

Moving from Training to Teaching

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ABSTRACT

Training at Drew University has been done mostly in an intense and concentrated format. With only an hour to train customers, we have to pack as much content in as possible. The problem with this method manifests once our customers return to their offices. Unable to immediately put into use all of what they learned, it may be days or weeks before they attempt a particular task they learned in a training session, and they have forgotten how.

In an attempt to provide extra learning opportunities and to explore another method of training employees, the Staff Technology Development Seminar was created. This seminar provides instruction on software packages and their uses. Instead of a training methodology, a teaching methodology was used. The students attended class for two days a week, received homework and reading assignments. They were instructed in the logic of how the software was designed to be used, and taught how to use that logic to accomplish a series of tasks, both individually and in a group.

The Staff Technology Development Seminar is entering its second year, and this paper is intended to cover the creation of the resources needed for the seminar.

Categories and Subject Descriptors

K.3.m [Computers and Education]: Miscellaneous

General Terms

Performance, Experimentation, Human Factors

Keywords

Training, Staff Development, Advanced Training Topics

1. INTRODUCTION

The training program for staff at Drew University is set up like most Universities. The trainers develop content for the classes that are constrained to one hour sessions that will fit within the available time of the staff. There is also the need to concentrate as much content into each session as possible to minimize the number of classes that a staff member needs to attend before they

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are able to begin using a new program in their regular daily work. The staff members come to and participate in these classes, which are offered regularly throughout a year, and take away what they need to accomplish their jobs. This system of training has worked for Drew for a number of years with some limitations.

The first limitation is that staff members often only come for training when they feel the need to accomplish a specific task and focus on that one topic during the training class. The other information in the class, while it may be absorbed is not of paramount importance to the staff member at that time, and so is not used. Any information that is not used shortly after the class is frequently forgotten within a few weeks, and therefore lost to the staff member. If the situation comes when they need that lost piece of information, they need to take the class over again and relearn all of the same material.

Additionally there are times when a staff member has reached a level of competence and knowledge with a particular software package that there is little they can gain from attending the standard training classes. Since there is a continuing need to offer classes on the more introductory and routine features of the software packages, it is not feasible for the trainers to devote their time and effort into developing and training new classes on more advanced features that would be largely unused. These staff members are often referred to the Staff Development Lab for additional one-on-one training.

2. THE SEMINAR

For years, the Faculty Technology Lab has been running a Summer Development Workshop to introduce new technologies and provide additional training to faculty at the university. This workshop was the initial inspiration for the Staff Technology Development Seminar, but the model of a week long workshop was unwieldy when dealing with staff members, who could not get away from their jobs for an entire week to attend. The workshop was ultimately just an extended version of the training that had preceded it. In creating the Staff Technology Development Seminar, I was hoping to develop something that would address some of the issues that our current training methodology was incapable of dealing with.

To this end, the seminar was developed more along the lines of a traditional course. The staff members included in the seminar were considered students in a small very focused course on a set of task oriented topics. A syllabus was generated by the Staff Lab Coordinator. The students received textbooks and were loaned laptop computers for use in the course. There was a regular meeting time twice a week for the course to be taught.

Most importantly the students were given regular homework assignments to accomplish either individually or in small groups outside of class. These homework assignments used the topics recently covered in the course. They built upon themselves to increase the understanding of how the whole system worked. It was hoped that the regular reinforcement of lessons learned in the class would increase retention of the material.

As an experimental offering of the seminar, it was limited to only six students. The students were requested from several different departments, who it was felt would benefit most from the topic. The first topic offered, “Database Development and Web Programming,” was met with great excitement from all of the departments approached.

3. SETTING UP THE COURSE

3.1 The Syllabus

The design of the syllabus for the course needed to be finalized before any other concerns could be addressed. The Staff Lab Coordinator worked with the input from several sources within his own department and from some faculty at the university to attempt to create an ambitious, but accomplishable, set of goals for the course.

It was decided that the materials taught within the class would have more of a lasting impact if there was a concrete overall project associated with the class. After discussing common requirements from the disparate areas of the university, it was decided that the most feasible project to work on as a whole was a database to perform appointment scheduling and tracking.

As the course progressed this project was the basis for all practical application homework assignments in the course. Also built into the course syllabus were days that were left open to work on specific aspects of the project or to address additional questions that might be raised about the best method to accomplishing certain tasks. It was hoped that the students would have more interest and learn more effectively with an achievable final result to the course.

3.2 Initial Concerns

There were concerns about the minimum level of knowledge and experience needed to participate in the seminar. The students approached all wished to participate but were uncertain that they would be able to keep up with the material of the course. They felt intimidated by the breadth and depth of the material being covered in the course and were expecting the information in the course to be just as concentrated as the standard training classes.

There were also some concerns about the amount of work time that would be consumed by the seminar. The staff of the university do not follow the same sort of cyclical activity cycle that the faculty often work under allowing them to have the summers free for additional learning experiences. Many of the staff offices were reluctant to release their employees twice a week for two hours each day, despite desire to have a member of their staff attend the course.

