

ENHANCING ADOLESCENTS' ACQUISITION OF CONTENT USING COLLABORATIVE STRUCTURES IN INCLUSIVE SETTINGS

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Conceptual Framework and Background

The High Stakes Assessment Movement has shifted focus to validation of instructional practices on improving student performance, particularly in critical content areas (i.e., literacy, mathematics, sciences, social studies). As a result, teachers within inclusive settings must be able to determine the effectiveness of strategies used with their students with diverse learning needs. However, many content area teachers feel ill equipped to handle the diverse instructional needs of their students while simultaneously covering required content and keeping students engaged.

Adolescent students face content areas that require reading increasing amounts of material simultaneous with learning complex concepts. Comprehension of these concepts is significantly affected by student literacy skills, particularly student aptitude for content vocabulary and key concepts. Students without necessary independent reading skills confuse key vocabulary with other information offered in textbooks. Therefore, the teacher's instructional task focuses on getting students to understand critical concepts in order to identify the "big picture" (Vacca, Vacca, & Mraz, 2013).

Spencer Kagan (2005), international expert on cooperative learning, offers structures that focus on increasing student engagement in class, on equalizing response opportunities among students, and on improving student learning that are appropriate for all students, including adolescents. One of his structures, Numbered Heads Together (NHT), is an alternative *question-*

answering strategy that teachers can use at almost any grade level. Initially, students are placed in small heterogeneous learning teams of four members. Within each group, they number themselves 1 to 4. Teachers pose academic-related questions or problems to the entire class. Instead of having students raise their hands to volunteer responses, teachers instruct the class to (a) *think and write* their responses on paper or white boards/response boards; (b) *stand up* when their responses are written; (c) *show and discuss* written responses within groups, and (d) *sit down* when discussions are complete; (e) teachers pick numbers (1 to 4) randomly; all students with that number answer simultaneously using Response Cards. Class members recognize students who respond with brief applause.

Research

A single subject A-B-A-B withdrawal of treatment design was employed and built on the previous work of the author and her colleagues (e.g., Maheady, Michielli-Pendl, Harper, & Mallette, 2006; Maheady, Michielli-Pendl, Mallette, & Harper, 2002). A twenty-six year veteran teacher utilized NHT with her diverse 9th grade biology class (23 students). The teacher posed biology questions or problems to the class on the SmartBoard. Instead of having students raise their hands to volunteer responses, the teacher instructed the class to use NHT to generate responses. Weekly biology quizzes of 5-6 items were generated through Castle Learning Systems (2009, <http://corp.castlelearning.com>) and served as a measure of student learning. Castle is an instructional supplement that provides materials for review, testing, and assessment in content areas at all grade levels. In addition, students completed a twenty-three item social validation survey at the conclusion of the study to assess their perceptions concerning the use of NHT and its impact on their learning and peer relationships.

Results

An accelerating trend was observed during use of NHT. Average student performance on curriculum-based weekly biology quizzes increased from 50% in baseline to 74% during implementation of NHT. When NHT was removed, the quiz average of the class dropped to 58% with a range of 56% to 60%. The reintroduction of NHT resulted in average quiz scores of 70% (range 69% to 73%). Visual inspection of these final two phases revealed immediate and noticeable changes in magnitude again. Social validity indicated that 75% of the class reported that NHT helped them to learn science content and to answer questions better during class. Whereas 80% of students stated that NHT helped them to get along better with peers. Fidelity of implementation was determined by direct observation of teacher use of NHT ($\bar{x} = 95\%$).

Recommendations

Teachers are being held accountable for student performance. Students with disabilities need instructional strategies that are effective in increasing learning, that can be maintained in included diverse settings, and that are easy for teachers to implement. Kagan structures, particularly Numbered Heads Together, can be implemented with relative ease with students with disabilities in a variety of classroom settings and in various content areas. NHT embraces principles set forth by Unrau (2004) and others, including the National Reading Panel, who argue for use of implicit and explicit teaching, the importance of active engagement of students in the learning process, and repeated exposure to words and key concepts.

Suggestions for Future Research

Future research efforts should extend the literature base on the systematic investigation of collaborative instructional strategies, such as NHT, in diverse classrooms. In addition, direct observation of student discussions while implementing NHT would provide insight into the

academic conversations taking place and note each student's contribution. Performance of students with disabilities in cooperative structures is of particular interest.

References

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