

**Holistic growth of college peer study group participants:
Prompting academic and personal development**

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Abstract

This qualitative study focused on observed and perceived changes in academic and personal attitudes and behaviors by student participants in the Peer Assisted Learning (PAL) program at the University of Minnesota (UMN). The PAL model employs best practices from national peer learning models including Supplemental Instruction, Peer-led Team Learning, and Emerging Scholars Program. The PAL program provides regularly-scheduled study review sessions weekly to support students achieve higher final course grades and persistence rates. In most uses of the PAL model at UMN, participation is mandatory. Arthur Chickering's Comprehensive Theory of Personal Change was used to analyze the data. Data was gathered by the PAL study group facilitators of observed or perceived changes of attitudes and behaviors by the participating students. Four themes emerged: higher academic engagement, higher confidence, increased interpersonal skills, and improved critical thinking skills. Higher engagement with the learning process was manifested through PAL participants talking more, displaying more comfort while speaking, and asking questions of the PAL facilitators and others in the group. Increased confidence was evidenced by reduction of frustration and fear and replaced with display of new cognitive and metacognitive thinking, expressions of self-confidence in ability to solve problems, and learn new academic content independently. Increased interpersonal skills was higher interaction within the study group, helping others during small group activities and within the large group discussions, making friends with the participating students and the facilitator, and actively working with fellow students to solve problems rather than preferring self-reliance and working alone. The final theme of improved

critical thinking was displayed by increased ability to understand and explain reasoning behind concepts. Several recommendations are offered: how study group programs could foster academic and personal growth of study group participants and areas for further research.

Introduction

Many postsecondary education institutions have become intentional about holistic development of college students. In the past, an artificial divide within higher education assigned fulfilling student learning outcomes to academic affairs and student development outcomes to student affairs. Progressive approaches to the higher education now place these as shared responsibilities (Corrigan, 2012; Keeling, 2004). Careful planning can embed student learning and student development outcomes throughout the college experience. This research study focused on the potential of a college study group program to help students grow seamlessly in academic knowledge and personal skills. Increasingly business and industry needs both hard and soft skills for successful workers (Heckman & Kautz, 2012; Mitchel, Skinner, & White, 2010). Peer study group programs have been widely implemented in postsecondary education throughout the world (Arendale, 2004, 2010, 2014a, 2014c).

The Peer Assisted Learning (PAL) program at the University of Minnesota (UMN) provides academic support for rigorous college courses that often serve as gatekeepers for new students pursuing academic majors in science, technology, engineering, and mathematics (STEM). PAL study groups review course content, model cognitive learning strategies, practice use of metacognitive learning strategies, and promote autonomous learning so students can be academically successful in classes where PAL is not available. Several research studies validate academic benefits of PAL (Cheng & Walters, 2009; Ediger, 2007; Lilly & Goergen, 2011). Influenced by other national peer learning programs, more description about the PAL program,

theoretical foundation, and other information is available elsewhere (Arendale, 2014e). Another series of research studies by Arendale and Hane examine the PAL program at UMN with its impact on PAL facilitator academic skill development (2014a), leadership emergence (2014b), vocational interest development (2014c), and professional identity development (2014d).

The importance of this research study is if the PAL peer study group program contributes to development of academic and personal skills of the participating students. These are sometimes described as *soft skills* (Heckman & Kautz, 2012; Mitchel, Skinner, & White, 2010). If this development occurred, could the process for such changes be identified? If the dynamic of change with these skills were better understood, would it be possible to be intentional about developing these soft skills in addition to improving grades of the students and supporting persistence towards graduation? With limited institutional funds, every budget dollar needs to be maximized for its benefit to the students and future employers. This article represents a step in this investigative process.

Review of the Professional Literature

The majority of professional literature for postsecondary peer cooperative learning groups report descriptions of their programs or contain studies of academic achievement and persistence towards graduation (Arendale, 2014a). Research with elementary and secondary students explores both academic and student personal development (Johnson, Johnson, & Smith 2006). In this section, we examine published studies on academic and personal development of study group participants. To develop a better understanding of student development at the postsecondary level, we examine an influential theorist and researcher for students regarding personal development during their college years.

