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ABSTRACT

This paper describes a research project that examined the impact a mentoring program had on college faculty and students. The program was designed to provide a collaborative research experience for faculty, graduate students, and undergraduate students. The goals of the program were to assist graduate students in establishing mentoring relationships with faculty, develop their research skills, and help them to select research topics for their doctoral dissertations. The program was intended to give undergraduates exposure to research, provide them with an inside view of life as a graduate student, and develop their aspirations for research careers. A case study method was used for examining the processes involved in mentoring relationships. Twenty-two mentorship teams were studied involving a total of 22 faculty, 25 graduate students, and 38 undergraduates. By examining the major themes that emerged from the data (commitment and teamwork, faculty participation, hands-on research, structure, and consistency), it was determined that the research mentorships were providing an effective method for developing students, including minority students, into research scholars. Close interaction with faculty was viewed as an effective way to teach students the skills necessary for research. Contains 19 references. (GLR)

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Mentoring in Higher Education

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This study examined a mentorship program designed to provide a collaborative research experience for faculty, graduate students, and undergraduate students. The goals of the program were to assist graduate students in establishing mentoring relationships with faculty, develop their research skills, and help them to select a research topic for their doctoral dissertations. For the undergraduates, the program was intended to give them exposure to research, provide them with an inside view of life as a graduate student, and to develop their aspirations for research careers. The purpose of this study was to examine the impact the mentoring program had on faculty and students.

Literature Review

A discussion of mentoring must begin with a workable definition. It is often unclear how the term mentoring is used and how it is differentiated from functions performed by persons who are labeled advisors or sponsors. Blackwell (1983) stated succinctly that mentors enhance the total development of students through a relationship that encourages responsibility, self-direction, and effective decision making. More recently, Healy and Welchert (1990) proposed a definition that incorporated developmental and contextual aspects. In their notion of mentoring, the development of the relationship progresses through a qualitatively distinct level of organization. In addition, the context or setting in which the relationship was formed has an influence on its development.

Studies on mentoring appear sporadically in the psychological, educational, and business literature. Much of the early work on mentoring, before the mid 1970's, was not empirically based, and often methodologically weak (Merriam, 1983). A common research strategy was to send out surveys to successful faculty or business managers to seek their opinions on the value of mentoring. The low response rate of many of these surveys, and the lack of observational data left many of the findings in doubt.

From the late 1970's to the present, studies on mentoring have provided some useful information on the role mentoring plays in the lives of graduate students and newcomers to the business world. Levinson's (1977) work approached mentoring as an important stage in adult development. In Levinson's view, mentor support and guidance facilitated the protege's realization of the "dream". He defined the dream as the vision each young man had about the kind of life he wanted as an adult. The mentor, through a sharing of his wisdom, introduction to colleagues, protection from harmful situations, and guidance, helped the protege achieve his dream.

Some studies on mentoring have looked at the role of the mentor and his or her effect on the protege's career. Collins & Scott (1979) and Rowe (1983) examined the protege's movement up the career ladder, and the effect the mentor had in guiding the protege through the management hierarchy. Wilbur (1987) described mentoring relationships as helpful in socializing newcomers and in enabling them to bypass the normal channels when necessary. Wilbur also found mentoring to be a significant predictor of career success for both highly motivated and less highly motivated employees. Zey's (1985) work examined mentoring programs in the corporate world. He found that mentoring programs were useful in adjusting newcomers to the organization. Zey proposed that since minorities have more difficulties in finding a mentor, formal programs would be useful in bringing mentors and minorities together. Kram (1985) however, found that formal mentoring programs were a high risk strategy. She discovered that in some instances mentors matched in these relationships resented the extra responsibility, while unmatched employees felt deprived.

Although studies on the mentoring relationships between faculty and graduate students are limited, Aguilar-Gaxiola, et. al. (1984) studied the complexity of the mentoring relationship between graduate student and professor. In their analyses, four dominant roles of the mentor were characterized: role modeling, professional socialization, advocacy, and emotional support. Alleman and Newman (1984) studied the basis on which mentors select proteges. She found no support for the common assertion that mentors pick proteges who are like themselves, but she did find that proteges considered themselves to be more similar to their mentors than did non-proteges. Carter (1982) suggested that the most successful mentor-protege relationships between faculty and graduate students were based on participants sharing common goals, perceptions, and views of the world.

