Faculty Development in Information Technology Education

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ABSTRACT

Information Technology (IT) is an emerging discipline that is well served by faculty members with recent industry experience. Unfortunately, hiring individuals with recent experience can lead to instructors who need help integrating into an academic environment. At the United States Military Academy, our faculty recruiting model results in a turnover of approximately 20% every year. Our challenge is to provide a top notch development program in order to rapidly inculcate the new faculty with an IT appropriate pedagogical focus. This paper describes the details of our faculty development program. The formal developmental process for new instructors begins with an intensive six week summer workshop and continues throughout their time at the Military Academy. During the academic year, mentor and peer classroom visitations provide a unique opportunity for personal pedagogical growth, and periodic seminars and invited speakers help maintain technical currency. At a higher level, our Center for Teaching Excellence publishes a monthly newsletter, coordinates seminars, offers a multi-year developmental program, and presents an annual award for teaching innovation. In addition to internal programs, members of the faculty are provided support and encouragement to attend conferences and remain active in the larger IT community. The paper concludes by describing our faculty evaluation processes, which are used to assess and then improve the development program.

Categories and Subject Descriptors

K.3.2 [Computers and Education]: Computer and Information Science Education – Information Technology Education.

General Terms

Management, Measurement, Standardization

Keywords

Information Technology Education, Faculty Development

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1. INTRODUCTION

A traditional interpretation of faculty development has been the use of sabbaticals, research grants, and attending professional meetings [2]. Institutions are being told to do more with fewer resources, so new efficient methods are required to continue an adequate faculty development program. Most institutions realize the value of a faculty development program because it improves the quality of teaching in the classroom and assists in the professional growth of faculty members.

The rapid advances in Information Technology require that faculty members remain current in their discipline because new technologies and problem solving solutions are constantly being introduced. Rapid advances combined with a faculty made up of difference backgrounds and experiences require an innovative approach to insure that faculty development is a continuing process. A developed faculty member can instill a sense of excellence in their students because they are well versed in the newest technology and practices.

2. FACULTY MODEL

The U.S. Military Academy enjoys a committed faculty with diverse backgrounds and experiences who are uniquely able to inspire the education and development of its cadets. The Department of Defense and the academy have a formal term, *The Blend of Excellence* [3], for this dynamic approach to address the constant changes required in a dynamic learning environment. The Academic Program is led by a combination of senior military officers and experienced civilian educators who provide strong connections to the higher education community as well as the long-term stability and focus vital in a highly connected and interdisciplinary academic program.

The West Point faculty contributes to the accomplishment of the mission of the Military Academy through the faculty domains of teaching, scholarship, service, cadet development, and faculty development (figure 1). Nearly eighteen percent of the USMA faculty are senior military officers. These seasoned military professionals provide effective leadership for the Academic Program. Stabilized military faculty members contribute to the formulation of USMA's curriculum and methods of instruction. They also maintain the academic standards required for graduation and mentor faculty development.

The largest group of the faculty, which makes up approximately 60% of the USMA faculty, is comprised of officers serving in the US Army on a two to three year tour of duty at the Military Academy. Their recent leadership experience in the Army allows these members to serve as military role models for cadets. Their very recent graduate degrees gained at the nations finest graduate schools provide an extremely valuable resource for the institution. This is especially important in the Information Technology domain because it allows the academy to remain abreast of research and recent developments in IT curriculum development throughout the country. At the end of their USMA tours, they return to their service to continue their careers in their military specialties.