Previous Research on Postsecondary Peer Cooperative Study Groups

David Arendale maintains an annotated bibliography on the six major postsecondary peer cooperative learning programs implemented nationally in the U.S.: Accelerated Learning Groups (ALG) , Emerging Scholars Program (ESP), Peer-led Team Learning (PLTL), Structured Learning Assistance (SLA), Supplemental Instruction (SI), and Video-based Supplemental Instruction (VSI) (Arendale, 2014a.) Of 1,100+ entries in the database, 51 studies identify academic or personal skill development for participants (Arendale, 2014b). Of the 51 research studies, 40 are about SI, six are about PLTL, and the others are studies of ESP and VSI. Half the studies are of peer programs in the U.S. with 14 from Australia, seven in the United Kingdom, and the remainder from South Africa, Sweden, and Malaysia. A meta-analysis of these 51 studies reveals themes of changed behavior, attitudes, and knowledge. The most frequent behavioral change are acquisition of new study strategies (14 studies), small group skills (10 studies), communication skills (5 studies), and a few studies document improvements with deeper approaches to learning, increased problem-solving skills, make new friendships, and increase personal decision-making skills (Arendale, 2014b). Armstrong, Power, Coady, and Darmer (2011) document how VSI influences participants in an Australian college. The participants record gains in their academic confidence, positive attitudes toward learning and math in particular, and increase skills study habits and learning strategies and deepened understanding of rigorous course material in engineering mathematics. Culow (2000) analyzed the potential impact of SI with Australian college students in a business course. Positive outcomes for the participating students include less inhibition to participate in discussion, higher academic confidence, better understanding of the course material and higher persistence to solve homework problems.

Regarding changed attitudes, eight studies indicate reduction of anxiety levels by the

participants. Six studies indicate increase of motivation for higher levels of academic performance and five studies record increased interest in the academic subject material. Three or less studies identify: increased social confidence, improved self-esteem, positive attitude toward learning, and increased sense of belonging in college. In the category of knowledge change, three studies identify better understanding of the course material. Ediger (2007) identifies positive benefits for students enrolled in rigorous mathematics and science courses at the UMN with their PAL program. Among changed attitudes are increased academic confidence, higher comfort in engaging other students with solving academic problems, and a higher level of self-reliance when encountering difficult academic course material. Lundeberg and Moch (1995) report in an early SI study student participants experience a higher spirit of cooperation and comfort within an academic community, increased feeling of empowerment, and an increase in experimenting with new ideas without fear of academic consequences (1995). Paideya (2011) reports a study of SI participants at the University of KwaZulu-Natal in South Africa with their first year engineering and chemistry students. The study reports development of thinking, reasoning, and social skills that support deeper engagement with problem solving activities more efficiently.

Chickering's Comprehensive Theory of Personal Change

An influential researchers and theorists that investigated student development are Arthur Chickering and his associates. His model is studied extensively and often used as a template for data analysis. Chickering's *Comprehensive Theory of Personal Growth* identifies seven *vectors* of change for individuals after high school (1969). *Vectors* are different dimensions of student development. He chose the term *vectors* since they may occur simultaneously and not in a cumulative or prerequisite manner. His revised model (Chickering & Reisser, 1993) emphasizes

changes for individuals can occur simultaneously in multiple dimensions.

Chickering identified seven *vectors* of identity development growth for individuals: 1. *Developing Competence*: Intellectual (knowledge, skills, aesthetics, critical thinking, and reasoning), physical (athletic, recreational, wellness, and artistic), and interpersonal (communicating, leading, and working with others). 2. *Managing Emotions*: Recognize, accept, appropriately express, and manage emotions. 3. *Moving Through Autonomy Toward Interdependence*: Emotional state not dependent upon others so healthy interdependent relationships are formed with others. 4. *Developing Mature Interpersonal Relationships*: Healthier relationships are formed and maintained through cultural competence and appreciation for differences among people. 5. *Establishing Identity*: Overlapping personal identities of students occur due to their life experiences, choices, and demographics. 6. *Developing Purpose*: Vocational, personal, and other persons become long-term commitments. 7. *Developing Integrity*: Students develop, respect, and act consistent with their own value system and consider the needs of others and honor their values (1969; Chickering & Reisser, 1993).

