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The Effects of Exposure to Role Models on the Self-Esteem of Deaf Students

Master’s Project

Submitted to the Faculty
of the Master of Science Program in Secondary Education
of Students who are Deaf and Hard of Hearing

National Technical Institute for the Deaf
ROCHESTER INSTITUTE OF TECHNOLOGY

By

Maria T. Interlandi

In Partial Fulfillment of the Requirements
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The Effects of Exposure to Role Models on the Self-Esteem of Deaf Students

A Proposal By:

Maria T. Interlandi

Abstract

This project looks at the impact that exposure to deaf role models has on the self-esteem of deaf students. Deaf students were asked to respond to two questions in writing following a lecture presented to them about successful deaf men and women in science, math and engineering. These responses were analyzed for evidence that the lecture had an impact on these students' self-concept. The responses will be categorized into five criteria which imply that the information in the lecture had an impact on the students' self-esteem. The five criteria are as follows: 1) a fascination or interest in the information on deaf men and women in the sciences; 2) learning something new about deaf men and women in the sciences and mentioned a specific fact; 3) interest in science as a career; 4) learning that deaf people could do things he/she previously thought not possible; and, 5) realizing the importance of facing challenges and being persistent in order to accomplish a career goal. From the results of this study, I will draw conclusions about the effect of exposure to deaf role models on the self-esteem of deaf students and make suggestions on how to incorporate role models into math, science and engineering curricula.
Introduction**

Research has shown, that students who possess a positive self-concept, usually perform better academically and have more confidence in their ability to complete tasks successfully than those with a poor self-concept. Studies have been performed which indicate that exposure to role models, whom student’s can identify with, can improve a child’s self-esteem. What does this mean for students with disabilities who rarely have contact with adult role models with similar disabilities? How can they benefit from exposure to role models? In this study, these questions will be addressed with a focus on the exposure of deaf students to adult, deaf role models in science, engineering and mathematics.

Between 1994 and 1998, Harry G. Lang, a deaf scientist at the National Technical Institute of the Deaf in Rochester, New York, visited several schools for the deaf throughout the United States to present a slide show about successful deaf people in math and science. The students were then asked to respond to the presentation in writing. In the present study, the student responses will be analyzed in order to see if the information learned in the lecture influenced self esteem.

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* The term deaf is used in this study to refer to both deaf and hard of hearing individuals
** From a cultural perspective, Deaf people are not disabled, they are considered a linguistic and cultural minority, however, a great deal of literature on deaf education describes deaf people as physically handicapped or learning disabled. Therefore, when the terms handicapped or disabled are used to describe deaf people in this paper, it does not reflect the perspective of the author, the terms are used to comply with the research described.
Literature Review

Role Models

A study by Desselle (1994), indicated that, for most students, success is directly connected with positive self-esteem. A great deal of research also suggests that exposing students to role models could improve their self-concept. As support for the inclusion of role models in an educational curriculum, research shows that role models affect student’s behavior. A study performed by Driscoll (1994), for example, shows that students’ expectations of what they are capable of doing affects the outcomes of their tasks. The study indicates that if a learner observes a role model performing or completing a task, they will believe that they could also complete this task, the student’s self expectation changes for the better when they see a fellow student or peer performing a task.

Eggen and Kauchak (1994) state that a model’s effectiveness is determined by the type of model to which learners are exposed. If a student perceives a model to be similar to themselves the model will be more effective than those perceived as different. Therefore, there may be a reasonable advantage to exposing deaf students to role models who are deaf.

In 1978, the American Association for the Advancement of Science (AAAS) sponsored a project in which scientists with disabilities served as role models for students with disabilities around the United States. The goal of the project was to reduce attitudinal barriers and the low expectations parents and teachers have for children with disabilities. Low expectation can limit a student’s aspirations for a quality science education and their participation in a scientific career (AAAS, 1978).
One of these role models was Bob Menchel, a deaf man and senior physicist in Rochester, New York. Menchel met with thousands of students with disabilities, their families, and teachers at many schools throughout the country. The responses which Menchel received from the students he visited were positive and enthusiastic. Many students claimed that they were given hope that they could achieve their goals because they saw what he could accomplish. Through the role model project, deaf students were given a clear idea of the abundance of job opportunities available to them as well as proof, through a role model, that they could accomplish great tasks in their lives. Menchel’s contact with parents helped to break down family stereotypes about the educational and career potentials of a deaf child. The results of this project indicate that exposure to deaf role models can heighten the self-image of deaf students.

