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ABSTRACT

Entering college students participated in a 4-week summer transition program that offered intensive course-based academic training and opportunities for faculty-student interaction. Enrichment activities were used in addition to instruction to consolidate student learning. Data were collected for 176 program participants from the class of 2001 and 216 participants from the class of 2002. In-depth interviews with 18 participants provided additional data. The participants obtained a higher level of academic achievement in both fall and spring semesters ($p<0.05$), had a lower attrition rate during the freshman year ($p<0.05$), and were better prepared for the college experience than the nonparticipants ($p<0.05$). Early intervention and intensive student involvement within the context of academic learning were the key attributes of this program. (Contains 2 tables and 25 references.) (Author/SLD)

Increasing Retention and Achievement: A Summer Transition Program at Work

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Abstract

Entering students participated in a 4-week summer transition program which offered intensive course-based academic training and opportunities for faculty-student interaction. Enrichment activities were used in addition to instruction to consolidate student learning. The participants obtained a higher level of academic achievement in both Fall and Spring semesters ($p < .05$), had a lower attrition rate during the freshman year ($p < .05$), and were better prepared for the college experience than non-participants ($p < .05$). Early intervention and intensive student involvement within the context of academic learning were the key attributes of this program.

Student attrition is a broadly discussed issue in higher education. In addition to identifying personal and environmental factors that may cause attrition (Astin, 1984; Bean & Covert, 1973; Cabrera, Nora, & Castandeda, 1993; Fidler & Moore, 1996; Pascarella & Terenzini, 1983; Tinto, 1985; Vazquez-Abad, Winer, & Derome, 1996; Zhang & RiCharde, 1998b), many institutions have focused on implementing intervention programs to improve student retention (Dunphy, Miller, Woodruff, & Nelson, 1987; Ferguson, 1990; Gold, 1995; Miller, 1985; Miller, Neuner, & Glynn, 1988; Seidman, 1996). The present study seeks to investigate the impact of a summer transition program on freshman retention and achievement.

Literature Review

Student attrition is a major problem in higher education, particularly during the freshman year with its attrition rates ranging from 34% to 60% (Ferguson, 1990). It is clear that the transition to college represents the first major challenge for many adolescents (Brooks & DuBois, 1995). Lack of adequate preparation for college work, lack of awareness of institutional expectations, and lack of personal commitment all contribute to the difficulty experienced by many freshmen during this period (Kramer, Moss, Taylor, and Hendrix, 1985) and all represent major causes of student attrition during the freshman year (Zhang & RiCharde, 1998b).

In order to increase student retention, a variety of intervention strategies have been implemented on college campuses. Examples of intervention strategies include some type of freshman orientation, study-skills workshops, academic advising, counseling, mentoring program,

freshman seminar courses, and programs to involve parents in the transition to college (Dunphy, Miller, Woodruff, & Nelson, 1987; Ferguson, 1990; Gold, 1995; Miller, 1985; Miller, Neuner, & Glynn, 1988). What these intervention strategies have in common is that they are all designed to achieve the following objectives: (1) increase student-faculty interaction and facilitate student involvement, factors crucial to student learning, development, and persistence (Astin, 1984, Tinto, 1975), (2) respond to the needs of college students in general and freshmen in particular, and (3) facilitate the transition of freshmen into the college environment. These intervention initiatives represent continuous efforts to increase student retention in higher education.

While most intervention initiatives were reported to have been embraced by both students and faculty, the evaluation of these initiatives appeared to be inadequate for two reasons. First, retention rate was often used as the sole criteria for judging the effectiveness of an intervention program. Rarely reported were the effects of the intervention on student achievement and college preparedness. Second, little is known about freshman's perception of the impact of intervention programs on their college experience. Hearing program participants' account of how an intervention has affected their transition to college may add another perspective to our understanding of how intervention programs can better serve the needs of college freshmen. These two points provide the rationale for the present study.

The present study attempts to investigate the impact of a summer transition program whose mission reflects the spirit of the theoretical premise that student involvement through academic and social integration results in better retention and achievement (Astin, 1984, Tinto, 1975) and that early intensive intervention is crucial to student retention (Seidman, 1996). Different from the evaluative approach commonly found in the retention literature, the current study will investigate the effectiveness of the program in relation to retention, academic achievement, and college preparedness of freshmen. Qualitative data will also be used to evaluate the impact of the summer transition program from the perspective of its participants.

