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Do Learning Communities Enhance The Quality of Students' Learning and Motivation in STEM?

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The role of motivation and collaboration in STEM learning and performance is paramount. A learning community represents an educational approach that can engage students in learning in a motivated, thoughtful, active, and collaborative way. The focus of this article is on the nature of students' interest, attitudes, learning experiences and motivation in STEM as a result of participating in linked classes as part of the Learning Communities for STEM Academic Achievement (LCSAA) initiative at two historically Black colleges and universities (HBCUs). Quantitative and qualitative data demonstrate a positive influence of learning communities on students' attitudes, learning experiences and intrinsic motivation in STEM.

> "We felt more confident. At least we tried and worked it through with others. If you're wrong, you're all wrong together." (Undergraduate science major enrolled in organic chemistry course taught by LCSAA faculty fellow.)

The comments above exemplify the positive roles of both motivation and collaboration in the learning process. Motivation in education involves students' appraisals of their competence, expectancies for success, goals; values, and learning strategies (Schunk, Pintrich, & Meece, 2008). Collaborative learning in the classroom involves the active exchange of ideas and shared responsibility for learning among students and promotes interest in the subject matter, critical thinking, and increased retention of material and higher levels of achievement (Gokhale, 1995; Harris, Bransford, & Brophy, 2002). At the heart of learning communities is collaboration among students and faculty toward shared construction of knowledge and attainment of academic goals. The student in the above quote is commenting on his experiences working with a small group of his peers to solve organic chemistry problems as part of the Learning Communities for STEM Academic Achievement (LCSAA) initiative. He describes the importance of confidence, effort and persistence in learning, and how a learning community facilitated his feelings of competence in the learning process. The student's remarks suggest that the collaborative learning experience fostered a level of comfort, confidence and motivation among the students that they might not have experienced when working alone.

When students grapple with material and tasks in collaboration with their peers they are pushed to consider alternate ideas and perspectives, be responsible to others, and engage in critical and divergent thinking and, therefore, be intellectually enriched. Furthermore, active engagement in the learning process allows students to create, discover, and deeply understand material in a way that is hard to attain when students are exposed only to traditional, passive lectures. These principles are the basis of the theory of social constructivism (Cross, 1998; Palinscar, 1989), which is the major paradigm underlying the collaborative pedagogy of learning communities. The most recent scholarship on scientific teaching suggests that collaborative pedagogy provides the exact type of learning experiences necessary for deep conceptual mastery of science content; that is, active, inquiry-based learning, and innovative and diverse pedagogies that can reach diverse learners (Handelsman et al., 2004). Furthermore, students who have typically underperformed in science, such as African Americans, may benefit the most from these types of innovative

pedagogies, which promote interpersonal interaction, collaborative learning, as well as the sharing of information (Dodge & Kendall, 2004; Smith, MacGregor, Matthews, & Gabelnick, 2004). The focus of the present article is on the nature and level of students' interest, attitudes, learning experiences and motivation in science, technology, engineering, and mathematics (STEM) as a result of participating in linked classes at two historically Black colleges and universities (HBCUs), as part of the Learning Communities for STEM Academic Achievement (LCSAA) initiative.

MOTIVATION AND STEM ACHIEVEMENT

It can be argued that motivation is the central psychological experience of students as they experience classroom work through persistence, effort, and choice. Motivation is concerned with students' beliefs about their competence, the "quality of task engagement," as well as "goals or reasons for learning," and the duration, intensity and direction of academic behaviors (Ames, 1990, p. 411). Psychological theory on achievement motivation has an established intellectual tradition spanning several decades (Linnenbrink & Pintrich, 2002; Schunk et al., 2008) and provides evidence of the central role of motivation in learning and performance. Motivation is considered a prerequisite for, or "enabler" of, academic success (Linnenbrink & Pintrich, 2002). Although learning communities' research and program evaluations are often concerned with how learning communities influence student confidence, effort, involvement, persistence and quality of learning (Taylor, Moore, MacGregor, & Lindblad, 2003), the extant learning communities research and scholarship fails to examine modern motivation constructs and instead uses more generalized measures, such as engagement, involvement, and effort (Engstrom & Tinto, 2008; Tinto, 1997, 2000; Zhao & Kuh, 2004). Typically, these measures represent how active students are in their education and with their peers and how much they study. But, there are many cognitive, social, and affective variables that shape these behavioral indicators, which have been less explored. If researchers are to gain a full and accurate understanding of the nature of student learning and experiences in learning communities, it is important that the multiple ways that students are motivated in learning contexts are examined (Linnenbrink & Pintrich, 2002). The present study uses modern motivation theories to examine student motivation in order to gain a more complex understanding of the nature of student's motivation in learning communities and to examine the efficacy of the LCSAA initiative in enhancing students' attitudes and motivation in STEM.