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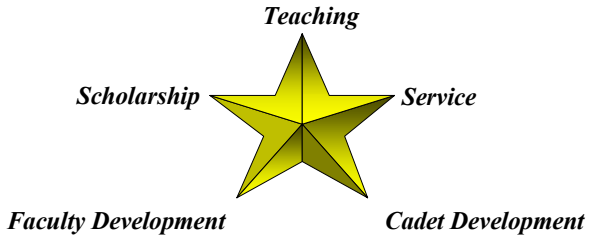

Rotating Military 60%	Civilian Faculty 22%	Senior Military 18%

Figure 1. USMA Faculty Model

Civilian faculty bring additional diverse perspectives, provide specialized knowledge of their disciplines, enrich the curriculum, and expand instructional methodology. Civilian faculty also play crucial roles in Military Academy governance, as bridges between departments, and as public ambassadors of the Military Academy in scholarly forums. Senior civilian faculty members add disciplinary depth, institutional knowledge, and experience with educational innovation. Civilian faculty members at USMA are categorized by either the statutory authority or the hiring mechanism associated with the positions. These categories include Title 10 faculty, Distinguished Visiting Professors, and Endowed Chairs.

The dynamic nature of the faculty requires a significant effort on the part of those responsible for faculty recruitment. The Deputy Head of the department acts as the faculty recruiting officer and is assisted by one officer that focuses on military candidates. Intensive management requires a focus that projects four to five years into the future to ensure the correct skill mix is available for each academic year. The Army's Human Resources Command supports the search for qualified candidates that are eligible for consideration to be granted a fully funded scholarship to attain a postgraduate degree and follow assignment at the academy. Merit for selection is based on the performance of military duties, potential for future service in the Army, as well as academic achievement. Approximately one half of the faculty are graduates of West Point while the other half have received degrees from other institutions.

Due to the diverse nature of backgrounds, a panel evaluates each candidate's file through a web interface. This paperless process puts all documents such as letters of recommendation, transcripts, and personnel records online in a web friendly format. Evaluators can write comments and assign a score such as must select, select, ok, or don't select on each candidate. The scores are then averaged and each panel member can read the other's comments. The advantages of this system are less shuffling of files and a centralized point that can update and correct files. Information Technology is being applied to improve and speed up a resource intensive process.

3. COMMAND EMPHASIS

One of the five points of the star in Figure 1 is Faculty Development. Because the Dean has made Faculty Development one of his priorities, it is also a priority for every member of the faculty. Once of the most critical resources of a faculty member is time. If faculty development is a priority, then specific time should be set aside to do faculty development. In many of the programs at USMA, a specific person is designated to monitor faculty development. This person coordinates guest speakers, provides structure to the program, and advises the leadership on the progress of the program.

First-line supervisors make faculty development part of their counseling process. At the beginning of each rating period, a subordinate outlines the plan on how professional growth will be accomplished. Normally these goals will be specific and measurable, but can be accomplished in a variety of ways. Publications, conference attendance, consulting, projects, involvement with cadets, and membership in academic organizations are all examples of how faculty development can be accomplished. Certification and continuing education are also approved approaches towards faculty development. Periodic reviews are conducted so feedback can be given on how a supervisor feels on the amount of progress is being made.

Second-line supervisors are also an integral part of the faculty development process. One of the major responsibilities of a first line supervisor is the development of his subordinates. The second-line supervisors serve as a role model and encourage a productive sense of teamwork. Often a first-line supervisor can partly measured by how well his subordinates are developed. Often a sense of satisfaction is created for both supervisors and subordinates when personal development goals are met. The diverse nature of our faculty makeup dictates the requirement for a well designed and integrated faculty development model.

4. THE DEVELOPMENT MODEL

The first phase of our formal faculty development process is an intensive workshop designed to fully integrate arriving faculty members into their new environment. Because we bring in approximately a dozen new faculty members each summer, the Faculty Development Workshop (FDW) is a process that has significant department level oversight and is allocated sufficient resources to ensure success. Six full weeks are devoted to this important activity, and several experienced faculty members devote their summers to this endeavor. The primary goal of FDW is to produce faculty members who are prepared to achieve teaching excellence in an environment that values excellence in teaching.