Method

Sample

Two data sets from a four-year public institution were used in the study: one from the class of 2001 (n = 442) and the other from the class of 2002 (n = 440). About 93% of the

participants were male. The distribution of ethnic background of the students was 81.5% White, 8.5% Black, 5.4% Asian, and 3.3% Hispanic. Thirty-two percent of the students majored in engineering, 47.4% in the liberal arts, and 17% in science. Fifty-one percent of the students were in-state residents whereas the remainder came from other states or foreign countries. The average age of the sample was 18. The number of students participating in the summer transition program was 176 and 216 in the two data sets, respectively.

A Summer Transition Program

In order to facilitate the transition of freshmen into the college environment, the institution has implemented a Summer Transition Program (STP) since 1987. Those who desired to get a head start in their college experience participated in a four-week program in which the participants could take a 3-credit hour course in one of the four subject areas (English, math, history, or chemistry). Course material was delivered by a faculty member during a two-and-a-half-hour session in the morning, followed by a two-hour tutorial in the afternoon. The tutorial included enrichment activities designed to reinforce the participants' understanding of the course materials. Depending on the subject matter and the individual professor, enrichment activities might take a variety of forms such as writing essays, solving math problems, going on a field trip, and working in a computer lab. Individualized assistance from the faculty was available during these enrichment activities. In addition to intensive academic integration with faculty and peers in the classroom, the students also participated in a physical training program early in the morning every other day during which when they either ran or did sit-ups and pull-ups under the supervision of the Department of Physical Education.

During the program the participants lived in the dormitory where they could interact among themselves but were refrained from socializing with upperclass men except those who served as student counselors. The rational behind this social arrangement was to equalize the effects of the upcoming "rat line" on all entering students during the freshman year.

Measures

In order to obtain the participants' perception of the impact of the STP on their transition to college, an in-depth interview was conducted with 18 participants (13 males and 5 females) randomly selected from the class of 2002. The interview data were collected two months after

the Fall semester started so that the interviewees could evaluate, based on their personal experience, how the STP had helped them with the transition into the freshman year. During a 40-minute interview session, each participant was mainly asked to respond to four questions: (1) What were the most valuable features of the STP? (2) What effects did the STP have in helping you with your transition to college? (3) Who were the significant people who affected your transition to college? and (4) Did the STP help ease the stress of your freshman experiences?

Fall and Spring cumulative GPAs (GPA), Physical Fitness Test (PFT) score from the Fall semester, and retention data of the freshman year were obtained from the institutional data bases. These objective measures were used to evaluate the impact of the STP on student achievement and retention. At the time of matriculation, data were also collected from the students on the Entering-Student Goal Survey (ESGS) (RiCharde, 1992), the College Facilitative Skills Inventory (CFSI) (Zhang & RiCharde, 1997), and the Learning-Thinking Styles Inventory (LTSI) (RiCharde, 1992).

The 52-item ESGS is an instrument designed to measure students' reasons for attending college and the goals they expect to attain as a result of the college experience. Four scales were generated for the ESGS based on factor analysis: Aspiration for General Growth, Aspiration for Military Accomplishment, Aspiration for Intellectual Growth, and External Concern such as family support and college reputation. The analysis of the data revealed alpha reliabilities of .86, .82, .76, and .75 for the four scales, respectively.

The CFSI is a 51-item instrument intended to measure a student's psychological and cognitive readiness for college education. Factor analysis of the data indicated that the instrument measures six facets of college readiness: Determination and Perseverance, Study Skills and Attitude, Self-Efficacy, Identity Achievement, Delayed Gratification, and Locus of Control. The analysis of the data generated alpha reliabilities of .85, .86, .72, .60, .37, and .51 for the six scales, respectively.

Rooted in the information-processing and trait theories, the 49-item LTSI measures four facets of learning and thinking styles: perceptual modality preference, distractibility, metacognition, and analytic versus global tendency. The LTSI subsumes ten scales that include Auditory, Kinesthetic, Reading, Visual, Distractibility, Logical Reasoning, Probability Estimate,

Problem-Solving Approach, Analytic Tendency, and Global Tendency with their corresponding test-retest reliabilities being .62, .63, .60, .46, .65, .41, .44, .33, .42, and .45 (Zhang & RiCharde, 1998a).