There are only a few studies that examine the issue of the mentoring of minorities and women in business and higher education. Goldstein's (1978) study provided evidence that a mismatched (male-female) mentor relationship may impinge on the productivity of the protege. Her findings suggest that proteges who were the products of cross-gender mentoring relationships were less productive in their academic careers than same-gender participants. Morrison and Von Glinow (1990) found that cross-race and cross gender relationships were harder to manage, and provided a narrower range of benefits for women and minorities. Fitt & Newton (1990) indicated that the possibility of gossip and innuendoes about sexual misconduct discouraged the formation of cross-gender mentoring relationships.

Not all studies however, emphasized the impact of mentoring on the protege. Kram (1985) found that proteges were not the sole beneficiaries of the mentoring relationship, but that mentors also gained from the experience. Kram maintained that senior executives who became mentors developed their sense of competency and self worth in their role. They fulfilled their generative needs by passing on wisdom, advice, and guidance to young managerial talent, and moved the mentor from a stage of preoccupation with their work to a drive to create and care for someone else (Erikson, cited in Healy and Welchert, 1990).

What appears to be lacking in the literature however, are studies that examine the structure of the mentoring relationship, and how the relationship functions in the development of the students' skills, values, attitudes, and aspirations for academic life. In other words, what role does mentoring play in the retention and persistence of minority students, and their socialization into academic culture? This question is particularly significant for minority students.

Theoretical Framework

The framework for studying the mentorship teams emerged from theories of cognitive development and activity theory developed by Vygotsky and other Soviet psychologists of the early 20th century (Wertsch, 1985). According to neo-Vygotskian theorists, learning occurs in social settings that provide the opportunity for the learner to acquire appropriate skills for accomplishing a task through joint problem solving with a more capable person. In the case of the research mentorships examined in this study, the settings and activities relative to the research project provided the context for the teaching and learning.

Within this framework, this study described how knowledge was acquired in the research setting by graduate and undergraduate students through social interactions in a research activity setting. The activity settings included more than the physical place where the research was being conducted. They comprised the events, the people, and the places where team interacted. Tharp and Gallimore (1988) defined the activity settings as the traditional who, what, when, where, and why (the 5 W's) of the events. The 5 W's are useful as an outline for understanding the interrelationships of the various dimensions of the activity setting. The who describes the people present in an activity. The what is a description of things that are done and how they are done. The when is the timing component of the activity with the activities occurring as often and and for as long as necessary.

The where is where the activity takes place. The why is the motivation, or the property of being able to inspire all members of the team to move through a process of mutual understanding of the meaning of the task.

To analyze how the process of mutual understanding is developed through activity it must be studied through the context of the culture that shapes the activity. Culture, whether it is a society or a research laboratory setting, has a set of relevant activities that characterize its day-to-day life. These ordinary practices are considered to be the "authentic activities" that comprise a culture (Brown, et al, 1988). In this study, authentic activities were described as those settings or activities used by researchers in their practice.

As in other cultures, the research setting has specific conceptual tools that must be mastered by the newcomer. The acquisition of conceptual tools goes beyond learning how to use the appropriate research equipment, but includes knowing how specific fields use particular concepts, instruments, or practices. The culture of the research setting provides the authentic activities that give the students the opportunity to practice using the tools necessary for acquiring the appropriate knowledge. In addition the close contact with faculty places the student in a suitable setting to be socialized into academic life by giving him or her the chance to acquire knowledge about the practices, values, and attitudes of the academic profession.

Methods

The questions in this research call for explanations of behaviors, and informing and testing a theoretical framework for describing learning in higher education. The case study method is an ideal method for examining the processes involved in mentoring relationships, and providing descriptions of the settings, activities, and other relevant elements that characterize the relationship and place the activities and beliefs of the participants in context (Goetz and Lecompte, 1984). The nature of this research gave the participants the opportunity to report their development as researchers in their own words and through their own perspectives.

