"*Hear* no IT Concepts, *See* no IT Concepts", *Speak* no IT Concepts" ….(Lessons Learned on getting new IT students excited about learning new Networking and Database IT concepts)

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Abstract

In response to government proclamations in recent years,4 colleges and universities in the United States increasingly are becoming aware of the need to develop the competence and confidence of new teachers and new students during their first years of service and students taking classes for the first time outside of their major field of study. In most universities, it is a requirement for students to take courses outside of their major field of study. With students taking courses they are not familiar with and being exposed to for the first time, it is important for students get a good start in such courses. There are many factors that must be taken into account when introducing students to new courses outside of their major. The teaching style and learning style are two of the concepts that must be taking into account.

Introduction

How am I supposed to understand this class? I have never seen a network before. What is a database? I cannot *hear* it running, I cannot *see* it, and I really can not *speak* it". How am I support to learn this stuff? Did I pick the wrong teacher?

Sounds familiar, doesn't it?

Many first year IT students probably have ask the above questions and more. Or, they have had a look on their face and you can see the above question rolling around in their heads.

Yes, the function of a college is to teach students to think (to paraphrase Newman5). Before a faculty member can begin *motivating* students to think, the *hygiene factors* need to be in place (to paraphrase Herzberg6).

According to Schroeder 7"faculties nationwide are bewildered and frustrated with the students they see in their classrooms today. Unfamiliar with many of the new characteristics, they see contemporary students as hopelessly under prepared, or less bright or motivated than previous generations. Clearly, the ways contemporary students view knowledge and derive meaning are

4 National Mentoring Month 2003 Proclamation.
5 John Henry, Cardinal Newman, "On education," ***The Idea of a University***, Yale University Press, 1996.
6 Frederick Herzberg, ***The Motivation to Work***, John Wiley, 1959
7 Charles Schroeder, New Students – New Learning Styles, 1993

vastly different from those of their instructors. These differences may be one of the causes of the low morale, sense of discouragement, and tendencies toward despair that are recounted across the country when faculty gather to discuss their roles as teachers".

Schroeder 8 also says that most faculties have chosen their careers for love of learning rather than for the extrinsic rewards. How, then, can we cope with students who do not recognize the same love? Must we resign ourselves not only to declining compensations but also to the loss of the joy in teaching and learning? One of my colleagues, a chemist, commented that his senior students were like chipmunks or squirrels, storing away separate little chunks of knowledge; they bad no idea why they gathered these nuggets and no understanding of how they related to each other.

As faculty, we have generally espoused the common belief that students learn and develop through exposure - that the content is all-important. We have been accustomed to a traditional learning process where one who knows (the teacher) presents ideas to one who does not (the student). Many of us prospered under the traditional lecture system, where the focus was on coverage of material through teaching by telling (Schroeder 9). This approach may work for us but it may not work for the majority of today's students. Most students do not like the lecture format because students are changing dramatically. Therefore, we as teachers need to change the way in which students learn the best.

Learning Styles

There are many learning styles as well as teaching styles. According to Ellis10, the theory of people learning differently is a fairly new topic in educational psychology, one that generated research activity in the last decade. Today, many teachers realize that these findings can make a difference in their ability to reach students. Ellis breaks learning into four stages:

Stage 1: Some of us want to know why we are learning things. We seek a purpose for information and a personal connection with the content. This occurs during Stage 1 of the learning cycle.

Stage 2. Some people crave the kind of ideas and facts presented in the classroom. Often such people are not concerned with how the material will relate to their personal lives. Instead, these students are eager to learn for the sheer pleasure of learning. This occurs during Stage 2 of the learning cycle.

Stage 3: Some people hunger for an opportunity to experiment with the knowledge they gain in the classroom. They want to see if the facts they learn actually work in daily life. They ask: Does this idea make sense? Is it usable? Such questions occur during stage 3 of the learning cycle.

Stage 4: Some people are more concerned about how they can use what they are learning making a difference in their lives and the world as whole. These people do well in mixing with others, enjoy group activities, create "on their feet, " and are usually vocal in a group.

8 Charles Schroeder, New Students – New Learning Styles, 1993
9 Charles Schroeder, New Students – New Learning Styles, 1993
10 Dave Ellis, Becoming A Master Student, 1997

Four Learning Style Models

Richard Felder11 breaks learning down into four styles, The Myers-Briggs Type Indicator (MBTI), Kolb's Learning Style model, the Herrmann Brain Dominance Instrument (HBDI), and the Felder-Silverman Learning Style Model.