Data Analysis

Effects on Transition: Participants' Perception. The transcripts of the interviews were analyzed by two raters. Inductive approach was used to categorize the students' responses to each question and the categories were tallied to determine their relative weights. Where categorization differences occur between the two raters, efforts were made to go back to the transcripts and recategorization was performed when necessary. This procedure often resulted in collapsing or recombining categories for the responses to one question.

Effects on Achievement and Retention: Objective Measures. The sample was divided into two groups: those who had participated in the summer transition program and those who had not. A t-test was performed on the data comparing the two groups on Fall GPA and Spring GPA. A chi-square test of homogeneity was performed on the retention data in order to determine if attrition rates for the two groups were significantly different. The analyses were conducted separately on the data of the class of 2001 and data of the class of 2002.

Psychological Preparation for College. A t-test was also performed on the data from the ESGS and the CFSI in an attempt to examine the possible differences between the STP participants and non-participants in terms of their psychological preparation for college.

Results

Effects on Transition: Participants' Perspective

The analysis of the interview data revealed that participating in the STP proved to be beneficial to incoming students academically, physically, and socially. The participants' perception of the program's impact is best reflected in their accounts of personal experiences.

Academic Benefits. Participating in the STP enabled incoming students to formulate a global picture of the college life based on their first-hand experience. Central to this experience was a taste of teachers' expectations, instructional styles, and the difficulty level of college-level course work. This was true to all those interviewed regardless of their academic standing in high school. One student articulated, "I learned about teaching style, how difficult the class is, and

what is expected of us." All participants concluded that "Professors are more demanding in a college environment. They expect more of you." Generated out of this experience was the conclusion that they "have to work harder for grades" and "prepare for the tests."

The realization that college-level course work was more demanding than that of high school led to different reactions from the participants with difference academic standings. For students with excellent high school GPAs, the concern was on learning the right study strategies to perform well in college. As Matthew articulated, "I talked to him [teacher] about how to improve grades, study tricks, why I missed a question, etc. It gave me a general idea about what he expects, how much time I need to put in, how I can approach the material." For those with average high school GPAs, getting into the habit of doing homework and staying focused on tasks was a challenge. Just as Charles reported, "... I thought STP was hard. The two nights of homework I had to do in STP. I wasn't used to doing that in high school." Taking a summer course helped these incoming freshmen to get used to "doing two and a half hours of homework a night" and studying "with a lot more distraction ....from roommates." The participants were appreciative of the rigorous academic demands because the "long stressful hours of homework... were really going to prepare you for what you were going to do...a lot of stressful classes and stressful hours [later on]."

Participating in the STP not only helped the incoming freshmen to "shake up" and develop a daily routine suitable for college life, but it also helped them to develop basic academic skills required at the college level. For those who took an English course during the STP, learning "to write a paper" was the most valuable experience because they have been inadequately trained in this area in high school. As one student summarized, "He [the teacher] helped out a lot on my writing skills. My writing was way under for college when I got here for the STP. Now I am about on line." The improvement in reading and writing resulted from an intensive training sequence of initial discussion of writing samples assigned by the instructor on the previous day, followed by writing practice by each student on a variety of topics, and subsequent individual conferences with the instructor in the afternoon during which students got feedback on how to improve their writing skills. The participants particularly appreciated timely, individualized feedback from the instructor because "[the teacher] would go back and talk to us about it

[assignment]. You kind of look back and see why you chose here and show you how to improve, get ready for the fall." For those who took a summer course in math, chemistry, and history, learning to use computer software and lab equipments, demonstrating what had been learned on tests and quizzes, and studying for hours in the evening were mentioned as valuable experiences in addition to intensive academic exposure and teacher-student interactions in the classroom.