Students are not "motivated" or "unmotivated;" motivation is a multifaceted construct and motivation scholars now realize that students can be motivated in many ways and that their motivation can vary from context to context (Linnenbrink & Pintrich, 2002). Just like the pedagogy that underlies learning communities, the current dominant theoretical paradigm framing motivation scholarship and research emphasizes social constructivism and the social bases of cognition and learning. Social cognitive theory puts forth that learning from others (models), through observation and vicarious experiences, is the primary mechanism for learning (Bandura, 1977; Schunk, 1991; Schunk et al., 2008). Social constructivist perspectives, building on the work of the Russian scholar, Lev Vygotsky, deepen this line of thinking to emphasize the social nature of human intelligence and the active, co-creation of knowledge among peers in a classroom (Palinscar, 1989). Contemporary motivation theories, such as self-efficacy theory (Schunk, 1991), expectancy-value theory (Eccles, 1983; Eccles & Wigfield, 2002), and achievement goal theory (Dweck & Legget, 1988; Midgley, 2002) build on the perspective that individuals are active "meaning makers" of the experiences and situations around them. Motivation theorists suggest that students actively form perceptions of their schools and classrooms; the work and autonomy they are given; their relationships with adults and peers; and their expectancies for success. These cognitions and appraisals shape choices, effort, persistence, help-seeking, self-regulation, affect, learning and performance in the classroom (see Schunk et al., 2008).

The role of motivation in STEM learning and performance is paramount. Stimulating and sustaining positive attitudes and interest in STEM is a common impetus of many science and math

reform initiatives (Math Science Partnership–Motivation Assessment Program, 2004). Attitudes and interest in STEM are related to students' motivation in STEM. In addition, several reforms aimed at increasing access and success in science for African Americans focus on nurturing feelings of competence and efficacy in STEM (Lam, Srivatsan, Doverspike, Vesalo, & Mawasha, 2005; Southern Education Foundation, 2005). In addition, many learning communities' reforms aim to positively affect students' feelings of competence, particularly for students who may struggle academically (Engstrom & Tinto, 2008). Efficacy beliefs are students' appraisals of their ability to organize and execute a course of action required for success. Efficacy beliefs and performance share a strong, positive reciprocal relationship—perhaps, particularly in the sciences. Task value represents the importance and utility students assign to a course or subject area, which influences engagement in the domain as well as choices related to the domain (e.g., decision to pursue advanced science classes). Finally, intrinsic and extrinsic motivations represent the degree to which students are more internally or externally engaged in a task in terms of striving for challenge, improvement, mastery, and interest in a task (intrinsic) versus getting good grades and performing better than others on the task (extrinsic). Student motivation is shaped by the learning context as well as social variables, such as relationships with others and engaging in group work (Patrick, Ryan, & Kaplan, 2007).

THE LCSAA PROJECT

The Learning Communities for Science, Technology, Engineering, and Mathematics Academic Achievement (LCSAA) project was developed as one strategy to increase the presence of learning communities and scholarly teaching at HBCUs, in order to work toward remedying the poor representation of African Americans in STEM fields. This four-year initiative was supported by the Fund for the Improvement of Postsecondary Education (FIPSE) and included four partner HBCUs: Howard University in Washington, DC (the lead institution); Jackson State University in Jackson, Mississippi; Talladega College in Talladega, Alabama; and Xavier University in New Orleans, Louisiana. The LCSAA project involved 23 faculty fellows, 6 doctoral student fellows, and nearly 300 undergraduate students. As a leader in the higher education of African Americans, HBCUs offer an exciting set of laboratories for addressing the underachievement of African American students in STEM. Major learning communities initiatives were implemented at each of the four partner institutions. Linked or clustered classes in the sciences were implemented at Howard University and Talladega College in both Fall 2006 and Fall 2007. The students enrolled in these classes are the focus of the present study.