The environment in which learning takes place is a significant influence on student development (Chickering & Reisser, 1993). The learning context is a catalyst or inhibitor for personal change. Manipulating the context can be controlled by intentional action or inaction by the administrators, faculty, and staff at the institution. The researchers identify seven areas of context: 1. *Institutional Objectives*: some institutions are intentional with development of one or more of the seven vectors through efforts of administrators, faculty, and staff. 2. *Institutional Size*: smaller learning environments often provide more opportunity for personal involvement of the student that is a prerequisite for change. The learning environment at large institutions can be moderated for this effect through smaller class sizes; student affiliation with clubs,

fraternities; and academic societies; and small-group activities within large class sessions. 3. *Student-Faculty Relationships*: Faculty members increase influence through easy accessibility outside of class, understanding student needs and wants, and effectiveness and honesty in communication. 4. *Curriculum*: Culturally-sensitive and relevant curriculum provide more fertile learning environment for students discuss to integrate perspectives from their diverse backgrounds with the curriculum. 5. *Teaching*: Students engage in higher levels of personal development when instructors move from passive modes of lecturing to active learning activities during class sessions. 6. *Friendships and Student Communities*: Student growth occurs more quickly and at deeper levels when they are engaged in small-group, learning activities that include a culturally-diverse composition for maximize interaction with different ideas and perspectives. 7. *Student Development Programs and Services*: Rather than only focus on the first-year experience, the institution is intentional with specially designed activities, curriculum, and programs throughout the entire experience for students until they graduate.

Method

Sample

Participants in the study were Peer Assisted Learning (PAL) facilitators. These undergraduate college students from a variety of academic majors were selected to serve as peer study group leaders in historically-difficult courses at UMN (i.e., high rates of academic withdrawal). Forty-three of those students were enrolled in the PAL facilitator professional development course, made up of 23 females and 20 males. The academic profile of these PAL facilitators were overall grade point average above 3.5 on a 4.0 scale. At a minimum, the students were sophomores or higher in their undergraduate studies. The students were enrolled in academic units distributed throughout the UMN curriculum. Data was collected from all 43 of

these students. The PAL facilitators were the direct observers of PAL participants. Facilitators maintained a weekly journal of their experiences in their personal role and observations of behaviors and perceptions of attitudes of students that participated in their study groups. The facilitators were expressly requested to notice changes in their students over the course of the academic term and record examples in their weekly journal entries.

Procedure

Data collection. At the end of the PAL facilitator professional development course (PsTL 3050 and 5050), online surveys were administered to the students by David Arendale. PAL facilitators enrolled in this class during their first semester of service in the program (Arendale, 2014d). Arendale served as course instructor and designed the surveys. He served as Primary Investigator for this research study and co-developed the campus PAL program. The questions were selected based on his previous data collection efforts with other peer assistance learning programs and a review of the professional literature (Arendale, 2014a).

Students were told Arendale would not know which responses were attached to which facilitator, and he would only be able to tell whether the facilitator had completed the survey. The surveys consisted of ten open-ended and two forced choice items asking the students to reflect upon their experience as a PAL facilitator, the possible impact that they had on their students, and the impact of the program on the facilitators' own development. The main item that was coded for this analysis was *What growth did you see occur with the student? Please give examples. That growth could be with personal or academic skills/behaviors.* The surveys took approximately 30 to 45 minutes to complete.

Data analysis. Responses to the open-ended survey items were analyzed using a modified version of the steps outlined by Boyatzis (1998) for inductive data analysis. Data

analysis was conducted by David Arendale and Amanda Hane who served as his graduate research assistant. In the first step, all responses were collected under each question of the survey. In the second step, Hane and Arendale independently identified draft themes across responses. They came together to discuss the draft themes and reconcile any differences. A preliminary list of codes was then developed. Codes were based on draft themes that emerged from the data, but were also informed by the survey items. In the fourth step, the faculty instructor and graduate research assistant independently applied the codes to the data, and then met to discuss their appraisals to establish reliability (Boyatzis, 1998). A final version of the themes was established and final data analysis occurred.

