Essays on Teaching Excellence
Toward the Best in the Academy
Volume 11, Number 1, 1999-2000

A publication of The Professional & Organizational Development Network in Higher Education (www.podnetwork.org).

Changing Student Learning Behavior Outside of Class

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This essay is about learning when teachers are not around - it is about out of class learning activity. It argues that you can have a substantial impact on student performance by planning this out of class time and by using assessment as a lever to encourage students to spend their time in sufficient quantities and in productive ways for the enhancement of their learning.

Importance of Learning Out of Class

- One of the "Principles of Good Practice in Undergraduate Education" (Chickering & Gamson, 1987) is "Good practice emphasises time on task." Defining what the learning task consists of, specifying how much time is allocated to it, and making sure this time is spent on this task, are critical for making courses work.

- Students can spend more time learning out of class than they do in class. In the U.K. students spend two or three hours out of class for each hour in class (Innis, 1996). However, although college instructors in the U.S. expect their students to spend about two hours out of class for each hour in class, they actually spend only 0.3 to 1.0 hours (Gardiner, 1997).

- An hour spent on a range of learning activities out of class has been shown to be as effective as an hour in a lecture, for the purpose of memorizing information, and more effective for understanding and problem solving (Bligh, 1997).

- Being student-focused means paying attention to what students do in order to learn rather than to what teachers do (Barr & Tagg, 1995).

Teachers tend to put most of their design effort into designing the content to be covered in their classes (Stark & Lattuca, 1997), and what effort is left is put into designing tests to measure what has been learned. It is significant that in most course descriptions what teachers do in class is described while what students do out of class is not - it is simply not planned in the same way or to the same extent. When I ask teachers how many hours their students are supposed to spend out of class and what they are supposed to do with these hours, I am often met with puzzlement, as if this were not their concern. These teachers were only planning half their course and were leaving the other half to chance.

It is difficult to improve teaching sufficiently to have a measurable effect on student learning, though it is possible. Almost all of the examples of dramatic improvements in student learning I have come across over the years have resulted not from improvements in teaching, but from improvements in learning. This involves a re-orientation of design effort.

Examples of Improved Learning without Changing Teaching
Forbes and Spence (1991) describe a failing engineering class in which student performance was transformed by simply requiring students to submit problem sheets for peer assessment on six occasions during the course, while all lectures and tests remained the same. The improvement resulted from:

- the requirement for students to submit work even though it was not graded, which made sure that they actually did it;

- the social pressure produced by students' work being seen and commented upon by others, which made sure that they did it well;

- the internalization of standards resulting from assessing others' work, so that they could judge and improve their own work;

- and learning from seeing others' mistakes and imaginative solutions to the same problems they themselves had tackled.

Here the strategy was to generate appropriate learning activity out of class through changes in the assessment. The specific tactic of peer assessment was less important than this underlying strategy.

Similarly, Cooper (1994) describes a large Accountancy class in which students were performing very poorly. Instead of changing the teaching to overcome this difficulty, students were formed into learning teams of four. Students attended the same classes and took the same exam, individually as before, but were allocated the average exam mark of their learning team of four. Again performance was completely transformed. The change was in what students did out of class, and the lever for this change was assessment. Students' marks were dependent on those of their team members so they taught each other very thoroughly. Almost all students benefited greatly, but the students who benefited most and whose marks increased the most were the best students - because teaching is a very effective way to learn, as every new teacher knows. Again the strategy was to change student learning activity by manipulating the assessment, in this case through the tactic of shared team exam marks. Incidentally this innovation was at no cost to the teacher in terms of her time.

Learning Functions of Assessment

Both the above case studies used assessment to change student out-of class learning behaviour. Assessment is the most powerful lever teachers have to re-direct learning effort in productive ways. It is common to distinguish two main types of assessment:

- formative assessment, which supports learning, primarily through providing feedback on progress;

- summative assessment, which allocates marks or grades to summarise what has been learned.

