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Abstract

The relationship of different learning environments (traditional versus constructivist/collaborative) to students' psychological sense of community in the classroom was examined in this study. In addition to students' sense of community, students' social skills and social behavior were also examined. Measures of students' psychological sense of community in the classroom, social problem-solving skills, one's own social behavior, and social behavior of the class were collected. Results from this study suggest that constructivist/collaborative learning environments support students' psychological sense of community in the classroom and social problem-solving skills better than traditional learning environments, and that psychological sense of community in the classroom is an important factor in students' social skills and social behavior in the classroom setting.

Our educational system today is faced with multiple challenges. One major challenge is related to the level of students' academic and cognitive skills. Students in today's economy have to compete for jobs that require a solid foundation in literacy, math, science, writing, and technological skills, as well as expertise in critical thinking, reasoning, and decision making. Data from the U.S. Department of Education National Assessment of Educational Progress indicates that although the average proficiencies in science, mathematics, and writing in 1992 were slightly higher than in 1988, these improvements failed to keep pace with the higher level of skills that are required in a global economy (NAEP, 1995), with the majority of our students failing to exhibit higher level problem solving, reasoning, and learning skills. Recent high school graduates have been found lacking in communication, collaboration, comprehension, and reasoning skills (Bruer, 1993).

A second major challenge is related to the lack of fit between students' developmental needs and traditional school

environments. This lack of fit is especially evident for early adolescents and their transition to middle schools. Adolescence brings forth increases in students' needs for autonomy, self-efficacy, and focus on peer relations, and increases in concern about social acceptance by peers, as well as increased cognitive abilities and a need for complex and challenging problem-solving activities. If these basic needs are not fulfilled, adolescents are likely to experience lack of intrinsic motivation, apathy, lack of confidence, decline in attitudes toward school and schoolwork, and decline in self concept of academic abilities (Eccles et al., 1993).

A third major challenge is related to the level of students' lack of social skills and prosocial behavior in our schools. Changes in the structure and cohesiveness of families and communities have left many children with fewer positive social supports, less adult guidance, and fewer sources of positive role models (Carnegie Council on Adolescent Development, 1995). Increasing levels of violence, drug-use, and other negative influences in and out of our middle and high schools are having a detrimental impact on the quality of life, quality of education, and the future of our students (Knox, Laske, & Tromanhauser, 1991). Improving the quality and safety of our schools is increasingly becoming a national concern (Safe School Act of 1993, US Senate).

The aforementioned academic and social problems have yielded increased calls from within and outside the educational community to reconceptualize goals for students and roles teachers play in the learning process, as well as the structure and function of learning environments (Brown & Campione, 1994; Glaser, 1988; Wise, 1989). These educational shortcomings have precipitated a growing movement toward educational reform, a reform that restructures learning environments so that they better meet students' cognitive, social, and affective needs by utilizing existing research and knowledge in cognitive, social, and developmental psychology (Bruer, 1993; Carnegie Mellon Report, 1995; Eccles et al., 1993, Pepler & Slaby, 1995).

The goal of this study was to examine such a middle-school reform environment (Schools for Thought) and its effect on students' psychological sense of community, social problem-solving skills, and prosocial behavior.

Sense of Community in the Schools: Theory and Research

Sarason (1974) proposed that in order to provide students with an environment that nurtures the aforementioned skills, we need to restructure the traditional classroom environment. One of the key goals of such a restructuring would be the creation of a learning community in the classroom and schools and the promotion of a psychological sense of community in the classroom. According to Sarason, the psychological need for being part of a community is a fundamental need all humans have. McMillan & Chavis (1986) defined psychological sense of community as a feeling that members have of belonging, a feeling that members matter to each other and to the group, and a shared faith that members' needs will be met through their commitment to be together. McMillan and Chavis (1986) proposed four criteria for defining a sense of community: a) Membership--a feeling of belonging and acceptance, of sharing a sense of personal relatedness. Personal investment and boundaries are important elements of membership. b) Influence--a sense of mattering, of making a difference to a group, and of the group mattering to its members. Influence is bi-directional. c) Integration and fulfillment of needs--a feeling that the needs of the individual will be met by the community, as well a feeling that the needs of the community can be met by the individual. d) Shared emotional connection--an emotional bond that gradually builds as members of a community share events that require investment of time, energy, and effort.