Results

PAL facilitators observed themes of personal and professional growth among the students participating in their PAL groups. The four themes identified were higher levels of engagement (17 facilitators), confidence (13 facilitators), interpersonal skills (8 facilitators), and critical thinking skills (6 facilitators). These are similar to findings from other studies preciously cited in the previous section on review of the professional literature.

These four themes represented attitudes and behaviors. The themes of engagement, interpersonal skills, and critical thinking skills were behaviors that PAL facilitators observed of their participants. The theme of confidence was evidenced by statements made by the participants that were noted by the facilitator. This theme of confidence, sometimes called comfort by the participants, will be the subject of a subsequent study. This theme of confidence and comfort also emerged in a study of facilitator outcomes. Sometimes confidence/comfort appeared as a precondition attitude before other behaviors changed. Other times it appeared this theme was a consequence of other behaviors. More study is required.

Greater Engagement

Seventeen facilitators observed many of their students become more engaged in the learning process during PAL sessions as the academic term progressed. This engagement was manifested through them talking more, displaying more comfort while speaking, asking questions of the PAL facilitators and others in the group, and with taking the initiative to answer questions rather than remaining silent and listening.

This one particular student, at the beginning of the semester, wrote on her [personal information] sheet that she doesn't like to be talked at and prefers to work by herself. Sam came every week and her growth has been immense. At first, she would never participate, and now she is one of the most active participants in our sessions. She always offers feedback when I ask and comes with a positive attitude ready to learn. She no longer stays away from the other students and is willing to work with others. Furthermore, she is the one student who, whenever I send out a mass email to remind them of something or to send out the outline we created in class, always responds and offers her thoughts on the past week's session. She has been incredibly helpful and her growth has been very special to watch!

For a number of students, this shift of higher engagement reflected perceived change in their attitude toward PAL sessions and academic discussions. One way this change was manifested was through them moving from disengagement to active leadership of group discussions.

One student had a bad attitude on the first day of the semester. She didn't listen and didn't participate. Over the semester, she grew to become one of my best students. She was a positive class member who actively participated in activities, gave me feedback, and drove group discussions.

For other students, growth with engagement could be attributed to different strategies and interventions on the part of the facilitators in response to the participating students.

There was one student in particular, who at the beginning of the year was very quiet, late to class, doing okay in the lecture and on the first exam, but never really seemed that into the class in general. I just continued to push the entire class, and when I started having fun activities, she started to get involved. She is an athlete, and I think getting out the desk and doing some active, fun, and even a little bit athletic activity helped her a lot. After that, even when we didn't do one of those activities she started to participate and be

more involved. I really noticed a change after the second exam, because she told me flat out that my study session really helped her get a better grade and that without it she didn't think she would have gotten the A she received. After that, she was never late again, started answering questions in the 200 person lecture, and from what she told me two weeks ago, she was going to get an A- or A as a final grade. I attribute this growth, both academically and emotionally (because she started being way more confident about the material), strictly to PAL. Without it, she wouldn't have realized that this material was easy to understand if you just tried to learn it in a different manner than accustomed too.

Changed attitudes and behaviors developed in the PAL sessions sometimes impacted similar outcomes in the academic course. Sometimes students self-reported their lack of engagement and participation in the class led by the professor early in the academic term. Interactions with the PAL facilitator and fellow participants appeared to serve as a catalyst to transfer improved attitudes and academic behaviors within the academic content course.

One of my students, "Stuart," started out the semester more or less in a bad way. He wasn't going to his classes, except mine, and was doing poorly. After meeting with Stuart outside of class halfway through the semester to discuss his next paper for the class (he failed the first one). We discussed school in general, and we straightened out a few things. He now attends class more regularly, and even got a 97% on the paper we met to discuss.