These two examples help us to identify the formative functions of assessment in a more discriminating way. I have found it helpful to consider four learning functions of assessment:

1. Capturing student time and effort. Assessment can make sure that students spend "time on task" and can make it more likely that this is "quality time." In the Engineering case study, requiring problem sheets to be submitted made sure that the time was captured; and having these sheets assessed by peers made sure that this was quality time.

2. Generating appropriate learning activity. The key word here is "appropriate." Much assessment generates learning activity which narrows students' attention and produces short-lasting consequences. For example, a multiple choice test generates very different learning activity in relation to the same content and educational goals than does an essay; and it is very difficult to generate "reading around" a topic without assigning a paper. If the goal for the Engineering case study was for students to tackle problems, then there was simply no substitute for assigning problems as learning activities. In a previous innovation the problem sheets had not been marked at all, to save resources. Students had stopped tackling the problems, and performance had plummeted.

3. Providing feedback. This is another of the "Seven Principles": "Good practice gives prompt feedback", to which I would want to add "that students pay attention to." Much effort in providing individualized written feedback is wasted either because the feedback is too slow or because students do not make use of it (Hounsell, 1987). Paying attention to feedback is a learning activity. In the Engineering case study students paid more attention to feedback provided immediately by their colleagues than they previously had to feedback provided, less promptly, by their teacher. The fact that their teachers' feedback was more accurate mattered less than when and how it was provided.

4. Helping students to internalize standards. Students who understand what different grades mean are more likely to improve their own work before submitting it than those who have never thought about standards. Teachers know about standards because they grade assignments. Students can learn about standards in the same way, as in the Engineering case study. They can learn to assess as reliably as a teacher's colleagues (Falchikov & Boud, 1989). However reliability is probably less important than the learning

consequences of having internalized standards.

Summary

It is proposed that teachers count up how many out of class learning hours they are entitled to and plan how to make the most productive use of all of these hours. Students should be briefed about the activities involved. Of course students will vary in terms of how many hours they need for the tasks teachers set. That should not, however, deter teachers from establishing explicit expectations any more than variations in students' ability should deter teachers from setting academic standards. To get students to actually allocate the time and effort required teachers may rely on students' intrinsic motivation. What is suggested here is the deliberate use of assessment to capture learning time, thereby promoting enhanced learning.

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Essays on Teaching Excellence

Toward the Best in the Academy

Volume 11, Number 2, 1999-2000

A publication of The Professional & Organizational Development Network in Higher Education (www.podnetwork.org).

Living up to Expectations

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The job advertisement calls for applicants with "a bachelor's degree in a social science discipline, two years' experience in community service, and fluency in Spanish." You have received 15 applications. Most candidates have a B.A. in sociology, two majored in history and one in economics. One candidate left college for financial reasons without finishing the senior year, but has worked for the city redevelopment authority for ten years. All the others did volunteer work with service agencies while they were in college. Two candidates are native Spanish speakers, one studied for a semester in Argentina, and the others had no more than two years of college-level Spanish instruction. Whom do you interview?

Unclear Expectations

Can't decide? Of course not. I haven't told you what the job is. Furthermore, the ad offers few hints about which qualifications are negotiable and which ones are absolutely not. We haven't discussed other qualifications that may be relevant either.

It's useful to compare our academic world with the work environment that many of our students will enter upon graduation. In both, people spend a lot of effort defining expectations, or trying to meet someone else's. Teachers and employers face similar uncertainties, as do students and employees.

Consider what one of our graduates would think if he or she applied for the job above. Some colleges count History among the humanities, not the social sciences. Will they accept my history major? How fluent can they expect me to be in Spanish after two

years? I hope they count the summer job I had with the YWCA as community service. Am I qualified? Would I be prepared to do the job?

Some expectations are very crisp and non-negotiable. Employers want to be sure that applicants have specific skills to meet safety or legal requirements of the job. We have similar concerns for college students. We want to ensure that a student entering Accounting 250, for example, can handle basic math and has grasped principles that are taught in Accounting 132.