Physical Benefits. Participating in the STP also brought about improved physical fitness for most participants. Many students came to the program with a vague idea of the physical requirements the institute would impose on them. The diagnostic PFT administered to the participants on the first day of the STP quickly replaced this vague idea with a concrete indication of their physical readiness for the freshman year. As one student reported, "That kind of let me know what I need to work on." Such an understanding translated into the behavior of training harder in order to meet the physical standards set by the institute. One student recalled, "You ran up stairs in barracks, do push-ups." Another student added, "I don't think that I would be able to do as much running as I've done without that part." The participants were unanimous in expressing the view that 'the physical training got us in excellent shape." Some attributed this achievement to the influence of their drill instructor, "He [drill instructor] was especially rough on us which I came to really appreciate."

The effects of the rigorous physical training were clearly seen in the statistically significant improvement on the PFT post-test. Many students continued to work out after they left the program so that they could be ready physically for the freshman year. As one participant reported, "During the time I was at home I ran 3 or 4 times which I had never done before." Because of these conscience efforts, many students "came back in better shape to go out with cadre."

Social Integration. The STP provided its participants with an opportunity to integrate with peers and faculty. Class discussion and peer evaluation of each other's homework undoubtedly promoted friendship among the program participants. The socialization process also took place in informal settings such as sports field, dining hall, and dorm buildings. The intra mural program in the afternoon was viewed by some participants as an excellent chance to develop team-working skills which is crucial to survival in a tough environment. One participant

reported, "The benefit of coming together. It might sound stupid, but when you are playing sports, you really have to count on one another. Like in the "rat line," and with the rat challenge, you really have to help each other. And then I think back to STP when we were playing sports, we really didn't know each other but had to count on one another. I think it is extremely important. Whether you like someone or not, whether you can do something about it or not, you have to get along. There is no choice. That's the way to survive here." The friendship established during the STP provided a source of support for the youngsters in the freshman year, especially at the time of difficulty as one student commented, "After the first day we met cadre, I was so close to leaving. You go get rid of it. This is what friends are here for. Talk to them."

College is a time of exploration and self-discovery (Erikson, 1968). During the STP, this process of exploration and discovery was facilitated by what seemed to be informal socialization among the program participants in the evening. For hours roommates or classmates got together to share their visions of college life. From these interactions the incoming freshmen gained a better understanding of and a positive attitude towards their decision to come to college. As one female participant articulated, "We talked about how college ought to be. We got together a lot of time to discuss how college is actually going to be. We were just anxious. We spent a lot of time discussing VMI and college. It could shape the rest of our life....From my friends I got the whole positive attitude. It may not the most fun you have, but it is definitely going to be worth it." A similar view was expressed by a male participant when he said, "A few of my friends kind of helped. We talked about how to get ready for the Fall. The kind of experience we would expect, and what it takes about the "rat line." Kind of get you pumped up for the Fall, get you ready and come in your best." Peer support seemed particularly important to those incoming freshmen who were troubled by uncertainty and apprehension about college life. When asked about the most significant event that helped ease her transition to college, Amy replied, "meeting friends and other classmates, listening to them, seeing how they felt about coming here, realizing that their fears and mine are the same." The fact that she could identify with other freshman was important because "...on the first day, I knew people. I wasn't like in a totally stranger zone. That helped a lot."

While some participants focused on obtaining a justification and support for their decision

to come to college, others were busy trying to get a picture of what life would be like in this college environment. The information could be obtained through interactions with faculty, student-affairs professionals, and counselors, but what seemed to be valued most was the information shared by upperclassmen because their stories provided a picture of the college experience from a student's perspective. Almost half of the people interviewed expressed their appreciation for the opportunities they had had talking with upperclassmen. As one participant explained, "The upperclassmen were there, they tell you what to expect...Some just came up once in a while to talk to the rats on their own time which was very helpful. You had like an hour's conversation just talking about the "rat line," what to expect. That was definitely helpful, what to expect out of the academics. They tell you how to study, what to do, what not to do, very helpful." Through interactions with student counselors and upperclassmen, the participants prepared mentally for the freshman experience which, in turn, had a direct impact on their persistence during the freshman year. Ched explicitly made this point when he said, "Talking to them gave me a chance to make a final choice, to decide whether VMI is the place for me or not. Some people just came here without knowing what to expect. That is why they drop out."