Greater Confidence

Growth in confidence also emerged as a strong theme facilitators noticed among thirteen of the facilitators with their students over the academic term. These students often used the terms *confident* or *comfortable* interchangeably.

This student began PAL sessions with seemingly little confidence in his academic ability. He didn't seem to take the class seriously and had already earned a reputation with his friends in the class of being the "dumb guy" or clown. Throughout the semester, sharing his ideas and work with his peers seemed to give him more affirmation that he could be a good student. I saw him prepare assignments in advance and put greater thought into the work he did.

As in the previous quotation, the following illustrated how confidence was perceived to be influenced by affirmation from the facilitator of their expressions of cognitive and metacognitive thinking, confidence by the facilitator of the student's capacity to learn, and the

student experiencing minor successes with solving problems and learning new academic content.

I had one student who went to class every week even the weather was so bad. In the beginning of the semester, she felt less confident with math. She did not like math but she was willing to learn. She worked hard through all the homework. She participated well in class. She asked me whenever she had questions. I tried to explain to her many times, many ways until she understood. I needed to be patient as a facilitator. Time by time, she started to understand math better. She started to like math. Her math skills grew so quick and she gained a lot confident in math.

For some students, this growth in perceived confidence was concurrent with an increase in comfort in the PAL sessions with expressing themselves.

The student participated more as the weeks progressed, and she became more comfortable in expressing her thoughts, and taking risks with her answers. Initially she was very uncomfortable talking with other classmates there, but was verbose when talking alone with me. However, by the end she would pipe up in support or opposition to her classmates.

Initial discomfort experienced when talking with other students appears to be reduced as students had private conversations with the facilitator.

Interpersonal Skills

Another theme that emerged from eight of the PAL facilitators was growth in observed interpersonal skills with fellow students in the PAL group. Growth in this area was manifested through: (a) serving as an interactive and supportive small group partner, more engagement during discussions in the PAL group; (b) helping others during small group activities and within the large group discussions; (c) making friends with the participating students and the facilitator; and (d) actively working with fellow students to solve problems rather than self-reliance and working alone.

Eight facilitators described students who became more effective and expressive work partners within their groups over the academic term. They moved beyond increased verbal participation to taking an active role in leadership of the group. PAL facilitators noted while

some students appeared to be gifted intellectually, improvement of their relationship and leadership skills perceived to be new for them.

One particular student of mine was one out of many that did attend PAL every single session. He was more intelligent than most other students from the beginning were. But where I observed his "growth" was more on his relationship level. After a few weeks, it was so exciting to see how willing he was to participate within group work. It wasn't as if he was "leading it" or "bossing" the answers out but rather, he was there facilitating his new friends! This was AMAZING for me because it was as if I almost had a helper with me from the start!

Oftentimes, this engagement came in the form of observing them helping other group members understand the material. The following quotation illustrates a student initially focused on obtaining answers for her own questions and then engaging other students with answering their questions and helping with their academic needs.

One particular student stands out in my mind. At the beginning of the semester, this girl attended PAL regularly. She always had questions and was not afraid to ask when she did not understand, but it always took her a little longer than the rest of the students to catch on. She realized this, too, because she consistently asked questions after the class had moved on in private, because she needed a little further time and explanation.... However, towards the middle of the semester, she stopped coming for a few weeks and I thought she wouldn't be back. Finally, towards the end of the semester, she returned and when she did there was a more confident girl who really had learned the math. The girl who she was usually partners with was having a hard time with a problem and asked me over for help and further explanation. However when I got there I found that I was not needed because she had accurately explained the problem to her [partner], and how to get started, solve, and the basic concepts in the problem. I thought that this was how PAL was supposed to be, and was happy that this particular girl had benefited from her time in PAL.

Likewise, some facilitators observed students began engaging in behaviors to support the learning of the group as a whole. They noted this change in behavior occurred over time and without active prompting from PAL facilitators to serve others.

It was refreshing to see that [the students] became more vocal and active during the discussions. It was also pleasing to notice that they would help their peers with questions and problems if they finished their work early. Other students who would often talk a fair amount would also start to wait before raising their hand so that their peers could get a chance to give their opinion.