The beginning of FDW is devoted to introducing new faculty to the people and the resources that will make them better teachers. The people they meet include the program directors for the

Electrical Engineering and Computer Science programs, since many of the courses in the IT program overlap with the Electrical Engineering and Computer Science disciplines. The Department of Mathematical Sciences is also involved, since it is critical for our faculty members to understand what types of math skills to expect from our students based on where they are in their mandatory 4 semester math sequence. We also provide briefings from academic counselors so our instructors understand how our courses are tied in to the academic programs of their students.

In order to be an excellent teacher, one must understand the environment in which students live and work. Our students live a unique existence, and we go to great lengths to ensure our new instructors understand that existence. Because our students have a great deal of physical training and military regimentation in their lives, our instructors, both military and civilian, must experience these things firsthand. By doing so, it is much easier for them to not only relate to their students, but also to create meaningful examples and topical exam questions. We also make sure that our instructors have first hand knowledge of the resources available to students, so several mornings are spent touring facilities such as the gym, the library, the computer repair facility, and the Center for Enhanced Performance (CEP). The CEP is a resource center where students can take classes such as study skills or speed reading, and some of these services (such as speed reading classes) are available to faculty as well.

By far the biggest part of FDW is spent trying to prepare new faculty for the specifics of teaching. Most of them will spend their first year teaching either a freshman level or an intermediate level Information Technology course. Broken into subgroups based on the course they will be teaching, faculty members get hands-on experience with the mechanics and pedagogy of their course. They also experience the entire contents of the course in the same order that their students will. This helps the new instructors do things like foreshadowing as they move through their first semester. New faculty experience the course material in multiple ways. Initially, experienced faculty members will come in and teach entire lessons, with the new faculty members playing the part of students. This lets them see several examples of what a well taught class looks like. Roles are then reversed for the remainder of the lessons, with new faculty taking turns teaching entire lessons, while experienced faculty critique their classroom performance. After a few times teaching practice lessons the new instructors are videotaped so they can see their own performance.

Throughout the summer seminars are conducted on various topics, such as how to help struggling students, how to create tests and quizzes, and how to grade homework and exams. Additionally, classes are provided about learning styles, teaching styles, Bloom's taxonomy, and a steady stream of other teaching topics. By learning these things early, instructors can integrate the concepts into their practice teaching sessions.

After six weeks of working and learning together, the new faculty members become a very cohesive cohort. Social events planned throughout the summer help to integrate families into the department culture as well. The end result is a faculty that is satisfied with the efforts made to make them feel welcomed and ready to teach. A side benefit of the cohesion that develops within each incoming group is that many collaborate endeavors tend to emerge. Their shared summer experience leads them to joint research and outreach in the future.

5. RESOURCE COMMITMENT

The Center for Teaching Excellence (CTE) is the embodiment of faculty dedication and commitment towards fostering an effective learning environment. The CTE's mission is to provide quality support to the USMA faculty by developing a broad range of services and programs that will assist in accomplishing their teaching mission [1]. CTE's contrivance is two fold (1) promote an ongoing discussion regarding instructional issues and (2) provide constructive feedback to facilitate faculty development.

Faculty members must strive to stay abreast of new instructional methods and technologies that affect the pedagogical situation. Seminars and workshops are used to stimulate continuous conversations regarding instructional issues and to challenge faculty on an intellectual level as a method to improve the learning environment. The Brown Bag sessions, newsletters, and the Master Teacher Program are just a few of the venues for discussing important instructional issues.

The Brown Bag (lunch) sessions are designed to discuss a myriad of instructional issues from a variety of disciplines to present and learn about topics that impact teaching and learning. CTE also distributes a monthly newsletter to provide information about current trends in teaching and learning in higher education to incite conversation among faculty members that will in turn be used to inspire the Brown Bag sessions.

The Master Teacher Program is an interdisciplinary, two-year program that focuses on developing the competencies and skills of USMA faculty members in preparation for the amelioration of the academic environment. Monthly sessions are held to discuss classroom teaching and review reflective activities in order to identify instructional needs and devise effective methods to meet those needs. The Master Teacher Program is predicated upon the credence that teaching and learning are tenaciously contingent upon each other and the life long learning principle that faculty members are learners as well as teachers.