To many students, the instructor not only facilitated the learning process, but also functioned as a source of support. Personal experiences shared by professors were particularly appreciated. One student commented, "We were out of class and talked to her generally, how to balance your time, just get advice on stuff she had difficulty when she was in college." Another participant added, "My history teacher told the class what we should do in order to succeed in class, be able to manage time between the "rat line" and the academics." The rapport established during the summer program continued to be present later on in the freshman year as reported by one student, "My teacher in the STP. Her attitude towards us helped so much. Making herself available during this year so we don't have to worry so much as far as support went."

Effects on Achievement and Retention: Objective Measures

In order to eliminate extraneous factors that may account for the differences between the STP participants and non-participants, a t-test was performed comparing the two groups on high school GPA, SAT combined score, and the ten scales measured by the LTSI. Since no significant differences were detected between the two groups on any of these measures, it was concluded

that the two groups were statistically similar in terms of precollege achievement level, perceptual modality preference, distractibility, metacognition, and general approaches to processing information.

As reported in Table 1, the analysis of the data of the class of 2001 indicated that whose who had participated in the STP demonstrated better academic achievement than those who had not in terms of cumulative GPA for both Fall and Spring semesters of the freshman year ($p < .05$). The STP participants also scored higher than the non-participants on the total fitness index of the PFT given at the end of the Fall semester ($p < .01$). The participants in the class of 2002 also obtained better GPA than non-participants in both the Fall and Spring semesters ($p < .05$). These results provide evidence for the positive effects of the STP on freshman academic achievement and, to some extent, physical fitness.

[Insert Table 1 About Here]

A chi-square test of homogeneity of the retention data of the class of 2001 indicated that the two groups differed in terms of retention status ($p < .05$). Fewer STP participants than expected (28 versus 39) and more non-participants than expected (69 versus 58) withdrew from the institution by the end of the freshman year. The attrition rate for the STP participants was 15.6% whereas that for the non-participants was 25.6%. Similar results were obtained from the analysis of the retention data of the class of 2002. Fewer STP participants than expected (30 versus 38) and more non-participants than expected (49 versus 41) withdrew by the end of the freshman year. The attribution rate for the STP participants was 14.2% and that for non-participants was 21.4%. These statistics lent support to the argument that the STP had a positive effect on student retention during the freshman year. The results of the chi-square analyses are reported in Table 2.

[Insert Table 2 About Here]

Psychological Preparation for College

The analyses of the data from the ESGS revealed that the STP participants scored significantly higher than non-participants on Aspiration for General Growth ($p < .01$) and Aspiration for Military Accomplishment ($p < .001$), suggesting that those who had voluntarily participated in the program possessed a stronger aspiration for general growth as well as military

accomplishment through their college experience. The analysis of the data from the CFSI showed that the STP participants scored significantly higher than non-participants on Study Skills and Attitude ($p < .05$) and Delayed Gratification ($p < .01$), indicating that the STP participants more often employed strategies to facilitate learning (e.g., When I am studying a topic, I try to make everything fit together logically.), maintained a more positive attitude towards study (e.g., I would endure physical discomfort to complete an academic assignment, because I just don't like to give up.), and were more willing to delay gratification (e.g, putting in more work in order to get an A in a contract-based grading system). These findings suggest that, in comparison to the non-participants, the STP participants were better prepared psychologically for their college experience and that they had positive attitude and more skills to pursue their educational goals. The findings from the ESGS and CFSI data should be interpreted with caution. Since the STP participants were self-selective, it could be that the students with higher aspirations and better study attitude and skills chose to participate in the early intervention program. Given the design of the present study, no inference of causality is warranted.

Conclusions

A summer transition program was implemented as an institutional initiative to facilitate the transition of freshman from high school to college. Interview technique was used to obtain the participants' perception of how program had helped them with the transition to college. Objective measures were analyzed to determine the impact of the four-week program on freshman academic achievement and retention. The STP participants and non-participants were also compared in terms of psychological variables in an attempt to understand the transition experience of the college freshmen within a broader context.