Some facilitators observed students becoming less self-reliant and using their groups more as resources. The facilitator in the following example modified their PAL activities to create a team-oriented session fostering mutual dependence among the students.

I had one student that attended every PAL session I held. Initially, he must have been motivated to learn because my sessions were entirely voluntary. I started out by using worksheets and asking students to work together in groups (usually 2-3 students). This student was not explicitly isolating himself, but he made no effort to really work with his partner. However, he was willing to go up to the board to explain his answers. I realized that the worksheets were not creating the interactive atmosphere I wanted, so I began having students work on the chalkboard together. This did wonders for all students, including this boy. At first he would grab the chalk and work through the problem, but I encouraged him to help his whole group understand it. Gradually, he backed off a bit and used the input of his group from the start.

Often, it appeared it was interventions by facilitators that allowed students to seek out and work with other students in the sessions instead of working on their own. In these examples, the facilitator was directive in creating a collaborative learning environment than the last example.

I had a student, who in the beginning really kept to herself. I believe she did this because she seemed to be able to complete the task sufficiently by herself, but at the same time, I could see that inside her, she really wished to open up and connect with other students. I would see her overhearing other students struggle and ponder that she could probably be of assistance to them, but her own shyness kept her from doing so. Eventually I started to make it so that she would have to sit with other students, which she showed a little resistance to in the start, but eventually came to see the advantages of herself. By the end of the semester, she was very social with the other students, and a student that others could rely on for assistance, which really implemented the PAL concept.

Whereas some students became more engaged with their groups, others were observed to rely less on their groups for support and reassurance as the academic term progressed. With newfound confidence, they became proactive and led other students rather than the other way around.

One of my students did make considerable growth. Beginning the semester she often relied on her group members to tell her how to solve the problems, or at least where to

start them. By the end of the semester, she was the one leading her group. She had worked hard to learn the math concepts either along the semester, or before coming to class. The other group members would look to her for the equations needed and whether or not they had solved them correctly. I think she enjoyed becoming the leader, feeling smart and confident, instead of always confused or "second rate".

Finally, some group members were observed to grow in their interpersonal skills and making new friends. In turn, the facilitators observed students' reduction of shyness and increase in comfort interacting with other students helped promote higher academic achievement. Sometimes it was difficult to differentiate between higher communication skill development and increased personal comfort that enabled the participants to more freely express their current communication skills. Increased comfort seemed to be a catalyst for increased expression of behaviors.

I had one student who throughout the semester really grew with his personal skills. He didn't talk at all at the beginning but then when we came to know each other. He was very open. He was open with his struggles which allowed me to help him more. This in fact helped with his academics. He started to ask more questions as the semester went because he was less shy.

One student in my first session of the day attended every PAL session during the semester. At first, he didn't talk much during class or offer opinions. As the semester went on, however, he made some good friends during class and worked with them when we did group work. By offering up his ideas to his friends first, he became more comfortable making guesses and answering questions in front of the entire class. By the end of the semester, he volunteered to present answers in front the class at every PAL session.

Critical Thinking Skills

Critical thinking was another area where six PAL facilitators observed growth in students. These facilitators noted how students were better able to understand and explain the reasoning behind concepts in comparison to the behaviors earlier in the academic term.

If I have to pick one I would choose Carly. At the beginning of the semester she was already a very good student but over the course of the semester I noticed that she was more able to explain the reasoning behind her answers. In the beginning of the semester she was good at saying "I know the answer is a" but wasn't focused on explaining how

she got to that answer. By the end of the semester she could work through a problem in a systematic manner and explain the steps she used to other students in the class effectively. I noticed very similar growth in all the students. One other student Lauren stands out because in the beginning of the semester she would ask me what the answer was without thinking about the question first and didn't care how we got to the answer only that it was right. During the semester she became more focused on the why and how rather than simply the answer which was pleasing.