Other expectations might be met in different ways, or to different degrees. The company that wrote the ad at the top of this essay might want to attract people who value community service and who share the language of social scientists. Any specialization would be O.K., but dilettantes and those without practical experience need not apply. A college that expects new first-year students to have studied a foreign language might have similar motives. The particular language doesn't matter; living abroad for a couple of years or growing up in a bilingual family might be acceptable forms of "study."

So, who gets the interview, is admitted to college, or is enrolled in Accounting 250? The answer, of course, depends on how negotiable the written criteria are and how fully they describe what we expect of candidates. Prerequisites and job descriptions are written for students and applicants in the abstract. We're rarely surprised that we have to be flexible in applying the criteria to real people. Sometimes real students and real job candidates exceed our expectations. Just as commonly, people offer strengths that substitute for what we were expecting or that compensate for gaps.

All too often, however, college entrance criteria, job ads, and course prerequisites set ambiguous expectations that lead later to frustration and disappointment. Students in Accounting 250 discover that the "basic math" prerequisite assumes familiarity with statistical methods that were not emphasized in prior courses. Potential employees decide not to apply because posted criteria appear more restrictive than intended. Morale and productivity suffer because teachers, students, employers, and employees cannot agree about what it means to be prepared for work.

The Importance of Planning

Careful planning can reduce the uncertainty caused by unclear expectations. Here are some key steps to take before soliciting candidates or potential students:

- Write a course syllabus or a job description first. Be clear about what students in the course or program will be asked to do. For a new course, think about how it will be related to parts of the curriculum that precede or follow it. Consider how a potential job relates to the broader corporate context.
- Identify the entry skills and levels of competency that are "non-negotiable."
- Determine how non-negotiable skills may be assessed (e.g., audition, standardized exam) or what guarantee of prior assessment you will accept (e.g., passing grade in a specified course, high school diploma).
- Describe the assessment as concisely as possible, making it clear that this is a requirement for everyone and that only a specified set of alternatives is acceptable ("Prerequisite: C or better in ENGL 325 or 330").
- If the pool of potential candidates is small, consider ways to help future candidates develop non-negotiable skills. A university partnership with public schools, for example, might strengthen reading skills and enlarge the pool of qualified college applicants.
- Identify "negotiable" bodies of prior knowledge or experience that will increase a student's likelihood to succeed in the college, program, or course or an applicant's effectiveness in the job.
- Describe these requirements, making it clear that although not strictly necessary, they constitute a highly desirable foundation ("The ideal candidate will have at least two years of work experience in a counseling environment" or "Prerequisite: prior or concurrent enrollment in PHYS 247 recommended").
- Decide what supplementary resources or services you will offer for students or applicants who have not met the negotiable requirements. These might include on-the-job training, tutorial sessions, a campus writing program, self-paced study materials, or extra optional class periods.

Risks and Obligations

This last step is particularly important. The existence of negotiable requirements implies a set of risks and obligations. A student who skips over a recommended sophomore class to take an upper-level English course risks being unfamiliar with some literary allusions. The student is therefore obliged to do independent reading to keep up. An employee who learned Spanish in an informal, non-school setting may be less able to write grammatical Spanish than a "fluent" employee who learned in school. A company that accepts that risk upon hiring may have to send the one employee to a night school class in Spanish composition if indeed the expectation is for grammatically correct written language usage.

Risk and obligation are clearly greatest for the most negotiable qualifications. This suggests that it is generally best to make important criteria as rigid as possible or at least to identify acceptable alternatives carefully. Risk and obligation are also greater when prerequisite skills were picked up long ago or far away. Although all first-year college students must satisfy generic entrance requirements, for example, students come from different high schools and take different courses. Some wait a year or more before applying to college. Colleges assume the obligation of offering remedial courses and intensive tutoring to reduce the risk of student failure. With time these differences diminish, faculty and students get to know each other better, and they meet each other's expectations more fully.