Although researchers' approaches to sense of community vary somewhat in terms of focus and content, an increasing number of researchers are identifying bonding to social environments, such as schools, that provide norms opposing high-risk behaviors and enable the acquisition of skills to live according to these norms, as a factor instrumental in increasing students' resiliency. School communities that provide students with a sense of belonging and educational engagement have been found to be most effective in retaining high-risk youths. Teachers' sense of belonging in the school community has also been associated with positive academic and social student outcomes (Wehlage et al., 1989). Students' sense of classroom belonging and support was associated with students' school motivation, interest and expectations of success in academic work (Goodenow, 1993). Several studies have demonstrated students' sense of school and/or classroom community as being associated with higher levels of social skills, intrinsic motivation, self-esteem, academic self-efficacy, liking of school, and interest in academic activities (Battistich et al., 1995). While the number of studies is small the results are generally consistent and very encouraging. More research needs to be done in this area to help establish a) the direction of these effects (all evidence up to date has been correlational); b) in addition to social skills, the relationship of sense of community in the schools to social behavior; c)

the types of school environments that promote a sense of community; and d) the processes by which sense of community develops in the school environment. In spite of the growing interest in community building as an integral element in the process of improving children's learning environments, very few studies to date have attempted to systematically examine the contribution of such learning environments to students' sense of community, the classroom structures and mechanisms that promote a sense of community, the process by which students' sense of community develops, and the relationship of this process to students' development of social and academic skills. No study to date has examined the sociocultural effects of constructivist learning environments, and specifically the relationship between constructivist/collaborative learning environments and students' sense of community, social problem-solving skills, and social behavior in the classroom which is herein examined.

Schools For Thought Learning Communities

Sarason's theory on the benefits of community building in classrooms, pioneering projects such as John Dewey's Chicago Laboratory school (Dewey, 1936), as well as advances in cognitive and educational research on how children learn. (Cognition and Technology Group at Vanderbilt [CTGV] 1994; Bruer, 1993) have provided inspiration and theoretical foundation for a growing number of efforts to build classroom and school environments that are structured as learning communities (Brown & Campione, 1994; CTGV, 1994; Lamon et al., 1996). Schools for Thought represents such an effort. SFT's concept of learning community refers to a community in which everyone is a teacher as well as a learner. It includes the classroom, the school, and the community as a whole. SFT has as its goal the creation of middle school classrooms that support extraordinary achievement for all students--not just a select few. Schools for Thought learning communities have the following cognitive characteristics: a) collaborative interdependent learning, b) active participation of students in the learning process, c) distributed expertise among students, d) authentic and realistic complex problems with generative formats, and f) formative assessment with opportunities for reflection and revision (Brown & Campione, 1994; Lamon et al, 1996).

Cognitive Research Behind SFT

SFT grew out of the integration of several key concepts from anchored instruction (CTGV, 1994), guided cooperative learning (Brown & Palincsar, 1989), and intentional learning environments (Scardamalia & Bereiter, 1991). Three research projects have served as the cornerstones of the Schools for Thought program and share features that make them compatible and synergistic (Lamon et al., 1996). All three research projects are consistent with a constructivist approach to learning (Bransford, Goldman, & Hasselbring, 1995; Brown and Campione, 1994; Scardamalia & Bereiter, 1991). Constructivist theories view knowledge as a social product that is actively constructed by the learner and that

involves the interpretation of phenomena, situations, and events, including classroom instruction, through the perspective of the learner's existing knowledge. Constructivist theorists argue that we need to drastically change the nature of teaching and learning that occurs in the classroom. Students should not be passive recipients of information provided by the teacher, but rather students should be actively involved in the construction of knowledge (Perkins, 1991; Resnick & Klopfer, 1989).

All three research projects have contributed to the following educational principals that characterize SFT classrooms: a) the importance of sustained thinking about authentic problems as a basis for extended and deep inquiry in various domains such as mathematics, science, and social studies, b) classroom instruction that promotes collaborative and active student involvement in planning and organizing research and problem-solving activities, c) formative assessment and revision opportunities for students, and d) the creation, through collaboration, of a sense of community.

Educational Features of SFT

The aforementioned research programs share features that make them synergistic. This synergy involves changes in curriculum, instruction, assessment and community.

Curriculum

An emphasis on sustained thinking about authentic problems that are the basis of extended in-depth inquiry in various domains characterizes SFT curriculum. For example, in mathematics the Jasper program uses problem-based and project-based activities that sustain students' interest. The Jasper adventures are centered around big ideas such as measurement in the domain of geometry. The use of videos as anchors allows students flexibility. Students identify their issues and research domains and seek relevant resources.

Instruction

Unlike typical classrooms, in which students are the recipients of information in a teacher-directed environment, SFT students are given the opportunity to plan and organize their own research. They also have the opportunity to work collaboratively toward their learning goals. An emphasis on distributed expertise allows students to specialize in particular areas, so that the learning community benefits from students' diverse expertise.

Assessment

Assessment in the SFT classrooms--unlike the traditional achievement tests--focuses on students' complex authentic performances. Students are given frequent opportunities to engage in formative assessment and revision.

Community

The SFT program promotes community building both within the classroom (i.e., between students and teacher) as well as between the classroom and the larger community. Technology is used as a tool in this community-building process by encouraging communication with peers as well

as with outside experts.