In linked (2) or clustered (more than 2) courses faculty collaborate to effect social and curricular connections across classes through thematic connections and integrative assignments. At Howard University, introductory biology, general chemistry, and precalculus courses were clustered and enrolled a partially common cohort of students. The faculty of the three courses met regularly to discuss overlap in content areas (e.g., what math is used in biology and chemistry?) The faculty also visited each other's classes to teach particular topics (e.g., the chemistry professor went to the precalculus course and discussed the chemistry involved in cooling). In addition, the faculty developed an integrative assignment that overlapped the disciplines: a group paper on Newton's law of cooling. The biology professor connected with chemistry vis-à-vis the chemistry of H_20 and the laws of mass action, which made explicit connections in class between biology and chemistry.

The primary LCSAA activity at Talladega College was interdisciplinary clustered classes in STEM and the social sciences. The Talladega College Learning Community program succeeded in placing freshman biology students in psychology and writing clustered classes in Fall 2006. Freshman biology students were selected because faculty participants had previously identified the first year as the critical year that determined whether or not students persisted in the STEM disciplines and, at Talladega College, biology has more majors than do other STEM disciplines. It had also been decided that the writing and critical reading skills of Talladega College students needed strengthening and that these limitations were hindering their success in the STEM fields.

The theme of the Talladega College Learning Community in the 2006-07 academic year was *Health Disparities and the African-American Community*. The faculty met weekly to discuss topics common to both biology and psychology that could be reinforced in both classes with this theme in mind. The teaching and learning that occurred as a result involved cooperative learning among students, and intentional and enhanced collaboration among faculty with a focus on writing and critical reading skill development in the STEM classes. There was also a strong emphasis on active learning pedagogy. In addition, the faculty created integrative assignments that spanned the three classes. For example, they assigned a single research paper to their respective classes that was graded by all three instructors and counted towards students' grades in each of the three classes. The paper topic was chosen by the student, with the requirement that the topic involved the disciplines of both psychology and biology (e.g., stress and heart disease). As a culminating activity, the faculty and students coordinated and sponsored a community health fair.

In Fall 2007, the professor of Biology 101 worked with the organic chemistry professor (both LCSAA fellows) to make curricular linkages between biology and organic chemistry. The chemistry professor provided three different lectures to the biology class about chemistry topics, including solutions across the sciences and functional group of chemical compounds. The biology professor emphasized the connections between biology and chemistry throughout the semester and the students were tested on the information.

In the present study, the authors examine if students' attitudes, motivation, and learning were enhanced as a result of participating in the clustered and linked courses at Howard University and Talladega College that were part of LCSAA. The following research questions guide this study:

- What is the nature and level of student's motivation in STEM classes?
- Is motivation enhanced as a result of the learning community initiative?
- Do students report positive or negative attitudes about linked STEM courses?

METHODOLOGY

Data Sources and Sample

The data sources for this study include both quantitative and qualitative assessments of students in linked courses at Howard University and Talladega College during two different semesters: Fall 2006 and Fall 2007. In 2006, students in the linked courses were given the *LCSAA Attitudes Survey*, which contained Likert-scale items and open-ended questions about their perceptions and preferences related to linked courses. The students in the "core" linked course (the course taught by the organizing faculty member on each campus) were administered the survey. Ten students at Howard University and 20 students at Talladega College completed the questionnaire.