Meeting Expectations

So far, so good. Suppose, though, you are teaching a course that someone else designed or that you don't hire new employees yourself. You may be surprised to find that a new student in your class or a person in your office lacks important background knowledge and is now struggling to keep up. Under some circumstances (when the person came with false credentials, for example), you can force a student to drop your class or reassign an employee; but that isn't always the practical or the humane thing to do. Instead, try a two-step approach aimed at clarifying expectations and responsibilities and enabling individuals to meet expectations.

- Very soon after the new person joins you (within the first two class periods in the term, for example), have an open conversation

about what you each expect. The goal is to anticipate problem areas while you each have time to soften their impact. The student or employee will be eager to learn how to succeed. Your task is to overcome their natural inclination to hide a shortcoming and to build confidence in your role as a mentor.

- Offer a specific developmental plan tailored as closely as possible to the person's area of weakness. Broad advice to "brush up on your computer skills" or "visit the math lab" is less helpful than advice that targets specific skills that will be needed in the course or job. Instead, for example, recommend that the employee sign up for a workshop in using Excel, followed by guidance from a more experienced staff member. For a student who reveals unfamiliarity with matrix algebra, recommend a tutorial guide that stresses applications in your subject area, plus participation in a math study group with other class members.

Conclusion

Support systems should be designed with the assumption that unprepared students and employees are exceptions to the norm. Students or employees should understand that they must shoulder a large part of the responsibility for meeting unfilled prerequisites. As teacher or employer, you should not enable their future dependence on remedial help by signaling that it's O.K. to be unprepared for a major task.

At the same time, it's important to realize that what we see as a lack of preparedness often arises from a mismatch of expectations, some of which is unavoidable. Rather than act surprised, annoyed, or discouraged, it makes sense to communicate expectations early and carefully and to be ready with help for those who need it.

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Toward the Best in the Academy
Volume 11, Number 3, 1999-2000

A publication of The Professional & Organizational Development Network in Higher Education (www.podnetwork.org).

Creating an Inclusive Learning Environment

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The world of higher education is very different from what it was just two or three decades ago. One might look back on the history of higher education and realize that there was a pattern of exclusivity rather than inclusivity. That, however, has changed dramatically as educational opportunities have increased significantly in just the past decade. As faculty, we have the opportunity as well as the social obligation to nurture talents and gifts that once might have been lost. We all have this opportunity - regardless of the teaching and learning setting in which we find ourselves. In response, it is our individual ethical and professional responsibility to create an inclusive learning environment - to the best of our ability.

Our Students' Differences

Each student brings into the learning environment attitudes, behaviors, and experiences that are different, yet similar. Differences among students may or may not be obvious. Among differences we might list are creativity, physical or psychological (dis)ability, educational background, sexual orientation, socioeconomic status, class (Warren, 1998), life experiences, language, culture, gender, ability to problem solve or use technology, race, age, military experience, leisure interests, religion, marital and parental status, teaching or learning style, and academic discipline.

These and other differences have the potential to contribute added value to learning rather than disappear into a melting pot. With a heightened awareness of differences and diversity issues, students and faculty may be more sensitive to and accepting of another's point

of view, especially if different from their own.

By modeling inclusive attitudes and behaviors, faculty and teaching assistants help students learn and apply strategies for acknowledging differences and respecting diversity. Consequently, students shape inclusive behaviors and attitudes in each other. We model such behaviors by the practices we incorporate into our teaching.

Strategies for Inclusion

Rules of the day. Adopting rules of the day (or class term) creates a sense of student-faculty ownership and fosters individual responsibility. Rules of the day might include the following: 1) be prompt/regular in attendance; 2) listen to what is said and *how* it is said; 3) participate actively; 4) confine discussion to the topic; 5) verbalize one's own views, using "I" instead of "we/they"; 6) respect others' views; 7) avoid blame and attack; 8) give and receive feedback graciously; and 9) honor confidentiality, sharing *what* was said, not who said it.

Be a change agent. A change agent is someone who takes action when appropriate and addresses inappropriate behavior when important. Faculty can facilitate behavioral and attitudinal shifts by asking themselves and their students, "What am I thinking/feeling? Are (*my*) biases getting in the way? What do I need from others in order to be able to work together better?"