Building a Sense of Community in the SFT Classroom

As discussed earlier, McMillan & Chavis (1986) proposed four criteria for defining a sense of community. How do the cognitive characteristics and classroom practices of SFT foster the development of these elements? The following section is a description of how these elements are fostered in the SFT environment.

a. Membership in the classroom community. The key to feelings of belonging in a community is the level of personal investment that individuals make in the community processes. In other words, the harder one works and the more resources one invests in earning this membership, the more valuable and meaningful the membership becomes. In the SFT classroom, all students are active participants in a rigorous learning process that continually challenges them by requiring them to engage in deep levels of inquiry. Students are expected to use active strategic learning, to reflect on their learning, and to monitor comprehension. All the students are required to invest considerable effort in acquiring expertise in different areas of research throughout the year. In addition, students are expected to effectively communicate, share, and teach their knowledge to other members of the classroom, and to apply them toward the common goals of the classroom. Students share learning goals that are complex and demanding, so they have to work together, delegating responsibility and sharing resources, in order to successfully reach their learning goals.

b. Influence. In the SFT classroom, every student is an integral part of the learning experience. Through the process of distributed expertise, each student becomes an expert in a domain of knowledge that his/her peers depend on for their knowledge and understanding of this particular area. Conversely, the student depends on the rest of the group for his/her understanding of other areas of expertise. The bi-directional nature of this influence bonds each individual to the community of the classroom. The model of instruction and assessment practiced in the SFT classrooms also provides the student with a sense of influence. Students are able to actively select (with teacher guidance) their areas of research, and students are given assessment in which they often play an active role by evaluating their own performance. Assessment is geared towards providing the student with useful feedback that has as its goal the continuous improvement of the student. Thus students feel they have some control and influence over instruction and assessment.

c. Integration and fulfillment of needs. In the SFT classroom each student's learning needs are facilitated and enriched by his peers through research activities such as reciprocal teaching, Jigsaw, crosstalk, etc. The continuous exchange of ideas through various means of discourse allow students to benefit from the common knowledge base and to selectively incorporate the information they feel they need. In addition, the contributions of individual students toward common goals help establish them as valued members in

the classroom community. Finally, the opportunity to become an expert and to share knowledge with other members of the community in the process of successfully completing a common learning goal provides students with a sense of success. Instruction that is anchored in authentic problems provides students with curricula that are relevant and interesting to them. Students' needs for autonomy, and for engaging and challenging activities, as well as their need for social support are met through the structure and activities of the SFT classroom.

d. Shared emotional connection is defined as the emotional bond that is gradually built as members of a community share a common history. This shared history should provide interactions with positive outcomes and should be a product of considerable investment of time, energy, and effort. In SFT classrooms, students are exposed to a year-long collaboration. Their collaborations result in eventually gaining a deep level of comprehension. The investment of time and effort results in a sense of mastery and achievement that includes all members of the community.

Method

The settings for this study were seven sixth grade classrooms in three inner-city urban middle schools in Nashville, TN. Four of the classrooms were SFT and three were traditional.

Participants

There were 94 students in the four SFT classrooms (in their first year of SFT) and 65 students in the three comparison classrooms. In order to examine the possibility of pre-existing differences between SFT and comparison classrooms, students' academic achievement scores in reading, math, and science from the previous year were compared with a series of T-tests. No significant differences were found between SFT and comparison classrooms. This lack of pre-existing differences in academic achievement scores supports the assumption that SFT and control groups were not significantly different academically at the onset of the academic year.

Data Collection

Students completed the study in three sessions over a period of three days at the end of the academic year. Students completed the self-report measures in their classroom during regular school hours. Students were told that, given that some of the questions are of a sensitive nature, all their responses would remain confidential and only the experimenter would have access to their name. At the beginning of the first session, students were assigned numbers known only to the experimenter. All subsequent forms and questionnaires administered to the students had their ID number as the sole means of identification.

Materials

Student-completed instruments (Day 1)

1. Social Skills Ratings System--Student Questionnaire,

34 items [Social Skills] (Gresham & Elliott, 1990).

2. Psychological Sense of Community in the Classroom (PSCC). 19 item scale (Bateman, 1998; Bateman, Newbrough, & Goldman, 1997b).

Student-completed instruments (Day 2)

3. Conflict-situation vignettes (Bateman, 1998; Bateman, Goldman, Newbrough, & Bransford, 1997a). This instrument is intended to measure students' social problem-solving skills. Table 1 depicts an example of one of the vignettes.

Table 1. Example of a Conflict Vignette

You and another child are working hard on an important presentation. You disagree on what your presentation should be. You think it should be a written report and she thinks it should be a drawing. Each of you thinks his or her idea is the best.