Self-Concept-Deaf

A project performed by Yachnik (1986) looked at the self-esteem of two groups of deaf students with hearing parents. The study indicates that deaf adolescents with deaf parents have a higher self-esteem than those with hearing parents. This may be due to several factors, including ease of communication between deaf children and deaf parents through visual communication and the exposure to other deaf people and the Deaf community, which deaf children of deaf parents have available to them. Successful adults within the Deaf community can often act as role models for deaf children. By seeing deaf adults succeed in many areas both socially and in a career, deaf children can see that they too can achieve success.

Desselle (1994) compared the self-esteem of two groups of deaf students, those with hearing parents who used sign language and those with hearing parents who did not communicate with their child in sign. In Desselle’s study, deaf children whose hearing parents
communicated using signed communication had higher self-esteem scores, (determined by the Modified Self-Esteem Inventory (MSEI), a questionnaire used to determine the level of a child’s self-esteem), than those children whose parents used only oral communication. The results from this study also showed that those students with higher self-esteem had higher reading levels and academic achievement. This research shows that exposure to sign language and Deaf culture can have a positive influence on a deaf child’s self-esteem. This relates to the exposure to deaf role models because role models are an intricate part of Deaf culture. The overall exposure to role models, ASL and Deaf culture can improve deaf student’s self-esteem.

Finn (1995) examined the development of a positive self-concept by deaf people. Finn believes that a positive self-concept is crucial for a deaf person’s self-esteem and well being. She argues that social interaction is a great factor in the development of any child’s self-concept or identity and the communication that takes place between the child and the people he/she encounters determines how social interaction occurs. From Finn’s personal experience and her background research on deaf student’s self-concept, she argues that limited interaction and linguistic feedback from the social environment affects deaf student’s self-concept. She notes that although hearing students receive their communication auditorily, deaf children communicate most effectively through visual modes. Finn also notes that if a deaf child’s hearing parents respond negatively to their child’s deafness this will adversely affect their self-concept.

Career Education and Aspirations

Research by Moccia (1981) and Farrugia (1982) explored deaf student’s attitudes towards their vocational options. Their work showed that deaf students tend to have less of an interest in
vocational fields which require a high skill development than hearing students. Deaf students tend to aspire toward lower levels of ambition and skill development than hearing students and they consider more challenging and prestigious jobs as suitable only for hearing people. It is clear from this research that deafness can affect a student's attitudes regarding occupational training and choice in that they feel deaf people are not as capable as hearing people when pursuing challenging vocational fields.

A study was done by Schroedel (1991) in which deaf students at 16 residential and day high schools were evaluated concerning their vocational training and attitudes about future careers. The results indicate that students who have vocational training are more knowledgeable and more positive about their career choices. Therefore, career development interventions can have a positive effect on a student's career decision. Career education involves many aspects of a student's overall educational experience. Smith (1982) describes the need for career education in a day to day classroom atmosphere, an educational aspect which is incorporated into every lesson. Smith (1994) and Brolin and D'Alonzo (1979) contend that career education is comprised of many different aspects including an understanding of self-perception, social aspects as well as vocational skill objectives. In summary, the research on the effects of role models on students as well as the work done on career education appears to supports the idea of the integration of role models into the curriculum for deaf children.

Educators/Curriculum

According to Welsch (1993), deaf students' cognitive functions and learning styles differ from those of hearing students. Many educators of deaf children have an awareness of the specialized
learning styles of deaf students and the importance of self-esteem in their students. However, little reform has been made in the education of deaf children in order to meet their unique learning styles and develop their self-concept. As Ellis (1998) suggests in his research on students with learning disabilities, an improved curriculum would attain the following goals for learning disabled students: intrinsic motivation, academic and social self-concept, self-esteem, a sense of competence and confidence and a willingness to take risks on challenging tasks.

In a National Science Foundation sponsored, teacher-preparation project, *Access to English and Science Outreach Project*, Lang & Albertini, 1995, suggest ways to incorporate information about Deaf people into the everyday science curriculum for deaf students. Although many educators believe that deaf role models should be incorporated into a science curriculum, they are often not aware of the appropriate information or how to include the role models in their curriculum. Some of the suggestions given by Lang and Albertini include: direct mention of role models in lectures and teacher-developed materials; invitation of deaf scientists to visit a classroom and field trips to see deaf scientists at work. Teachers could follow up activities such as these by giving their students supplementary reading materials and writing activities about deaf scientists.