Change agents address issues. They describe facts, feelings, and perceptions clearly. They demonstrate empathy and seek to clarify, asking "When we say _____, what are we *really* saying?" Change agents listen and ask such questions as, "What is your perception of the situation? What led you to that view? What do we (dis)agree on? What is getting in the way?" Change agents do not judge. They give specific examples of undesirable behavior followed by "how it makes (me) feel ... because .... Therefore, (I) would prefer that...". Change agents acknowledge and respect differences.

Classroom management. In class, students should be encouraged to think about material and engage in active discussion so that misconceptions are cleared up in a timely way. Teaching students to organize, apply, synthesize and evaluate information helps them filter

that information and identify core concepts.

For example, no matter what our discipline may be, we can develop cases which demonstrate people, despite their differences, sharing certain values. We can encourage students to share stories and situations in which they perceived discrimination and stereotyping. In doing so, however, we must recognize that differences, of whatever type, should not be highlighted unless relevant to the topic at hand. Not expecting students to function as experts or spokespersons representing any particular group is also sound practice.

If students have a (dis)ability, take cues from them, or ask them what you can do to include them effectively. Listen to how they refer to their (dis)ability. Focus on their needs and interests, as with anyone else. Find out the degree to which they can see, hear, or use a physically disabled limb. Meet with the student(s) to find out how s/he takes notes, offering to do whatever will give them necessary information. Do they need more time for tests? What is problematic for them in class or getting to/from? How can activities be modified for effective class participation and inclusion? (See Scott, 1997.)

When facilitating classroom discussions and judgment or criticism is necessary, choose a tone and choice of words that shows respect for those who hold different beliefs and opinions. Adopt multiple teaching strategies and methods that stimulate the senses (e.g., vision, hearing, taste, smell, touch); and address some, if not all, of Gardner's multiple intelligences (e.g., logical-mathematical, spatial, musical). Faculty should encourage students to make connections between current course material, other courses, and life experiences. This makes the theoretical and abstract applied, concrete, and relevant. Offering students more time in which to take an exam, alternative testing formats, or a menu plan mixing assignments and exams can go far in alleviating student anxiety and fostering an inclusive learning environment. Referring students, as appropriate, to academic advisors, library services, tutors, computer labs, or other student services is another way in which faculty can support student development and acknowledge differences.

Think outside the box. Edward de Bono, authority on teaching thinking as a skill, separates thinking into six distinct modes or hats

and assigns each hat a color. A white hat represents pure facts and figures, neutral and objective, while a red hat holds strong emotion, hunches, and intuition - "this is how I feel". Black hats point out what is wrong and why it will not work although not in an argumentative way while yellow hats are optimistic, positive, probing for value/benefit, and permitting logic and dreams. Green hats are creative thinkers and fertile problem solvers, asking "what happens next?". Blue hats define problems, shape questions, summarize, and assume control like an orchestra conductor.

When discussing sensitive issues, the following exercise, based on the concept of *Six Thinking Hats*, may be of interest to faculty and students to encourage different thinking or thinking about differences, to infuse energy into a discussion, to depersonalize feedback, or to ensure representation of multiple viewpoints. The activity can be done at any time during a class or a meeting. Materials needed include a container for the flash cards and stacks of colored flash cards (white, red, black, yellow, green, and blue). Type on each card a concept summary of what that color represents. Each color should be represented proportionately to the number of students. It is very helpful to give participants a description of the activity and a summary of concepts represented by each color so they might review them in advance of the activity.

To start, shuffle the flash cards, and pass them around until everyone has one. The facilitator of learning then makes a statement or asks a provocative question to promote discussion. Participants contribute to the discussion based on the "point of view" of their color. Depending on the topic, each group of colors may be allowed to meet at the beginning of class to plan an approach to the discussion. Once underway, white hat thinkers usually describe the situation as it is, greens offer alternatives, yellows extol the benefits while black hats note pitfalls and reds share their hunches and feelings. Blues shape and direct the process. Once people are familiar with the technique, they enjoy "changing colors" at designated points in the discussion.