In Fall 2007, students were given the *Motivation in the College Classroom Questionnaire* at the beginning and end of the semester. Using this approach, we obtained pre- and post-measures of students' intrinsic/extrinsic motivation in STEM, self-efficacy, task value, and control of learning beliefs. Students were given the survey at the beginning of the semester (September) and again at the conclusion of the semester (December) to measure change in motivation and attitudes as a result of participating in the LCSAA linked classes. The survey administered to the students in December 2007 also contained the Likert and open-ended questions from the *LCSAA Attitudes Survey* given in Fall 2006 in order to facilitate cross-year, cross-class comparisons. A total of 19 surveys were collected in Fall 2007 (11 from Talladega College students and 8 from students at Howard University).

Instruments and Measures

The *LCSAA Attitudes Survey* was developed by one of the faculty fellows and the Co-Project Director. This survey includes Likert-scale items and open-ended questions to assess students' perceptions and preferences related to linked courses. Likert-scale items asked students to rate their degree of agreement from 1 = "Strongly Disagree" to 5 = "Strongly Agree" with statements

concerning their learning and interest in STEM as a result of participating in linked classes. Sample questions included: *As a result of participating in linked classes, my interest in pursuing graduate school in STEM has increased*; and *Overall, I liked classes that are linked more than classes that are not linked.* The open-ended items included questions, such as: *What did you like about linked classes?* and, *Should the college continue this effort?*

The *Motivation in the College Classroom Questionnaire* was adapted from the *Motivated Strategies for Learning Questionnaire* (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991). The MSLQ is a self-report instrument made up of a battery of scales used to assess college students' motivation and learning strategies for a college course. Reliability of most of the scales of the MSLQ is good, ranging from .52 to .90 (Duncan & McKeachie, 2005). Five motivation subscales were taken from the MSLQ and used in the present study, including intrinsic and extrinsic motivation; task value; academic efficacy; and control of learning beliefs. All scales had a 7-point Likert response scale that ranged from 1 = "Not at all true of me" to 7 = "Very true of me." A sample item for intrinsic motivation is:

> *In a class like this, I prefer course material that really challenges me so I can learn new things;* extrinsic motivation: *Getting a good grade in this class is the most satisfying thing for me right now;* self-efficacy: *I'm confident I can learn the basic concepts taught in this course:* task value: *I think the course material in this class is useful for me to learn;* and control of learning beliefs: *If I don't understand the course material, it is because I didn't try hard enough.*

All instruments are included in the Appendix.

Analysis

Descriptive analyses of all variables were conducted to determine average scores of the participants on the motivational and attitudes variables. Non-parametric bivariate correlations were also conducted to examine the nature of students' motivation and patterns of relationships among the motivational variables. Parametric and Non-parametric are two categories of statistical tests common for analysis of data. Parametric tests are preferable as they are more powerful and less likely to result in Type II errors than non-parametric tests (Weinbach & Grinnell, 2001). Use of a parametric test requires that the data under observation meet a set of certain assumptions specifically, a random sample, sample size of at least 30, dependent variable should be measured at the interval or ratio level, and normal distribution of the dependent variable. When data violate one or more of the aforementioned assumptions the alternative non-parametric test is recommended.

Unlike a parametric test, a non-parametric test makes no assumptions about the parameters of the population and, therefore, is not concerned with variables of interest being normally distributed within the population from which the sample was drawn (Weinbach & Grinnell, 2001). Non-parametric tests, while less robust than parametric tests, have their advantages and are appropriate for addressing statistical needs, such as small sample size (Weinbach & Grinnell, 2001). In the current study, the data violated several assumptions of the appropriate parametric tests (i.e., Pearson's *r*; independent *t* test): no random selection or assignment, and sample size is less than 30. As a result, the alternative Non-parametric tests were used: the Spearman's Rho bivariate correlations and the Mann-Whitney U test. Spearman's Rho was used to examine relationships among the motivation variables. The Mann-Whitney U test was conducted to determine if students' motivation was higher as a result of participating in learning communities.

RESULTS

Fall 2006

From the open-ended items on the *LCSAA Attitudes Survey*, 95% (19:20) of the students in the Talladega College linked classes reported that they would recommend linked classes to others and that the college should continue the effort. One student commented, "*If the college is serious*

about the freshman class's well being, then the effort should definitely continue." The main benefit that students reported about the linked courses was the shared experience with their peers. Students expressed that the linked courses enabled them to get to know students better, which made it easier to study because they could get assignments from peers and create study groups across the multiple classes.