**Purpose**

The purpose of the proposed study is to examine deaf students’ writing to see if presenting deaf students with information about successful deaf people in math and science will have an impact on their self-esteem. It is expected that the study will show that deaf student’s self esteem does in fact improve when they are exposed to deaf role models in math and science.
**Data Collection**

The data for this study were collected in two different ways. A presentation and slide show of successful deaf people in math and science was given to students at five schools for the deaf in the United States. The slide show was given by Harry G. Lang, a deaf scientist at the National Technical Institute of the Deaf in Rochester, New York. Lang had previously researched and written two books which document the accomplishments of deaf people in the history of science, *Silence of the Spheres: The Deaf Experience in the History of Science* (1994) and *Deaf Persons in the Arts and Sciences: A Biographical Dictionary* (1995). At four of the schools, Rochester School for the Deaf (RSD), Phoenix Day School for the Deaf, Model Secondary School for the Deaf (MSSD) and the Scranton State School for the Deaf (SSSD). The students were asked to answer two questions after the presentation: 1) what did you learn about deaf men and women in science? and; 2) are you interested in science as a possible career? Second, the American school for the Deaf, the students expressed their responses to the presentation in a free writing sample addressed to the presenter.

**Method of Analysis**

Writing samples from the questionnaire presented after the slide show, will be analyzed in order to see if the students gained an improved self-concept from exposure to deaf role models. Words or phrases were chosen that I believe, if present in the student writing, would represent heightened self-esteem. These include comments about learning something new about a deaf person in the sciences, or finding a new interest in a person or topic in math or science. Other examples include a student realization that deaf people could achieve success in the sciences.
when they previously thought that only hearing people could prevail in this area; or learning that deaf people can do more than they thought was possible. If a student shows some new interest in a career in math or science I believe that would also show an improved self-concept.

All of the samples will be reviewed in order to identify how many include these indicators of improved self-esteem. The results will be discussed in terms of whether the deaf student's self-in this sample gained self-esteem from exposure to deaf role models. Suggestions for improving methods of introducing deaf role models will also be provided with the purpose of enhancing self-esteem in deaf students.

Criteria

Five indicators of improved self-esteem in the student writings are listed below:

1) Fascination or interest in the information on deaf men and women in the sciences
2) Learning something new about deaf men and women in the sciences and mentioned a specific fact
3) Interest in science as a career
4) Learning that deaf people could do things he/she previously thought not possible
5) Realizing the importance of facing challenges and being persistent in order to accomplish a career goal
Results

One hundred and forty-seven responses were collected from the students at the 6 schools for the deaf (See Table 1). I then reviewed the written comments. After my preliminary analysis, I created five categories of comments which I believed showed that the lecture had impacted the student's self-esteem. Each of the student's comments were then coded for a specific category (See Table 2). In the discussion section of this paper, the responses will be examined in detail, using excerpts from the respondents writings to illustrate the impact the lecture had on the student’s self-concept. The discussion is divided into five categories of comments which were created after my first analysis of the responses; 1) Fascination or interest in the information on deaf men and women in the sciences; 2) Learning something new about deaf men and women in the sciences and mentioned a specific fact; 3) Interest in science as a career; 4) Learning that deaf people could do things he/she previously thought not possible; and, 5) Realizing the importance of facing challenges and being persistent in order to accomplish a career goal.

