94.4	61.25	33.2	22.6	1.5
Calm	87.5	83.3	4.2	16.4	0.256

As shown in Table 1, the standard deviations of scores for the two background types were calculated. Each standard deviation was then divided by the difference between the scores. If the difference divided by the standard deviation is greater than 1 then it is considered to be a significant difference. If the difference divided by the standard deviation is less than 0.5 then it is considered an insignificant difference. For the distracting backgrounds, the difference divided by standard deviation was 1.5 which demonstrates a significant difference between the regular and special education students' scores when they were tested on the distracting PowerPoint lesson. For the calm backgrounds, the difference divided by the standard deviation was 0.256 which suggests that there was not a significant difference between the students' scores when they were tested on the calm PowerPoint lesson.

DISCUSSION

Under distracting conditions, the scores of the regular education students were considerably better than special education students. However, one teacher reported that under these conditions, a few regular education students complained of headaches and refrained from participating during class; one regular education student put his head down on a desk and closed his eyes. Because of the small sample size of this pilot study (15 students), the results might have been different if the regular education students who refused to participate were induced to participate. For example, these regular education students might have done poorly on the assessments. In turn, this would reduce the difference in scores between the regular education students and the special education students.

CONCLUSIONS

High school classroom presentations against colorful backgrounds with textured objects distracted special education students significantly more than regular education students. Presentations against plain white backgrounds were equally effective for special education and regular education students. Integrated and special education classrooms should be designed to minimize visual distractions.

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REFERENCES

1. United States Code title 20 section 1432 (Individuals with Disabilities act 1975).
2. S. Cermak, et al. Food Selectivity and Sensory Sensitivity in Children with Autism Spectrum Disorders, Journal of American Dietetic Association, 2009.
3. Simon Baron-Cohen, Patrick Bolton. What Causes Autism. Autism: the facts, Oxford, UK: Oxford University Press, 1993.