The Myers-Briggs Type Indicator (MBTI)

According to Felder12, this model classifies students according to their preferences on scales derived from psychologist Carl Jung's theory of psychological types, students may be:

- Extraverts (try things out, focus on the outer world of people) or introverts (thinks through, focus on the inner world of ideas)

- Sensors (practical, detail-oriented, focus on facts and procedures) or intuitions (imaginative, concept-oriented, focus on meaning and possibilities)

- Thinkers (skeptical, tend to make decisions based on logic and rules) or feelers (appreciative, tend to make decisions based on personal and humanistic considerations)

- Judgers (set and follow agendas, seek closure even with incomplete data) or perceivers (adapt to changing circumstances, resist closure to obtain more data)

Kolb's Learning Style model

- Type 1 (concrete, reflective). A characteristic question of this learning type is "Why?" type 1 learners respond well to explanations of how course material relates to their experience, their interests, and their future careers. To be effective with a Type 1 student, the instructor should function as a motivator.

- *Type 2* (abstract, reflective). A characteristic question of this learning type is *"What?"* Type 2 learners respond to information presented in an organized, logical fashion and benefit if they have time for reflection. To be effective, the instructor should function as an *expert*.

- *Type 3* (abstract, active). A characteristic question of this learning type is *"How?"* Type 3 learners respond to having opportunities to work actively on well-defined tasks and to learn by trial-and-error in an environment that allows them to fail safely. To be effective, the instructor should function as a *coach*, providing guided practice and feedback.

- *Type 4* (concrete, active). A characteristic question of this learning type is *"What if?"* Type 4 learners like applying course material in new situations to solve real problems. To be effective, the instructor should stay out of the way, maximizing opportunities for the students to discover things for themselves.

11 Richard Felder, Matters of Style, 1996
12 Richard Felder, Matters of Style, 1996

Herrmann Brain Dominance Instrument (HBDI)

According to Felder13, this method classifies students in terms of their relative preferences for thinking in four different modes based on the task-specialized functioning of the physical brain. The four modes or quadrants in this classification scheme are

- *Quadrant A* (left brain, cerebral). Logical, analytical, quantitative, factual, critical;
- *Quadrant B* (left brain, limbic). Sequential, organized, planned, detailed, structured;
- *Quadrant C* (right brain, limbic). Emotional, interpersonal, sensory, kinesthetic, symbolic;
- *Quadrant D* (right brain, cerebral). Visual, holistic, innovative.

Felder-Silverman Learning Style Model

This model classifies students as:

- *Sensing learners* (concrete, practical, oriented toward facts and procedures) or *intuitive learners* (conceptual, innovative, oriented toward theories and meanings);
- *Visual learners* (prefer visual representations of presented material--pictures, diagrams, flow charts) *or verbal learners* (prefer written and spoken explanations);
- *Inductive learners* (prefer presentations that proceed from the specific to the general) or *deductive learners* (prefer presentations that go from the general to the specific);
- *Active learners* (learn by trying things out, working with others) or *reflective learners* (learn by thinking things through, working alone);
- *Sequential learners* (linear, orderly, learn in small incremental steps) or *global learners* (holistic, systems thinkers, learn in large leaps).

Teaching to all types:

Here are some strategies to ensure that your courses present information that will appeal to a range of learning styles. These suggestions are based on the Felder-Silverman model.

- *Teach theoretical material by first presenting phenomena and problems that relate to the theory* (sensing, inductive, global).
- *Balance conceptual information* (intuitive) *with concrete information* (sensing). Intuitors favor conceptual information--theories, mathematical models, and material that emphasizes fundamental understanding.

13 Richard Felder, Matters of Style, 1996

- *Make extensive use of sketches, plots, schematics, vector diagrams, computer graphics, and physical demonstrations* (visual) *in addition to oral and written explanations and derivations* (verbal) *in lectures and readings*.

- *To illustrate an abstract concept or problem-solving algorithm, use at least one numerical example* (sensing) *to supplement the usual algebraic example* (intuitive).

- *Use physical analogies and demonstrations to illustrate the magnitudes of calculated quantities* (sensing, global).

- *Occasionally, give some experimental observations before presenting the general principle, and have the students (preferably working in groups) see how far they can get toward inferring the latter* (inductive).

- *Provide class time for students to think about the material being presented* (reflective) *and for active student participation* (active). Occasionally pause during a lecture to allow time for thinking and formulating questions. Assign "one-minute papers" near the end of a lecture period, having students write on index cards the lecture's most important point and the single most pressing unanswered question.

- *Encourage or mandate cooperation on homework* (every style category). Hundreds of research studies show that students who participate in cooperative learning experiences tend to earn better grades, display more enthusiasm for their chosen field, and improve their chances for graduation in that field relative to their counterparts in more traditional competitive class settings.

- *Demonstrate the logical flow of individual course topics* (sequential), *but also point out connections between the current material and other relevant material in the same course, in other courses in the same discipline, in other disciplines, and in everyday experience* (global).

The Team Learning Concept:

In an article by David Brown14(www.syllabus.com), it is explained that the team-learning concept is a very good way of presenting classes. Below are some of the techniques that he suggested:

For example, before each class I ask teams of two or three students to submit annotated lists of the five Web sites that at most relevant to the concept of the day.

Instead of asking individual students to respond to study questions at the end of the textbook chapter, ask three students to submit a mutually agreed-on best answer.