Table 1: Participating Schools in Study

<table>
<thead>
<tr>
<th>School</th>
<th># of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phoenix</td>
<td>52</td>
</tr>
<tr>
<td>SSSD</td>
<td>14</td>
</tr>
<tr>
<td>MSSD</td>
<td>46</td>
</tr>
<tr>
<td>RSD</td>
<td>17</td>
</tr>
<tr>
<td>ASD</td>
<td>13</td>
</tr>
<tr>
<td>PSD</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>147</td>
</tr>
<tr>
<td>Criteria</td>
<td>Phoenix (52)</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td></td>
<td><em>n</em></td>
</tr>
<tr>
<td>Interested in information</td>
<td>2 (5.8%)</td>
</tr>
<tr>
<td>Learned something new</td>
<td>26 (50%)</td>
</tr>
<tr>
<td>Career in science</td>
<td>16 (30.8%)</td>
</tr>
<tr>
<td>Deaf people can</td>
<td>10 (19.2%)</td>
</tr>
<tr>
<td>Facing challenges important</td>
<td>2 (3.8%)</td>
</tr>
<tr>
<td>Lecture motivated student</td>
<td>0</td>
</tr>
<tr>
<td>Deaf pride</td>
<td>0</td>
</tr>
</tbody>
</table>
The student learned something new about deaf men and women in the sciences and mentioned a specific fact. The category with the largest number of responses (58.5%) related to what the students learned about deaf scientists. Several of the students mentioned specific names of scientists and the goals they had accomplished. One student said, “A man named Olaf Hassel was fascinated and drawing star and comet”. Many of the students mentioned Thomas Edison, an inventor they had heard of before but most did not realize he was deaf. One respondent commented, “I learn about Thomas Edison that he is deaf. He doesn’t know how to communicate and he uses Morse code.” Another respondent writes, “I even was surprised to find out that Thomas Edison, the inventor of electricity, was a deaf man.” Most of the students remembered the accomplishments of the deaf people even when they could not recall the scientists names. One student commented, “A deaf man used a telescope to fine out about comets”. Another said, “A deaf women drew plants.” The information presented to the students about deaf men and women in the sciences seemed to also give them now insight into the capabilities of deaf people. One student writes:

I found many new things that I never knew about deaf people. I really never thought about deaf culture and think about if there are scientists who are deaf until Dr. Lang talked about it. It made me wonder about many different things. I never knew Edison was deaf and I never knew science and art could be combined. There are so many things that I never knew about. It was very interesting experience I’ve had!

The student is interested in science as a career. The category with the second most responses
related to the student’s interest in a career in the field of science or mathematics. All of the students who were given the questionnaire after the lecture were asked if they had any interest in a career in science. On the average, one third of the students responded positively to this question. One student said, “I am interested in rocket that send man to moon and explore the moon.” Another student, with an interest in rocket science, when asked if he/she was interested in a career in science commented, “Yes, because I want to be rocket engineer, I want to developed rocket don’t give pollution.” Several of the students who wrote letters to Dr. Lang also showed an interest in a scientific career. One student wrote, “I am interested in the field of medicine. My goal is to become a veterinarian, I enjoy working with animals and I love animals. I am interested in computer technology too. I hope I can combine both of my goals to benefit people.” One student was inspired to consider a career in science, “One of my future interests is in science, and this presentation today had just made my think for science even more, seeing all of those deaf scientists accomplish.” These students, with an interest in science as a career, seem to have a strong sense of what they are capable of doing and the extent of what is available to them in the world as deaf adults.

The student learned that deaf people could do things he/she previously thought not possible. The third category concerns the student’s comments about what goals were possible for deaf people that they previously thought unobtainable and if the lecture impacted the student’s deaf pride. 28.6% of the respondents comments were placed into this category. One student explained what the lecture had taught him/her, “I learned that there are more scientists (Deaf) then I originally thought there to be. Also I learned that they made very important contributions to science and the world around us.” Many of the students were encouraged to reach for their own goals by the
accomplishments of the deaf people they learned about. One respondent wrote, “I learned that deaf people have the ability to do whatever they wanted to be for their own career.” Another student said, “I’ve learned that we the Deaf people have the ability to become a successful scientists.” When asked on the questionnaire, what he/she learned from the lecture one student responded, “that science for any one is possible! Nothing is impossible for Deaf people but they can’t hear!” Several comments also related to the student’s sense of Deaf pride. In response to the lecture one student wrote, “it also increase my deaf pride, thanks to Harry.”

The student reveals a fascination or interest in the information on deaf men and women in the sciences. The category concerning the student’s interest in the lecture and the information provided was mentioned by 19% of the respondents. The students who made comments in this area seemed to have a genuine interest in the information which Dr. Lang provided in his lecture. One student, when asked what they learned in the lecture replied, “that there were smart deaf men and women, even in the 18th century. It was interesting to learn.” The students who sent Harry Lang letters responding to the lecture also found the information interesting. One student’s letter, shows his/her enthusiasm for the subject matter:

We wanted to say thank you for coming to (our school) to teach us about history. I really enjoy your lecture. Your lecture to us was very cool! The one thing that I was very interesting about your lecture was about Stephen Hawkins. Also other story about the first deaf president. I really thought King Jordan but I was wrong! I really learned a lot from your lecture. I wanted to meet Stephen Hawkins, as I already have several questions for Stephen. I really appreciate to have you gain to (our school) to teach us more about history. Thanks!
The student realized the importance of facing challenges and being persistent in order to accomplish a career goal. The fifth category (7.5%) relates to the student’s comments about the importance of facing challenges in order to accomplish a goal. One student, after mentioning accomplishments of deaf people in the 1800s, commented on the difficulties deaf people must have faced in the past. “I also learned that there was a lot of more barriers for the deaf people back then.” Another student, inspired by the accomplishments of deaf men and women in the past said, “I learned about deaf women and men scientists and mathematicians that is impression and wonderful for our deaf to learn from them. We can do that like them.” One respondent who wrote a letter to Dr. Lang expressed how the presentation had inspired her, “Myself I want to be a writer. I know I can be one. Like you said nothing can stop you, only you. You inspired me in some ways.” Many of the students showed pride in the deaf men and women’s accomplishments and seemed to gain a sense of worth as a deaf person.

Discussion

The goal of this project was to analyze how Dr. Lang’s lecture on deaf men and women in the sciences impacted the self-esteem of deaf students. Although self-esteem is not an easy factor to measure, I believe that the criteria chosen show that the lecture had an impact on how the deaf students feel about their own capabilities as a deaf adult. The analysis was performed with the purpose of using the results to influence the curricula of science classes for deaf children. The results of this study show that presenting deaf students with role models in the sciences in the classroom may cause them to become excited about science and encourage them to pursue a scientific career or any challenging goal they chose.
More than half of the respondents (58.5%) said that they learned something new about deaf men and women in the sciences and mentioned a specific fact they had learned. 19% of the students also said they were fascinated or interested in the information presented in the lecture. These results indicate that deaf students may be more interested in a scientific based curriculum with the inclusion of deaf role models. Many of the students also expressed their shock or surprise at discovering what deaf men and women have accomplished in the sciences. This indicates that little information about deaf role models has been taught to these students in science courses. Therefore, these results show a need for a greater inclusion of deaf role models in science curricula for deaf students.

Many of the students who were present at Dr. Lang’s lecture expressed their interest in science as a career, with 34.7% of the responses falling into this criteria, it was the second large category. It is possible that the students who responded positively to this question had an interest in science as a career previously to the lecture. However, many of the students mentioned specific careers which Dr. Lang discussed in his presentation specifically, rocket science. Several students also openly commented that Dr. Lang’s lecture had inspired them to pursue a scientific career. These responses suggest that because the scientists discussed in the lecture are deaf, deaf students are able to identify with these role models and imagine themselves reaching the same or similar goals. By including deaf role models whom students can identify with, the information presented to deaf students about deaf people’s accomplishments can improve their self-concept, who they are and the possibilities that are within their grasp as a deaf adult.

28.6% of the respondents wrote that the information in the lecture made them realize that deaf people could do things he/she previously thought an impossible accomplishment for a deaf person. Many students mentioned how surprised they were that deaf people had made strides in
science because they thought technical fields were only available to hearing people as a career. These comments show that learning about deaf adults and their accomplishments affects how deaf students view deaf adults and consequently, because they can identify with the adults, how the students view themselves. An important factor in a deaf child’s self-concept is deaf pride. Deaf students must become aware of the accomplishments of deaf adults so that they can gain a sense of pride in other deaf people and the Deaf community.

The issue of deaf pride and self confidence also relates to the last category of responses, the student realized the importance of facing challenges in order to accomplish a career goal, 7.5% of the responses fell into this category. Many of the students expressed their respect for the way in which the deaf scientists faced up to their challenges and did not allow anyone to tell them they could not succeed. The students realize the difficulties which deaf people face in their careers and were proud of the successes of the deaf men and women they learned about.

All of the results of this study that have been discussed lead to the same conclusion: there are few efforts to include deaf role models in the science classrooms of deaf students today and deaf students would greatly benefit from their presence. It is clear from the student’s responses that they are interested in learning about deaf people and their accomplishments and that this information provides encouragement and inspiration for deaf students in their own future goals. Exposure to deaf role models allows deaf students to identify with successful deaf people and consequently believe they themselves could accomplish goals they previously thought out of their reach.
Bibliography and Resources