In the case studies of the mentorship teams, the goal was to describe in detail the aspects of the mentoring relationship and ensuing activities that contributed to student development as researchers. The theoretical framework that guided the study proposed that student learning is facilitated in settings that gave students the opportunity to work on research while being guided by a mentor.

Subjects and Procedures

There were 22 mentorship teams in the study, each consisting of at least 1 faculty member, 1 graduate student, and 1 undergraduate. A total of 22 faculty, 25 graduate students, and 38 undergraduates were interviewed over a period of 2 years. Each of the subjects was interviewed for approximately one hour. An interview guide was used to make sure key topics were explored with the subjects, but the questions were otherwise open-ended, and made allowances to change directions or adapt to new situations in the course of the interviews.

Data Analysis

The data for the study included taped interviews, field notes, written student progress reports, and a questionnaire. The method for processing the data consisted of developing a coding system for organizing the data. Coding the data involved assigning descriptive terms to pieces of data, and placing the data in appropriate categories. In addition to coding the data, comments or research memos were written about sections of the data. The memos were written to provide more elaborate descriptions of the codes, and to interpret segments of the data. The memos were also important in the data reduction phase, and in identifying major themes. The strategy for data reduction, was to organize the data into larger more conceptual codes or themes, using the memos as a guide for linking and categorizing the data.

Findings

Four major themes emerged from the data. The themes provided descriptions of key elements that facilitated students learning. They were: (1) commitment and teamwork, (2) faculty participation (3) hands-on research, (4) structure and consistency.

Commitment and Teamwork

Not surprisingly, the mentorship teams that were most successful in reaching their research goals and promoting student aspirations for academic careers were those groups that instilled feelings of teamwork and commitment to the research task. The promulgation of teamwork was most notable among those groups that made efforts to draw all members of the team into all aspects of the research, including conceptualization, design, implementation, and analyses of the study. A graduate student commented about her role in developing the team concept: "(I learned) organizational skills...the need for group interaction and feedback...how to organize the group...how to pull everyone's ideas

together...to make sure everyone's voice is heard and it's being synthesized". Students who were not included in the more sophisticated aspects of the research, such as the conceptualization or analyses, often felt that their contributions were not as valued as the other members of the team. One of the undergraduates commented: "We were go-fers. I would have liked to have done some of the analyses". Without the promotion of teamwork, a hierarchy is formed based on a division of labor. Faculty and graduate students perform the more sophisticated aspects of the study, while undergraduates perform the more mundane tasks. An undergraduate said: "I want to get a Ph.D. in social work...I wanted to learn about research... All we learned to do was code...There were a lot more things they could have shown us".

Working as a team encouraged students to think as team members, and to work toward team goals. One male student commented: "I've been to the library and I checked out books on feminism. Last month I went to a symposium on Black women". Another student said: "On my own initiative I met with MALDEF. When you meet with those people you really have to think". In a sense the extra work performed by the students was primarily for the benefit of the team. There may have been some personal gain for the students, but the student's initiative was moving the team toward the achievement of the its goals.

An additional benefit from teamwork was that it helped the individuals develop a sense of social acceptance and integration into the institution. The students were placed in a setting where they could interact with others both socially and intellectually. The project also contributed to the students developing a sense of belonging and purpose. One professor commented about a graduate student: "She was lost...she wasn't in anyone's lab. I took her in...gave her a home". The team concept brought social acceptance to the student, and contributed some of the necessary guidance, direction, and intellectual stimulation she needed to be successful in a research environment.

Hands-on Research

A goal of the program was to give the students research experience and to develop their aspirations to become academics. Nearly all of the graduate students were able to make progress toward their degrees. Some of the students were able to identify their dissertation topics, while other laid groundwork for future research. A graduate student reported: "The program gave me the opportunity to go down to South America and make contacts with people...This will make the whole process easier when I have to do fieldwork...I have been

able to cut (*sic*) one year of graduate school because of the work I've done".