For these students, it was observed growth occurred not only in academic skills, but also in their perceived increase of confidence. In the above quote the student began focusing on understanding “why” rather than immediately rushing to seek an answer to “what” requested by the question. This additional step placed the student in the critical thinking mode which was not demonstrated at the beginning of the semester during the PAL sessions.

Discussion

It was common for the PAL facilitators to notice specific changes in attitudes and behaviors in multiple areas by the participants in their PAL sessions over the academic term of three months. Facilitators observed their behavior over three months. Chickering's theory (1969) helps to explain how it was possible for so much change in different areas to occur simultaneously in the same academic team for the participants. The vectors of change were not sequential nor dependent upon one another. Chickering and Reisser (1993) stated that the smaller the learning environment, the more opportunity for personal involvement which is necessary for predicted growth to occur. The PAL sessions provided a highly interactive learning environment with group sizes of a few or several dozen students at different times. The PAL facilitators carefully designed activities to foster engagement by all participants.

Analysis of the data for the PAL participants illustrated development in five of the seven vectors of Chickering's theory of development. *Developing competence* is the first of Chickering's seven vectors. One of the themes emerged from the PAL participants was greater

engagement with the academic content material during PAL sessions. PAL facilitators noted improved academic performance of students when they moved from passive to active involvement. In addition to increasing competence with the course material, students also increased interpersonal competence with one another. Some students reported greater engagement in the PAL sessions carried over to increased participation in classes, even in those where the class instructor employed a passive mode of learning. The observed development of higher critical thinking skills could also be an expression as well.

Managing emotions is the second of Chickering's seven vectors. The study group participants often expressed anxiety about their academic competence early in the academic term. This was somewhat surprising since these same students prevailed through a selective admissions process to UMN due of their previous academic success in high school and high scores on college admission examinations. Yet, many of these students displayed lack of confidence, fear, and high levels of frustration dealing with the academic course content during early in the academic term.

The link between low confidence, or sometimes low comfort as they interchangeably described themselves, fear, high frustration, and lower academic performance was demonstrated by their comments and behavior in early PAL sessions and self-reports of their low scores on the first class exam. Some students reported low confidence in their academic competence led to less effort with preparing for class sessions and exams which spiraled downward with more lower exam scores. This self-doubt may help explain why the most common time for students to withdraw from college across the U.S. is during the first six weeks of their first year in college that corresponds to when they receive feedback from their first major exam in the course (Tinto, 2012). For students with low confidence and experiencing high frustration with the course

material, a low score on the first exam could validate their feelings of not belonging in college and withdrawing from the institution even their scores in other classes were passing or higher.

By the end of the academic term, the majority of study group students moved from an earlier perceived emotional state of *fear and frustration* to higher *confidence and comfort* during the PAL sessions. This change occurred as they self-reported higher major course exams grades later in the academic term. It appears their emotional state of *comfort and confidence* was a consequence of managing the emotion of fear by replacing it with the new emotion of *frustration tolerance*, which allowed them to exhibit higher academic performance.

Moving through autonomy toward interdependence is the third of Chickering's seven vectors. The development of interpersonal skills was a strong theme of the PAL participants. Participants also perceived value in group work, not only for themselves, but also for benefit of other study group participants. It appeared their newfound interest in interdependence was partially altruistic in helping their fellow participants. Many students noted interactions within the PAL sessions helped them better understand concepts since they were sharing it with another.

Developing mature interpersonal relationships is the fourth of Chickering's seven vectors. PAL facilitators noted many of the students moved beyond simply working in temporary teams with others students on academic tasks related to the class. Facilitators noted some previously unacquainted students began developing friendships with one another that extended beyond the confines of the PAL sessions based on their comments before and at the conclusion of PAL sessions.

Establishing identity is the fifth of Chickering's seven vectors. The major evidence for development in this area was the majority of students were perceived as becoming more confident or comfortable in their new identity as a college student. For most students, this

change in perceived identity occurred over the academic term. Based on their comments to one another and to the PAL facilitator, students that perceived themselves as competent college students were often able to meet academic challenges in the courses. As described earlier, lacking this emotional state was often concurrent with lower academic performance in the course and less belief in their identity as a capable college student achieving their academic goal of completing a rigorous academic major.