Feedback is essential to learning because it allows faculty members to see the impact of their teaching styles – to sustain their strengths and use it to their advantage and recognize their weakness and devise creative ways to overcome their shortcomings. Reflective activities such as assessments and surveys are used as tools to provide constructive feedback to faculty members. Each faculty member in the Master Teacher program is assigned a senior faculty member as a mentor. The mentor is responsible for assessing and counseling their faculty member to provide feedback that will help hone the faculty member's teaching style. CTE also make available anonymous surveys that faculty members can employ throughout the course to gain insights from students as well.

Leadership is vital to faculty development and pedagogical evolution. The capable leadership of senior faculty inspire junior faculty to remain on the evolutionary forefront of education and supplies recognition praise to maintain their motivation. The Apgar Award for Excellence in Teaching has been established to recognize, encourage, and reward faculty members at the USMA by supporting teaching projects that improve the cadet learning environment. The Apgar Award is presented every academic year to the faculty member(s) who demonstrate scholarly promise that impact the cadet learning environment in and out of the classroom and contributes to the art and methods of teaching. This award is

not intended to be a best teacher type of award; instead it is intended to recognize innovative teaching methods.

6. ASSESSMENT

There are many assessment tools that could used to measure the effectiveness of our faculty development program. At the US Military Academy, we primarily use exit surveys; evaluations, reports, support forms and required counseling; and cadet feedback on instructor performance. Some of the best feedback comes from our rotating faculty members who have gone through the 3-year development program. To capture this feedback from these departing faculty members, exit surveys are given. The survey allows our faculty to provide feedback on their impressions of the level of professional development they received. This provides the department with an assessment of their faculty development program from the perspective of their customer, the faculty member.

Both military and civilian faculty members receive yearly evaluations and periodic counseling throughout their time at West Point. Counseling meetings between subordinate and supervisors provide an opportunity to set goals and possibly evaluate the subordinate faculty member's performance to date. Support forms are used to document the goals set for the current rating period. These forms are considered a living document and can change as goals and events change throughout the rating period. Finally, evaluations provide documentation on a faculty member's performance during an entire rating period of normally a year. These documents taken together provide a record of the faculty member's development toward the goals set at the beginning of the rating period.

Another tool for monitoring instructor performance is an anonymous, web-based survey system to solicit feedback from cadets at the end of each semester. The survey contains questions focused at the department, program, instructor and course level. This provides an excellent source of feedback from the student perspective on the development of IT courses. This assessment tool gives insight on the effectiveness of both the delivery and organization of the course material. Furthermore, since the questions are basically static, the survey results are a good source for longitudinal assessment of IT course development.

7. CONCLUSIONS

In order for a Faculty Development program to be successful, it must have the attention of the leadership, time, resources, and a commitment from the faculty. They are many ways to do faculty development, and the end result is a better instructor that can effectively teach our students. It makes good sense to pool some resources at a higher level because costs can be shared, a collection of best practices can be collected, and personnel can be dedicated to improving faculty development. Another benefit of a higher level oversight is there will be more uniformity between programs.

The same multilayered approach taken to improving faculty development can be applied to the assessment of how a program is accomplishing its faculty development mission. Surveys, reports, and feedback are all excellent methods to assess how a faculty development program is meeting its goals. Perhaps the best assessment measure is how our students perform after graduation. A more developed faculty member will produce a better student, and thus instructors and students can inspire each other to achieve excellence.

REFERENCES

[1] Center for Teaching Excellence. (at http://www.dean.usma.edu/centers/cte/default.htm)

[2] Professional and Organizational Development Network in Higher Education. (at http://www.podnetwork.org/development.htm)

[3] USMA Faculty Development Manual, Dec 2005.