Table 1 -Syllabus Topics and Associated Homework

Topic	Homework
Project Design and Planning	Create Project requirements and feature requests. Develop documentation of project timeline.
Relational Database Theory	Take project requirements and create a database design in Third Normal Form.
Beginning programming logic and SQL	Translate SQL statements into understandable English.
Using VBA to enhance the behavior of forms in Access.	Create a form using a VBA script to automate one action on the form.
Introduction SQL Server and SQL Server data types	Given a series of different types of data, students had to choose the most appropriate data type in SQL server.
Using Stored Procedures and Triggers in SQL Server	Write one Stored Procedure or Trigger to automate a task for the DB or to protect data against faulty entry or collision.
Programming logic for the web using PHP	Write a PHP script to take data from a web form and display the information on the next page.
Connecting PHP to MSSQL	Write a PHP script to take all of the data from a table and display it on a form.
Inserting into the DB from PHP	Write a PHP script to take information from a form and insert it into a table
Updating data in the DB from PHP	Write a PHP script to take information from a form and use it to update a specific row in the DB

3.3 Initial Solutions

To address the concerns many staff had about their initial level of knowledge needed, the curriculum was designed to work for a relative novice in database design and web programming and develop the skills and understanding of not only the best way to use the software to develop the database but also provide an introduction to some of the best methods used in the field of project management.

To prepare for the class, the students were provided with their text books and a set of recommended reading three weeks before the class began. They were also encouraged to meet with the Staff Lab Coordinator to address any other concerns or areas they felt they needed additional training in before the class began.

Unfortunately the concerns about the time commitment required by the course could not be addressed at that time. There were few options available to teach the course within. The only alternative

to teaching the course during the latter half of the day on Wednesdays and Fridays was to require the students to attend class outside of the normal business hours of the University. This was decided to be an unacceptable option, since we were already requiring the students to put in personal time to work on the reading and homework assignments given during the course.

4. TEACHING THE COURSE

Since this was the first time that the material in the course was being taught, there were some planning mistakes that could easily have been avoided with additional outside input. The initial syllabus was based entirely upon the idea that the students would learn and understand the material presented to them during the class in a fairly rapid and complete manner. The material was designed to build upon itself, and so the later topics were nearly completely incomprehensible if a student fell behind in the reading or comprehension of the tasks assigned in class. If a student was unwilling or unable to meet with me outside of the class time, there was little they could do to catch themselves back up to the rest of the class. Often other students would attempt to help them learn the material by providing another perspective on it, but on some topics, the complexity was simply beyond their ability to help.

The homework of the class was also difficult to implement since there was no reward or punishment system. This meant that unless the students were entirely self-motivated to accomplish the tasks set in front of them, they would often leave the work undone, done poorly, or done without considering the material in the larger context. While I attempted to make the material as interesting as possible to the students, there were still topics which some students refused to work on without additional outside encouragement.

Attendance was unfortunately another source of difficulty with the progress of the course. The realities of a full-time staff members work schedule include vacation time. To ask a staff member to take no vacation at all for thirteen weeks is unreasonable, and so there were often classes that needed to be repeated or made up by the staff to keep pace with the syllabus.

The last major hindrance in teaching this seminar was my own inexperience as a teacher. Often, I would have to remind myself to make proper lesson plans and to not attempt to structure the class like a series of training sessions. The teaching mentality was one that was not ingrained into me like the mentality of a technical trainer.

Ultimately, we did not manage to keep pace with all of the material in the syllabus. The last two weeks of material were left out of the class, but students were given the option of meeting independently with me to cover any and all material that we had not managed to accomplish in class.

5. LASTING CONCERNS

After the course was completed, there were some additional concerns about the method of measuring the success of the experiment. It would be difficult if not impossible to require any kind of skills measurement similar to what is used by instructors of more traditional courses. There would be no way of enforcing the requirement without an edict from the administration of the university which was unlikely.

In the end it was decided that the students themselves would be the measurement of success for the course. The students were surveyed as to their comfort level and confidence when dealing with technology. Since each of the students was known to the Staff Lab Coordinator before the course began, it was possible to gauge a noticeable increase in the amount of confidence that the students felt when dealing with the types of programs that had been taught in the class. Additionally many students expressed an increased comfort level with technology as a whole and an increased willingness to experiment and learn new skills on their own.

6. CONCLUSIONS AND FUTURE PLANS

While none of the students opted to completely cover all of the class material, the Seminar was ultimately viewed as a success. The students from the class all came away with more understanding and knowledge about database design, project management, and web programming than they would have given a similar set of standard training classes. They have all expressed an increased level of confidence with their technical skills, not only when dealing with databases or web programming, but when dealing with computers in general. By helping each other learn the material, they came to understand it better themselves and be more aware of their own strengths.

The current topic of the Seminar "Rich Media Applications" is being offered during the summer of 2004 in the same general format as the original topic. Additional time and planning have gone into managing the expectations of both the students and the teacher. The current group of six students was selected from an open application pool of twelve applicants. This will hopefully mean that some of the problems with self-motivation will be lacking in this group of students. Once again, the material covered is ambitious, but with more experience and planning all of the material should be able to be covered in sufficient detail. Starting in January of 2005, the current Seminar topic will be offered in the extended format of once every two weeks for the entire year.

It should also be stressed that this form of training is not and should never be considered as a replacement for the more traditional forms of computer training that occur. This methodology of training skills allows students to push themselves past the initial level but does require a significantly higher input of resources and energy from both the students and the instructors than is normally feasible within most training organizations.