Students involved in the linked course sequence at Howard University indicated with a mean score of 3.6 and 3.5, respectively, on a scale of 1 = "Strongly Disagree" to 5 = "Strongly Agree" that they were more likely to attend graduate school and more likely to pursue a math or science-related career as a result of their experience in the linked courses. In addition, 90% of Howard University students in linked courses indicated that the university should continue the effort. The students reported that what they liked about having classes with the same group of students was that they could get to know students better, which made them more comfortable and made it easier to form study groups. They also reported better comprehension of the material because the subject matter was related across the classes and the information was reinforced. The one negative that students reported was the heavy course load.

In Fall 2006, the linked class intervention at Howard University seemed to deepen student learning. The students involved in clustered courses had a 61% success rate in precalculus, receiving grades of A, B, or C compared to the 45% success rate of students in a non-clustered precalculus course. In the general biology course, the clustered students demonstrated a success rate of 75%, compared to a 70% success rate for non-clustered biology students.

Fall 2007

As shown in Figure 1, students from both institutions reported positive levels of motivation in their core STEM linked course (Talladega College students reported about biology linked class; Howard University students reported about precalculus linked class). At the pre-test, intrinsic motivation was lowest among the students (although still positive) and extrinsic motivation was the highest. The correlation analysis shows that, with the exception of self-efficacy and control of learning beliefs, all pre-measures of motivation were positively and strongly related to their post-measures. In addition, pre-intrinsic motivation was positively and strongly related to pre-task value and especially post self-efficacy and control of learning beliefs. Post self-efficacy beliefs were strongly and positively related to post intrinsic motivation, task value, and control of learning beliefs. Also, at the baseline, female students were more likely than male students to take more classes and to endorse greater task value (see Table 1).

As shown in Figure 2, Talladega College students reported favorably about the effects of linked course as it related to them understanding biology better (M = 4.67) and their overall feelings about the linked courses (M = 4.33). As it related to the linked course helping them to better understand chemistry the students disagreed (M = 2.67). Students neither agreed nor disagreed that the linked course increased their interest in attending graduate school (M = 3.33) or in pursing a career in math of science (M = 3.33). Howard University students neither agreed nor disagreed that the linked course increased their interest in attending graduate school (M = 3), or in pursing a career in math or science. (M = 3). They neither agreed nor disagreed that they liked linked courses overall (M = 3). And they disagreed that the linked courses helped them to better understand biology (mean = 2.5) or precalculus (M= 2.5).