Summary

Perception is an individual's view of reality. Students enter the learning environment with different sets of perceptions, skills,

attitudes, and behaviors. Once we accept that different does not mean *less than*, it is easier to respect those differences and effectively use them to make connections in the promotion of an inclusive learning environment. We now have the opportunity to do so in ways not previously practiced in higher education with intent and planning,

The promotion of such an environment is the duty of every reflective and responsible teacher.

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Essays on Teaching Excellence
Toward the Best in the Academy
Volume 11, Number 4, 1999-2000

A publication of The Professional & Organizational Development Network in Higher Education (www.podnetwork.org).

The Legacy of John Dewey
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The influential legacy left by the world-renowned philosopher and educator John Dewey is so vast and so complex that it is necessary to be selective in our approach to it. His vision of things typically features connectedness and interaction, aspiring at all times to be inclusive and unitary.

With this in mind, the remarks that follow will focus first on the nexus of teaching, learning, and training and secondly on the relationship, for educational purposes, between emotion and imagination.

Teaching and Learning
When Dewey inquires into the relationship between learning and teaching, he posits, in effect that you can teach and you can learn because – and only because – you can communicate. It would be hard to overemphasize the importance that Dewey places on that last term.

Through communication it becomes possible to bring together things, such as teaching and learning, that are too often separated from one another. He wrote, "there is a natural bridge that joins the gap between existence and essence; namely, communication, language, discourse" (1925, p. 133).

Indeed, Dewey's educational vision draws motive power from the sheer wonder of our ability to communicate: "Of all affairs, communication is the most wonderful. That things should be able to pass from the plane of external pushing and pulling to that of revealing themselves to man, and thereby to themselves, and that the

fruit of communication should be participation, sharing, is a wonder by the side of which transubstantiation pales." (1925, p. 132)

Through communication, the "immediacies" of worldly events and things, hurrying by too fast to be appreciated, become susceptible to "survey, contemplation, and ideal or logical elaboration; when something can be said of qualities they are purveyors of instruction. Learning and teaching come into being, and there is no event which may not yield information. . . . Even the dumb pang of an ache achieves a significant existence when it can be designated and descanted upon; it ceases to be merely oppressive and becomes important; it gains importance, because it becomes representative; it has the dignity of an office." (1925, p. 133)

Two comments are in order here. One involves the convergence of teaching, learning, and instruction, based on the self-evident assumption that these kinds of performance necessarily belong together. Had Dewey come back during the long stretch of time when, at least in the United States, learning got shuttled off to one side in our haste – long overdue, to be sure – to improve pedagogy, he would most assuredly have been provoked to further thought and recommendations for action. A second comment is that Dewey offers, in the term "office" as used above a way of figuring the inherent unity of the educative performances – teaching, learning, and instruction. "Office" implies not only a competence but a duty, a genre of service and at the same time a position of authority and a mode of professional operation.

Are there other offices or functions belonging to this same nexus? From much of what Dewey has to say elsewhere, the answer must be "yes", and its name is training. Not surprisingly, this sometimes appears in connection with training for jobs or professions – more or less what was traditionally called vocational training. Here again, Dewey's inclination is not exclusive but inclusive: practically speaking, all of the offices may be thought of as a single overarching office. Dewey turns to these and related considerations when he examines "the laboratory, as distinct from the apprentice ideal" of education.

(Teacher) Training

In this context Dewey questions: "whether we, as educators, keep in mind with sufficient constancy the fact that the problem of training teachers is one species of a more generic affair – that of training for professions. Our problem is akin to that of training architects, engineers, doctors, lawyers, etc. Moreover, (since shameful and incredible as it seems) the vocation of teaching is practically the last to recognize the need of specific professional preparation, where is all the more reason for teachers to try to find what they may learn from the more extensive and matured experience of other callings.

It seems noteworthy that Dewey here shows the teacher in, at least potentially, a learning mode: to be a better pedagogue, the individual instructor may inquire into, possibly emulate, the procedures conventionally grouped under the heading of training.

