Peer Tutoring: Can it have an Affect on Science in the Content Area?

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Abstract

This study was performed as a part of the GMU Language Minority Beginning Teacher Induction Project at Ellen Glasgow Middle School in Alexandria, Virginia. It was based upon an investigation of how a focus of peer mentoring among language minority students and "successful" students can affect the achievement in the Science content area.

Language minority students expressed difficulty-mastering concepts and felt the need of a peer mentor would be effective. Base line data was established from their Science grades and completion of a survey. This investigation started mid-year and comparison of students' quarterly grades enabled a comparison of student achievement, first in the absence of peer mentors and then after peer mentors were used. In a follow-up survey, students' responses indicated an increased willingness to take risks within classroom discussions and a greater likelihood of applying their knowledge to a wide variety of tasks within the Science content area.

School Context

The students of Ellen Glasgow Middle School range from grade 6-8. There are approximately 1200 students. The overall population of the school is represented as the following:

African-American – 12%   American Indian/ Multiracial – 2%
Asian – 21%   Caucasian – 29%
Hispanic 37%

Glasgow Middle School has students from 67 different countries with 31 different languages spoken. The percentages of students in need of special education and regular education are as follows:

ESL (English as a Second Language students) – 35%
GTC (Gifted and Talented Center students) – 11%
LDR (Learning Disability students) – 23%
RE (Regular Education students) – 34%

Background of My Sixth Grade Classroom

My class consists of a variety of learning levels Learning Disabled (LD), Learning Disabled Resource (LDR), Gifted and Talented School Based (GTSB), English as a Second Language (ESL) and regular education. My observations and experiences indicated that the expertise and understanding of my successful students was beneficial to their classmates. "Successful" students provided a support system for peers as well as me. These students served as positive role models and mentors for their classmates.

Success of students was not solely measured by grades. Success might be assessed by the degree of which they understand new concepts. "Successful" students might serve as role models and mentors for their classmates in cooperative learning groups.

A majority of my class was spent in cooperative learning groups. Students had following expectations frame their work:

- Brainstorm in small groups to determine and understand the experiment
- Verbally communicate with the other members in their group
- Carry out and complete the experiment as a group

Verbalization and reading comprehension were key factors in determining a student's level of success in science. The ability to verbalize thoughts was critical. Each group member needed to explain what was being learned in each lab. Each of the experiments required understanding and comprehension of reading. In addition, students were also expected to complete responses of each experiment. The responses were expected to be grammatically correct and to contain a good use of mechanics.

At the outset of this project it was my observation that most of my students could not complete the labs without a student facilitator, who kept them focused on what to do and how to complete the task. When surveyed, students expressed positive interest in participating in a peer mentorship program as part of this project.

My Concerns

My concerns lay specifically with three Spanish-speaking students, each of whom were natives of El Salvador. Each of these students spoke English as a Second Language. These students have been identified with learning disabilities, specifically auditory deficits. All have been tested at a reading comprehension level of third grade using the Qualitative Reading Inventory (QRI) and the Degrees of Reading Powers (DRP). They each had IEP goals for reading and writing.

These three students did not contribute to classroom discussions nor have many social interactions with other students. They had, however, formed a tight-knit social group with each other.

Being aware of these three students' weaknesses and the requirements for my science class, I knew I had to do more or these students would be set up for failure. In response, I developed this investigation to use peer tutoring. When

interviewed, each of the three students expressed frustration understanding written language. They each felt a peer mentor would be beneficial.

Background on Peer Tutoring

Peer tutoring has been proven effective and is not a "new" concept for assisting learners. Peer tutoring has been a part of society since hunter-gatherer times. As Jenkins & Jenkins explain, "Tutorial instruction (parents teaching their offspring how to make a fire and to hunt and adolescents instructing younger siblings about edible berries and roots) was probably the first pedagogy among primitive societies" (Jenkins & Jenkins, 1987, p. 64). Peer tutoring was a part of educational traditions in Greece during the first century A.D. and during the Roman Empire. It was later used in Germany and finally America. Formalized uses of peer tutoring in the United States date back to the 1700's.

Definitions of Peer Tutoring

Probably the most succinct definition of peer tutoring comes from Damon and Phelps: "Peer tutoring is an approach in which one child instructs another child in material on which the first is an expert and the second is a novice"(1989 a, p. 11).
However, other definitions of peer tutoring exist, and they are not all consistent. For example, not all peer tutors are "experts." They are sometimes randomly assigned, same-age classmates or same-age lower achievers.

To make matters more confusing, the term "peer tutoring" often subsumes both cross-age and same-age tutoring. As Gaustad explains: "Peer tutoring occurs when tutor and tutee are the same age. In cross-age tutoring, the tutor is older than the tutee. However, sometimes the term peer tutoring is used to include both types" (Gaustad, 1993, p.1).

Why use Peer Tutoring?

Three commonly cited benefits of peer tutoring are as follows:

- To enhance the learning of academic skills
- To develop social behaviors and classroom discipline
- To improve the enhancement of peer relations
                                         (Greenwood, Carta and Hall 1988, p.264)

Some writers also cited broader benefits of peer tutoring. Hedin, for example, cites "a more cooperative, pleasant classroom atmosphere" and "[recruiting] promising future teachers into the profession" (Hedin, 1987 p.44).

Analysis and Conclusion

After implementing peer tutoring in my classroom for two quarters, I noticed a great change in my students of concern. Their science grades improved. The level of participation increased from these three students. I was

able to assess their knowledge from the increase in their classroom participation and their completion of lab reports.

The classroom became more manageable with peer tutoring in place. I observed that the trained tutors were expanding their focuses to their entire cooperative group. Not only did they assist the students of concern but at a broader range. The students within the group would turn to the tutor before they would turn to me for questions. They would problem solve together. The classroom became more learner-centered with peer tutors in the classroom.

Peer relations benefited from this study as well. My three students of concern became more social. They broadened their peer group. I was pleased with their ability to take risks and feel this is important in a middle school setting. We, as educators, sometimes forget that the sole purpose of school isn't academics, but socialization as well.

Overall, I feel as though peer tutoring was effective. All the students benefited from this study. I learned a lot about my teaching and my students. This study proved that students do learn from their peers.

My focus for next year will be broader. I am going to implement a Peer Tutoring school wide. At Glasgow, we will call the program "Teacher Assistant Training. The plan is to train assistants from each grade level quarterly and have them peer tutor students in need.

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