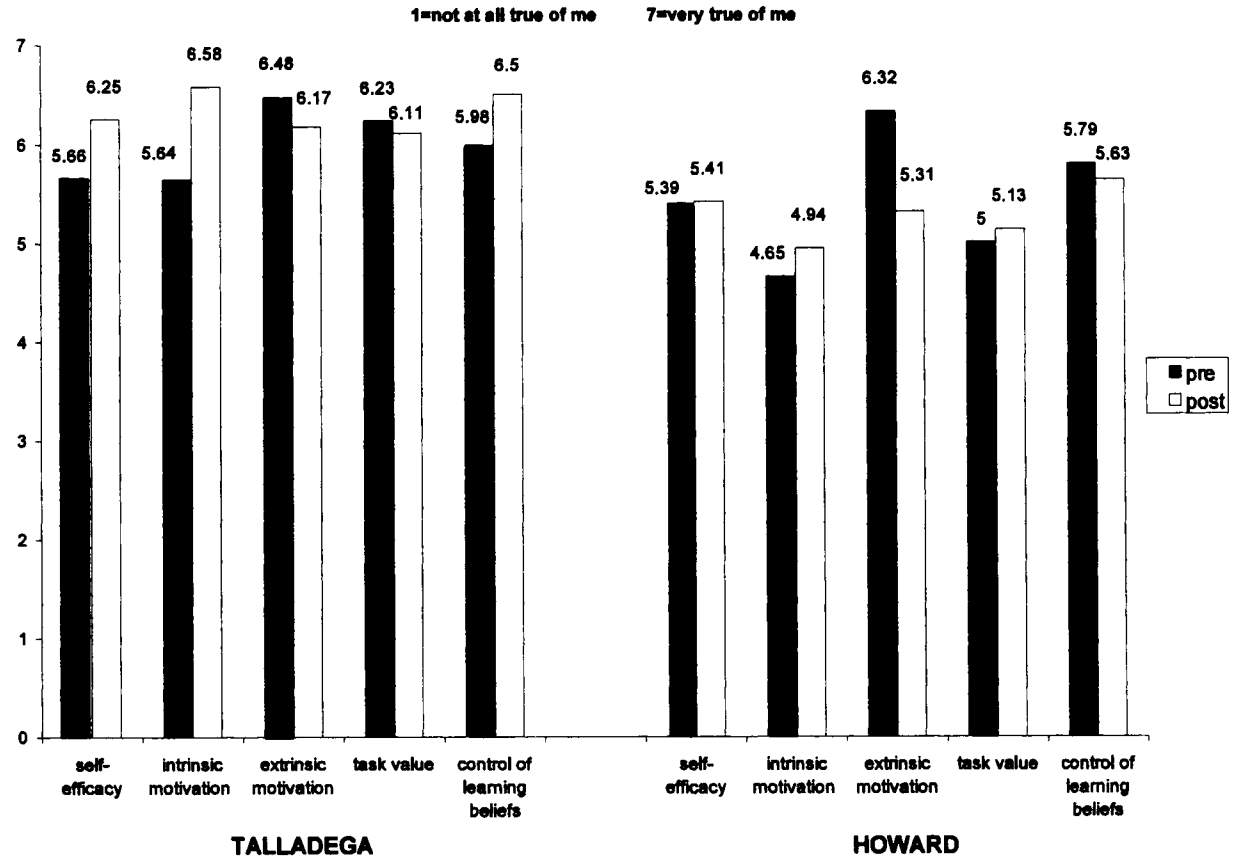

Figure 1. Pre- and post-motivation scores of students in LCSAA linked courses, by institution—Fall 2007.

Table 1

Spearman's Rho Bivariate Correlation Analysis of Motivation and Student Background Variables

		Female	# classes	# hours study	Pre Self-Efficacy	Pre Intrinsic	Pre Extrinsic	Pre Task Value	Pre Control of Lng	Post Self-Efficacy	Post Intrinsic	Post Extrinsic	Post Task Value	Post Control of Lng
Female	Coeffct	1												
	Sig													
	N	18												
# classes	Coeffct	.433*	1											
	Sig	.036												
	N	18	18											
# hours study	Coeffct	-.243	-.374	1										
	Sig	.174	.070											
	N	17	17	17										
Pre Self-Efficacy	Coeffct	-.043	-.261	.167	1									
	Sig	.432	.148	.261										
	N	18	18	17	18									
Pre Intrinsic	Coeffct	.480	.035	.287	.260	1								
	Sig	.022	.445	.132	.149									
	N	18	18	17	18	18								
Pre Extrinsic	Coeffct	.237	-.167	.311	.220	.288	1							
	Sig	.172	.253	.112	.190	.149								
	N	18	18	17	18	18	18							