The STP prepared the entering students academically, physically, and socially for the freshman year. To most students, participating in the program not just led to a better understanding of the demands and expectations of the institution. More importantly, it brought about behavioral changes among the participants that were compatible with these demands and expectations. Working harder to develop academic skills required by college-level course work, developing study habits to ensure the completion of course assignments, and working extra hours each day to keep in shape were commonly-reported behavioral changes among the program

participants. These changes suggest that students were actively engaged in a reciprocal learning experience (Cote & Levine, 1997) during the program. These responsive changes in students are observable indicators of the positive impact of the STP.

The STP provided an excellent opportunity for social integration, a mechanism crucial for student persistence (Tinto, 1975). For college freshmen, interactions with faculty and peers not only helped them to develop metacognition of the expectations of the adult world (Kegan, 1994), but also gave them a chance to wrestle with identity issues, which is an important phase of development for adolescence (Erikson, 1968). The bond with fellow freshmen developed through these interactions functioned as a major source of support during the freshman year and counteracted student attrition.

The effectiveness of the STP was reflected in both freshman retention and achievement. Those who had participated in the program not only had a better retention rate than non-participants, but also demonstrated a higher level of academic achievement in both semesters of the freshman year. The STP participants also reported a higher degree of aspiration for growth through college education, had a more positive attitude towards study, used study strategies more often, and were more willing to delay gratification in order to obtain long-term gains. Given the design of the study, it is only safe to say that the STP participants and non-participants differed on these measures.

A few reasons may account for the success of the program. First, the program allowed for academic exposure. Different from most intervention initiatives, this program mainly focused on academic preparation. Students not only learned about a subject in a intensive fashion as one would find in a regular summer course, but also had an opportunity to digest and internalize course materials through enrichment activities in the afternoon. Frequent interactions with faculty also allowed students to adjust to instructional styles and respond to teachers' expectations. This early exposure to college teaching and subsequent adjustive response on the part of the students eased the difficulty and stress that normally occur during the first semester. These experiences put the program participants in an advantageous position right from the start of the freshman year. Second, the program allowed for social integration. Frequent interactions with the faculty and peers in the STP produced a subtle yet important impact on the participants' academic and social

integration into the college community. Living in dormitory was particularly beneficial to students. The program participants reinforced each other's preparation for the freshman year by sharing their vision of college life and their goals and by helping other with class assignments. This peer support had a direct impact on student persistence during the first semester.

In his book Achieving Educational Excellence (1985), Astin suggested that student involvement is the key to effective education. "Students learn by becoming involved" (p. 133). According to Astin, involvement requires the investment of psychological and physical energy in college-related events and people; involvement is a continuous concept; involvement may be quantitative or qualitative; and the amount of learning or development is proportional to the quality and quantity of involvement. Evaluating the STP within the framework of Astin's model, it is clear that the success of the STP lies in its participants' involvement in the learning environment. The participants' involvement was best reflected in their active interactions with faculty and peers both inside and outside the classroom, their conscientious efforts to change behaviors in the learning process, and their psychological preparation for the college education. It is through this early, active involvement in the college environment that the STP participants eased into the freshman year and ensured better academic achievement and retention than the non-participants. The success of the STP lent support to the notion that student involvement is proportional to learning, development, and persistence (Astin, 1984; Tinto, 1975) and that early interventions are necessary to improve student retention (Seidman, 1996).

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Table 1 t-test: Effects of the STP on Freshman Achievement

	STP Participants	STP Non-Participants	t
Class of 2001			
Fall GPA	2.20	1.99	2.40*
Spring GPA	2.45	2.27	2.23*
PFT	156	135	3.18**
Class of 2002			
Fall GPA	2.27	2.01	2.25*
Spring GPA	2.41	2.24	2.08*
PFT	210	203	1.16

Note. * $p < .05$; ** $p < .01$.

Unless specified otherwise, the numbers reported represent means.

Table 2 Chi-Square Test of Homogeneity: Effects of the STP on Freshman Retention

	STP Participants	STP Non-Participants	χ^2
Class of 2001			
Stayers	151 (140)	201 (212)	
Leavers	28 (39)	69 (58)	
			6.45*
Class of 2002			
Stayers	181 (173)	180 (188)	
Leavers	30 (38)	49 (41)	
			4.15*

Note. * $p < .05$.

Unless specified otherwise, the numbers reported represent observed frequencies. The numbers in parenthesis indicate expected frequencies.

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