14 David Brown, Accounting for Team Learning, 2002

During class, ask teams of three students to create a PowerPoint presentation that uses the concept of the day to persuade a decision-maker to take appropriate action. At the end of each study unit, teams of five students are responsible for creating a web site that explains and uses the concept just studied.

Brown15 also suggests that:

- Keep the teams small, preferably from two to five people.
- Assign specific roles for each team member. For example, in a networking course one team member might serve as the chief information officer, another a chief marketing officer, or a accounting manager and etc. Or, when preparing a PowerPoint presentation, one team member might be responsible for creating the theme, and another for putting the presentation together.
- In addition to submitting a team project (for a team grade), ask each individual to submit a critique of the team project (just as a Justice of the Supreme Court might submit a minority opinion).
- In addition to grading the team project, ask each individual to submit a grade for his or her individual contribution to the team project. This is especially feasible when individuals have been assigned roles within the team.
- First give the assignment to all individual students, and then ask students to work in teams and submit their best-combined contribution.
- For larger, longer-term projects, periodically e-mail team captains to ask how things are going. Meet with groups that are in trouble.
- At the end of the course, ask each student to name three to five students in the class who have helped them the most, and give frequently named students extra credit.

Co- mentoring program can help:

There are other ways that teachers can improve their teaching styles. They can pick up information from other teachers, books, etc. One program that can help is a co-mentoring program. Each participant must be a committed researcher, observer, and team player. For a co-mentoring program to work, both the institution and the co-mentors must reject common assumptions about the mentoring relationship. These common assumptions include:

Only recognized wise men can be mentors.

Mentoring only happens on a one-to-one, long-term, face-to-face basis.

A mentor needs to be 5-10 years older than the mentee.

The person being mentored is the only one to benefit from the relationship.

Mentoring takes more time than most people have available to give.16

15 David Brown, Accounting for Team Learning, 2002

Some better assumptions to bring to the co-mentoring program include:

Co-mentoring is an empirical learning experience.

No one is an expert.

All information is available somewhere.

Everyone can discover the answer to a question by looking in the right places.

Discovering a useful piece of information is rewarding.

Sharing useful information is rewarding.

The best success is collective success.

Broadly speaking, a co-mentoring program also possesses the seven components identified earlier with a traditional mentoring program. Key differences are indicated below.

Information Center

In a co-mentoring program, the faculty information center takes on far greater importance than in a traditional mentoring program. For many mentor-mentee pairings in a traditional program, the information center is an optional source of information that serves to supplement the traditional mentor's experiential knowledge. In a co-mentoring program, neither co-mentor possesses extensive experiential knowledge. For co-mentors, the information center is often the only source of information critical to successful acclimation of the new faculty member.

The meeting place aspect of a faculty information center takes on a special importance to co-mentors. Co-mentoring sessions often involve a group of co-mentors, each of which has a small piece of the teaching success big picture. These group problem-solving sessions often do not fit well in a faculty office. The information center can serve as a neutral territory, away from each participants primary work area, in which co-mentoring discussions are unencumbered by distractions, and a wealth of archived information is immediately at hand in the information center's file system.

Means of Identifying Co-Mentor Expertise

Each co-mentor has some expertise—some piece of the big picture—to contribute to the co-mentoring process. And, as with traditional programs, good mentors should be, generally speaking, people-oriented, open-minded, flexible, patient, and empathetic. However, no particular co-mentor possesses the extensive experiential knowledge to be a traditional mentor. Additionally, each co-mentor is a mentor to numerous other participants and is mentored by numerous other participants. Therefore, a co-mentoring program keeps track of the pieces of expertise possessed by each co-mentor in the program so that propitious temporary co-mentor pairings or groupings can be identified in response to needs brought to the program.

Faculty Development/Assimilation Plan

As in a traditional mentoring program, a co-mentoring program works best when a development committee or administrator is given oversight responsibility. Someone who already sees the big

16 This list is taken from The Myths of Mentoring page of ***The Mentoring Directory.***

picture is in a position to identify who is in need of critical pieces of the success package and to identify who might best supply those missing pieces.

The goals of the faculty development/assimilation plan are the same as those in a traditional mentoring program. In a co-mentoring program, only the achievement process is different. Because of the fluid nature of the co-mentoring process, the development committee or administrator must be chosen with great care. As the saying goes, herding cats is not an easy job.

Conclusion

Colleges and universities in the United States increasingly are becoming aware of the need to develop the competence and confidence of teachers and students learning. On-the-job nurturing and support by mentors can accelerate success and effectiveness among teachers. However, for the students to be successful, the teacher must realize that every student does not learn the same. A teacher has to be flexible and willing to try new things to ensue learning is taking place.

In addition, teachers need to be aware of new technology that is available for the classroom. It is no secret that technology can help greatly in learning. Teachers as well as students must learn to Hear, Speak and See new concepts and ideas. In other words, we all must have an open mind when it comes to learning and teaching.

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