Pre Task Value	Coeffct	.497*	.371	-.054	.129	.453*	.243	1						
	Sig	.018	.065	.418	.304	.029	.166							
	N	18	18	17	18	18	18	18						
Pre Control of Lng	Coeffct	.196	-.137	-.008	.395	.142	.430*	.605**	1					
	Sig	.218	.293	.488	.053	.287	.037	.004						
	N	18	18	17	18	18	18	18	18					
Post Self-Efficacy	Coeffct	.408	.358	.143	.036	.778*	.148	.464	.218	1				
	Sig	.182	.217	.394	.469	.020	.376	147	.319					
	N	7	7	6	7	7	7	7	7	8				
Post Intrinsic	Coeffct	.624	.534	.058	-.101	.962**	.094	.455	-.472	.783*	1			
	Sig	.067	.109	.457	.415	.000	.420	.153	.142	.011				
	N	7	7	6	7	7	7	7	7	8	8			
Post Extrinsic	Coeffct	.312	.038	.551	.560	.226	.906**	-.346	-.296	.265	.457	1		
	Sig	.248	.468	.129	.096	.313	.002	.224	.259	.263	.127			
	N	7	7	6	7	7	7	7	7	8	8	8		
Post Task Value	Coeffct	.412	.821*	-.116	-.645	.598	-.449	.991**	.229	.671*	.661*	-.036	1	
	Sig	.179	.012	.413	.059	.078	.156	.000	.310	.034	.037	.466		
	N	7	7	6	7	7	7	7	7	8	8	8	8	
Post Control of Lng	Coeffct	.629	.539	-.088	-.093	.933**	-.095	.551	-.299	.849**	.969**	.288	.732*	1
	Sig	.065	.106	.434	.422	.001	.420	.257	.257	.004	.000	.244	.020	
	N	7	7	6	7	7	7	7	7	8	8	8	8	8

Note. $^{*}p < .05$; $^{**}p < .01$ level. Lng=Learning; Coeffct=Coefficient; Sig=Significance.

From the open-ended items on the *LCSAA Attitudes Survey*, 100% (3:3) of the students in the Talladega College linked classes reported that they would recommend linked classes to others and that the college should continue the effort. One student suggested that the college extend the learning community project to include other courses, "I agree that Talladega College should continue this program and try it in other courses." They all also reported that they did not see any problems with the linked courses and felt that they provided a diverse, new experience. One student commented that the linked courses "open your mind to new things and new people as well." Another student commented on the student-teacher interactions stating that what she liked about linked courses was "having small class sizes because the professor can learn and interact with his students."

Talladega College students' responses to the question "*What do you like most about taking the same classes with the same students?*" varied but all seemed to reflect a theme of social connectedness and exchange of information. One student reported, "The part I like most in having the same classes with the same students is being able to communicate." Another stated, "I like having the same classes with some of my peers because if I had a question about something that was discussed in class, I could ask them or vice versa." In Fall 2007, the Howard University students did not respond to the open-ended questions.

The Mann-Whitney U test of median ranks showed no significant differences between pre- and post-measures of motivation except for in the intrinsic motivation of Talladega College students. For Talladega College students only, intrinsic motivation was significantly higher at the post-test (6.58) than at the pre-test (5.64).

DISCUSSION

This study was based on a very small sample and, thus, any conclusions we make we do so with extreme caution. Nonetheless, the limited evidence regarding the efficacy of the Learning Communities for STEM Academic Achievement (LCSAA) project suggests positive results of this four-year initiative among the partner HBCUs. The results of the present study suggest, in particular, that students' motivation and attitudes concerning science and mathematics are enhanced in classes that adopt learning communities' educational approach. Our results are supported by other studies nationwide on the benefits of learning communities pedagogy for students' learning, engagement and retention in higher education (Tinto, 1998; 2000).