FIRST CHOICE

1. What would you do in this situation?

SECOND CHOICE

2. If what you chose to do did not work what would you do then?
-

The vignettes were constructed in a 2 (type of conflict) X 2 (location of conflict) design. Four hypothetical vignettes were given to students. Two vignettes involved conflict over resources and two involved conflict over ideas. The vignettes took place in two settings (school and neighborhood). Students were asked to provide two solutions for each vignette (i.e., what they would do first and what they would do if their first solution did not work)

Student-completed instruments (Day 3)

4. Behaviors of Others in your Class (Bateman, 1998; Bateman et al., 1997ab). This instrument is intended to measure students' self-report of the level and type(s) of antisocial and/or delinquent behavior in their classroom over the last six months of school (6 items).

5. Your Behavior in Class (Bateman, 1998; Bateman et al., 1997ab). This instrument is intended to measure students' self-report of the level and type(s) of antisocial and/or delinquent behavior in which they had engaged in their classroom over the last six months of school (6 items)

Results

Psychological Sense of Community in the Classroom (PSCC) Students in the SFT classrooms reported having a significantly higher psychological sense of community than students in the comparison classrooms [$F(1,146)= 40.83; p<.001$].

Social Skills Rating System (SSRS). Students in the SFT classrooms reported significantly higher levels of cooperative skills than students in the comparison classrooms [$F(1,142)= 5.01; p<.05$].

Table 2 presents the means and standard deviations for

Table 2. PSCC and SSRS by type of classroom

Measures	SFT		Comparison	
	M	SD	M	SD
PSCC	3.20	.38	2.80	.37
SSRS (cooperative)	14.26	2.67	13.14	3.22

Behavior of Others in your Class (BOC). SFT students reported significantly lower levels of fighting behavior occurring in their classroom than students in the comparison classrooms [$F(1,145)= 5.01; p<.05$].

Your Behavior in Class (YBC).

SFT students reported engaging in significantly lower levels of fighting in their classrooms than students in the comparison classrooms [$F(1,145)= 6.10; p<.05$].

Table 3 presents the means and standard deviations for BOC and YBC.

Table 3. BOC and YBC by type of classroom

Measures	SFT		Comparison	
	M	SD	M	SD
BOC (fighting)	0.92	.69	1.19	.57
YBC (fighting)	0.35	.58	0.63	.76

Conflict-situation vignettes (CSV). Students' proposed solutions to the four conflict-situation vignettes were analyzed. The goal of the analyses was to identify the total number of collaborative solutions students proposed (Schmuck & Schmuck, 1983). Students in the SFT classroom proposed a significantly higher number of collaborative solutions than students in the comparison classrooms [$F(1,142)= 18.58; p<.001$]. See Figure 1.

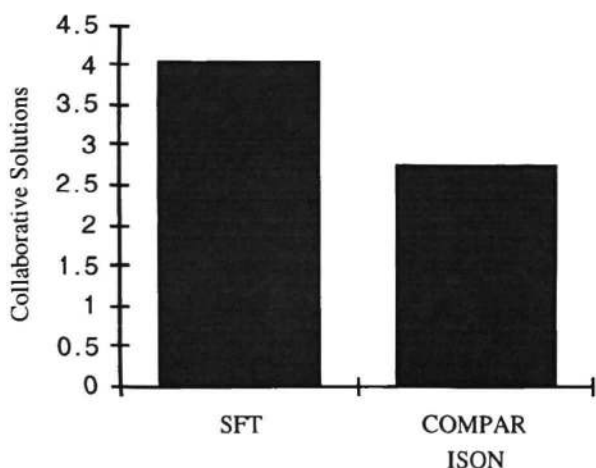


Figure 1. Number of collaborative solutions by group

Discussion

Did students in collaborative/constructivist learning environments (i.e., SFT classrooms) report higher levels of psychological sense of community in the classroom? The answer is yes. Was the higher level of community in the SFT classrooms accompanied by higher social skills? It was. Support for these hypotheses comes from students' self-report of their social skills. SFT students also demonstrated higher level of social problem-solving skills in their proposed solutions to conflict-situation vignettes. Did this increase of social skills and social problem-solving ability correlate with decreased antisocial behavior at the individual and at the group level for students in the SFT classrooms? It did. Students in the SFT classrooms reported engaging in less fighting in the classroom, as well as observing lower levels of fighting in their classroom as a whole.

This study offers support for a research model in which certain types of reform learning environments (i.e., constructivist/collaborative learning environments) better support students' psychological sense of community in the classroom. Future research should examine in more detail the role that cognitive characteristics of reform learning environments play in the development of students' sense of community in the classroom and students' social skills and prosocial behavior. More specifically, studies should examine the causal relationship between the aforementioned variables, the role of learning environment cognitive characteristics as antecedents of students' sense of community and prosocial behavior, and the processes by which such a causal relationship develops.

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