Developing purpose is the sixth of the seven vectors and *Developing integrity* is the seventh of the seven vectors. In this study, there was not sufficient data to affirm or deny development in these two vectors.

Implications

These research findings lead to several implications for postsecondary peer-led study group programs at other colleges. Often these programs narrowly focus on supporting higher grades in rigorous courses and continued persistence of students towards graduation. There are opportunities to expand the study group program to achieve additional student outcomes.

The first step is for the small group program coordinator to understand the official student development and student learning outcomes for a particular institution. These stated outcomes provide a benchmark for the coordinator to evaluate the program and its' training and supervision protocols. To document achievement of these additional student learning and student development outcomes, the coordinator could choose methods to assess and evaluate them. Examples include focus groups of participating students, short pre- and post-assessments of selected outcomes, and data from standardized assessments such as the *National Survey of Student Engagement* (Trustees of Indiana University, 2014).

Once a more robust evaluation system is operating, the coordinator could target

additional student outcomes for cultivation. This could be integrated during training and supervision of the study group leaders. Adding more assessments of student learning and development outcomes to the study group program might require additional study of student development theories as well as development of training materials to demonstrate how to model and practice these during study group sessions. We have begun to address this issue during our campus training program (Arendale & Lilly, 2012).

Expanding the training workshop for the study group leaders might be required. Two full days before the academic term likely are required to fully discuss and practice these outcomes with subsequent discussions periodically throughout the academic term. Consider inviting other student development units to take part in the training to bring their expertise. Examples might include advising, counseling, leadership, orientation, or other units. Follow-up training could occur during the academic term.

If the study group program evaluation system documents student learning and development outcomes, include those in the annual evaluation report forwarded to campus administrators. Expanding the vision for the study group program from narrowly focused on higher grades in a particular class to wider holistic development of the student may afford firmer or even expanded funding of the program. Study group programs can be reinvented as cocurricular venue for student development as well as academic support for particular rigorous courses.

Limitations

This research study has several limitations. The first is this study focused on PAL facilitator perceptions of the experience of PAL for themselves, other PAL facilitators, and the participating students. It is possible they made errors in interpretation of the PAL experience.

The responses by PAL facilitators were subject to perceptual recall which reflected their own interpretations, judgments, and potential bias. By its nature, this research is subject to the limitations of self-reported data. Second, the majority of the college courses served by the PAL program were in the area of science and mathematics. It is possible a wider range of academic subjects served could have fostered different results. Third, all PAL facilitators were undergraduates as were the participants and the selected courses for PAL at the lower-division of the undergraduate curriculum. It is possible a different experience could have resulted from graduate students serving as PAL facilitators or classes served at the upper-division undergraduate or graduate level. As discussed in the final section on suggested future research, these limitations present opportunities for others to conduct similar research at different institutions with different student populations.

Further Research

Extension of evaluation of the study group program beyond grade and persistence rate improvements for student participants could reveal additional outcomes achieved. With increased emphasis on acquiring job-readiness skills while in college, more institutions are working to embed skill development through curricular and cocurricular experiences. The first research question would be to evaluate what is occurring regarding academic and personal outcomes of the study group experience. This could be completed through focus groups and short pre and post assessments of participating students. A second question could assess after the study group program targets particular attitudes or behaviors for development. This would reveal whether bringing intentionality to those skills during the study group sessions had a measurable impact. A final research question could measure student learning and student development outcomes of the study group leaders themselves. These research areas could

contribute to the educational practice and make it more robust for its utility at colleges during times of tight financial constraints.

Conclusion

PAL study group sessions are powerful incubators for academic and personal skill development of the participating students in addition to their traditional role as supporting higher levels of academic achievement and persistence towards graduation. This qualitative study identified four themes of growth for the participants through this co-curricular experience: higher engagement, increased confidence, improved interpersonal skills, and deeper critical thinking skills. With careful planning, the peer learning program can achieve more student learning and student development outcomes. Documenting these results could improve the student development experience and increase support from upper-level campus administrators for continued or increased funding for the study group program.

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