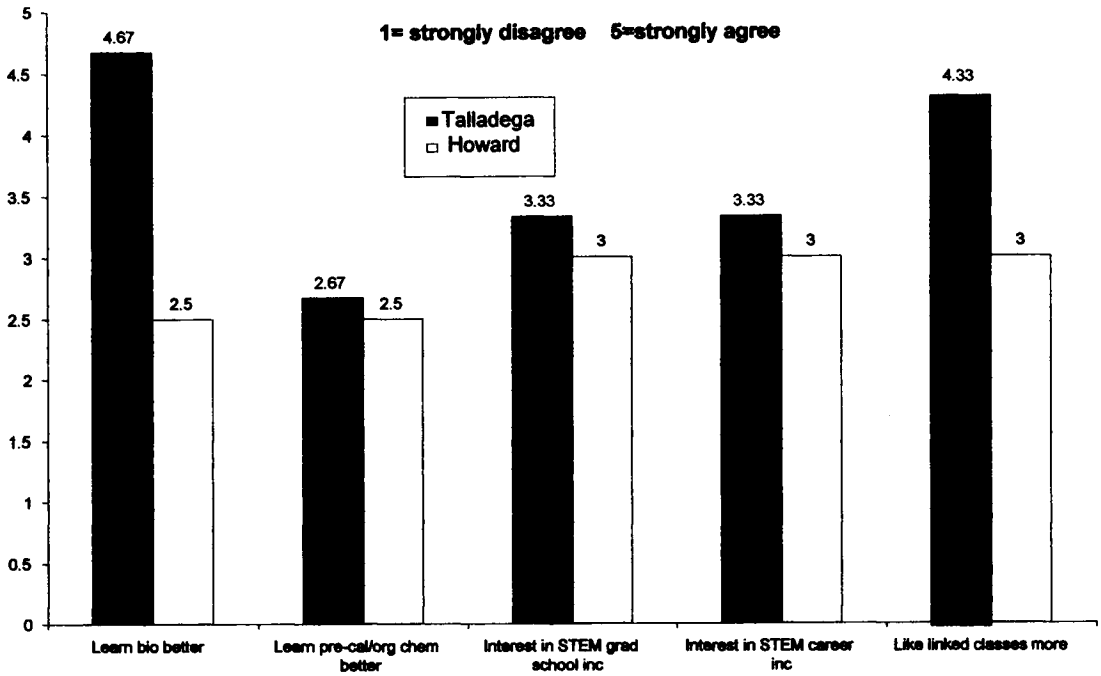

Figure 2. Attitudes about benefits of LCSAA, by institution during Fall 2007.

Table 2

Summary of Mann-Whitney U-Tests on Motivation Subscales for Pre-Test and Post-Test Occasions (N=11), Talladega College

Subscale	Pre-Test		Post-Test		U-Statistic
	M	*SD*	*M*	*SD*	
Self-Efficacy	5.66	.85	6.25	.38	9.00
Intrinsic Motivation	5.63	.71	6.58	.28	3.00*
Extrinsic Motivation	6.47	1.14	6.16	1.23	11.00
Task Value	6.23	.84	6.11	.58	12.50
Control of Learning	5.97	.71	6.50	.43	8.50

Note. $*p < .05$.

The positive effects of learning communities on African American students' STEM learning, motivation and attitudes about science are significant. As aforementioned, we cannot conclude that

the LCSAA initiative *caused* an increase in students' intrinsic motivation, but the quantitative and qualitative data from multiple sources and years provide evidence that linked courses and the LCSAA program had a positive influence on students' motivation and learning in their STEM classes. This type of research at HBCUs is virtually nonexistent in the literature. To evaluate a reform initiative that resulted in positive academic gains for African American college students warrants future investments in replication of and research on the learning communities approach. Cultural studies on African Americans from a variety of disciplines, including education, psychology, sociology and anthropology, emphasize the communalistic cultural orientation of African Americans in general, as well as the centrality of social relationships in the African American community. Couple that knowledge with knowledge from cognitive science and educational psychology that intelligence, cognition, learning, and performance are socially based and driven.

CONCLUSION

The authors conclude that learning communities seem especially fitting for African American students, and suggest that they can be considered *culturally relevant pedagogy* (Ladson-Billings, 1995) for African American students throughout the education pipeline. The implementation of learning communities in STEM at HBCUs is timely and critical. Today's information and technologically driven, global economy commands that institutions of higher education provide its students with knowledge, skills, and abilities that will position them to compete and provide leadership in such a world. Moreover, it is our responsibility as educators to work toward developing students who are life-long learners and who are intrinsically motivated in their studies. Educators want the learning experiences that are created for students to be rewarding in and of themselves and not just because they provide high grades or curriculum requirements. HBCU administrators and faculty can answer this pressing call and build on a tradition of excellence in African American education by embracing *evidence-based instructional and curricular reforms*, such as learning communities, that are effective with the population of students that we serve today. A growing amount of scientific evidence suggests that learning communities enhance engagement and retention, particularly for African American students. Moreover, many institutions are revitalizing and transforming themselves through the implementation of learning communities (e.g., Wagner College in New York). Whatever motivation is needed in the higher education community of researchers, teachers, and leaders to engage in new, innovative curricular approaches, let us muster it and model the exact drive we hope to see in our students.

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