Moreover, several professors commented that the experience was important for developing the leadership skills of the graduate students. An anthropology professor stated: (The graduate student) is the director...I sit and listen...I'm training him how to administer, how to be a leader". A psychology professor added: "I think this program is good for her...she has to supervise students...she is gaining confidence in herself". The development of leadership skills would be useful to students who intended to pursue careers as researchers. As researchers they will need to lead research projects, and train and supervise students. A graduate student commented: "Teaching these things to her has helped me...If I'm going to teach these things to her, that means I have to know it". Being perceived as project leaders was also beneficial to the student's career. A professor commented: "They have the opportunity to be seen in the role of project leaders by other members of the department".

Faculty Participation

The amount of participation varied and changed over the course of the project. In successful mentorship projects however, the constant was the availability of the professor. A graduate student said: "He's been a great mentor, he's always been there when I've needed him". Several of the professors commented that they spent the early stages of the project instructing and providing direction. As the research progressed, their involvement changed, and the project became more of a collaborative event with the students taking on more responsibility. Although constant monitoring of the students was not necessary at the latter stages of the research, faculty participation still was. The professor's role changed from one of teacher to that of colleague as both students and professors shared more, and learned from each other. A professor said: "As we go on the hours are spent on work operations".

The contact with a professor provides more than someone to teach the students research skills. The professor is also providing a model of the academician. A professor commented: "I am socializing them to the profession...I model the role of the academician through publication...I do it informally, and I work it in when it is appropriate".

The close contact with faculty contributed to a development of a relationship between professor and students. It is important for the graduate student to develop a close working relationship with faculty, and it is important for undergraduates as well. Several undergraduates reported that

the experience in the mentoring program helped them to feel less intimidated by faculty. An undergraduate reported: "I really feel the gap has lessened. I call the professor by his first name and I feel part of the team...It gave them a human face. I realized they are more than a voice behind a podium".

Being able to establish a relationship with faculty is an important element in the mentoring program. An undergraduate said: "It's a good way to become close to a professor. Letters of recommendation are so important for graduate school". Another undergraduate said: "I'd been in labs before, but the professor was not there very much. He would tell me what to do and I'd do it. Here I get to know the professor...I think it's great to work in the same lab for a whole year with a professor...I've gotten to know him...he gave me a ride home for Christmas...I met his family".

The contact between student and faculty gives the faculty member more time to observe the student conducting research, and provides him or her with a more substantial basis to evaluate the student. This may prove to be valuable if the professor is in a position to recommend the student for graduate school or other academic positions.

Consistency and Structure

It was not necessary for mentorship teams to have highly structured meeting and activities, but a consistency and regularity to their interactions contributed to the success of their projects. A professor commented: "I don't have any lab meetings...I don't have any office hours either...I talk to them one-on-one...I sit out there in the lab... Whenever they want to talk (I'm available)...I have a table in there and that's where I do my work. Other teams were more formal and scheduled weekly conferences or lab meetings. The consistent element for the teams was the opportunity for all members to interact. At the meetings faculty could provide direction and feedback to students, and ideas could be shared and modified by all present. The essential component was creating an environment that encouraged openness and a willingness to share ideas.

The consistency and structure was also reflected in the goals and direction of the research. If the purpose of the research was clearly defined and communicated to the team, the chance for success was improved. Students were more inclined to feel part of the team if they understood the direction of the research, and what their role was in the overall scheme. The teams that did not nurture these elements were more inclined to have dissatisfaction on the part of students who were felt left out of the more sophisticated aspects of the research.

Implications

Research mentorships appear to provide an effective method for developing minority students into research scholars. The close interaction with faculty is an effective way to teach students the skills necessary for research, and to give students a preview of academic life. Matching students with faculty provides the setting for students and faculty to work collaboratively on research, and to give students the opportunity to develop close working relationships with a professor. The present study indicates that mentorship programs may constitute a stable and desirable higher education intervention for all students aspiring for careers as research scholars, and not just for minority students with those aspirations.

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