Dewey rejects any notion that teaching or instruction are somehow superior to training and the correlative notion that there exists an impenetrable barrier to this training. Or, if there is a barrier, he renders it transparent. His attitude precisely complements the point he makes repeatedly about the school in relation to the society, i.e., that the two should be brought together as closely as possible.

The complacent view that training is essentially a lower-order function limited to business and industry reveals a lack of historical grounding. The influential philosopher Hans-Georg Gadamer (1986) reminds his readers that the concept of training is at least as old as Plato: "Plato's entire *Republic* may be viewed as a program of *training*, leading not only, and not even primarily to insight into what the good is, but to an inculcated disposition (*hexis*, *ethos*) to hold to the good in practice" (p. 173). Another modern luminary, Ludwig Wittgenstein (1953), broadens the terminological range by acknowledging the importance, not only of teaching (*Lehren*) and instruction (*Unterricht*, which can also mean training) but training per se (*Abrichtung*) (pp. 4-6.)

Emotion and Imagination

"I think one could go through the defects and mistakes of teaching and learning generally and find that they are associated with failure to secure emotional participation" (Dewey, LW 6, p. 15) — an idea

which we might easily relate to our current discussions about active learning.. Teaching practice too often assumes that functions of intelligence are almost entirely intellectual and are related to affective functions, if at all, only peripherally. In *A Common Faith* (LW, vol. 9) Dewey espouses a larger and more inclusive view and one that provides a partial historical framework for the current interest, especially in business and industry. This view was exemplified in a recent conference on "Leading with Emotional Intelligence" sponsored by the Stanford Center for Professional Development.

"There is such a thing as passionate intelligence, as ardor in behalf of light shining into the murky places of social existence, and as zeal for its refreshing and purifying effect. The whole story of man shows that there are no objects that may not deeply stir engrossing emotion" (Dewey, 1932, p. 52).

Dewey differentiates between, then brings together and unifies two basic types of emotion: "No matter how much evidence may be piled up against social institutions as they exist, affection and passionate desire for justice and security are realities in human nature. So are the emotions that arise from living in conditions of inequality, oppression, and insecurity" (1934, p. 53).

The unification of these emotions at critical times in history can be both explosive and creative: "combination of the two kinds of emotion has more than once produced those changes that go by the name of revolution. To say that emotions which are not fused with intelligence are blind is tautology. Intense emotion may utter itself in action that destroys institutions. But the only assurance of birth of better ones is the marriage of emotion with intelligence" (1934, p. 53).

Coming together on these terms may also be seen in terms of a related office; for what is the marriage of emotion with intelligence if it is not imagination? This is indeed the concept to which Dewey appeals in an essay on "Appreciation and Cultivation"(LW, vol. 6): "with respect to imagination I should approach its definition, educationally, through the spontaneous carrying power which information and ideas sometimes possess. . . . The connection of emotion and imagination is not accidental. Emotion provides the

carrying impetus. Imagination denotes that to which we are carried when the emotion is not so coarsely organic as to lead to direct overt action."

To illustrate his point Dewey draws a contrast between, on the one hand, a man in a rage and a man full of resentment with, on the other hand, a man capable of imagination. "Whereas the first two men spend their time flailing about or brooding, the third man, with a more refined indignation may set to work to explore imaginatively the source of a public wrong and to construct measures of remedy. Or a Dickens may be led to an imagination which discloses the situation to others through the medium of a novel" (1931, p. 114).

Conclusion

This brief discussion of only two aspects of the complex body of thought left to us by John Dewey can remind us of the importance of his body of thought and of the relevance of this thought to higher education as we move into the next century. We can benefit by rethinking the nexus of teaching, learning, instruction, and training as well as the connection between emotion and imagination in the context of our educational world.

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Essays on Teaching Excellence

Toward the Best in the Academy

Volume 11, Number 5, 1999-2000

A publication of The Professional & Organizational Development Network in Higher Education (www.podnetwork.org).

Foundations of Collaboration

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The use of collaboration in learning and decision-making is increasingly popular. Advocates present these processes as friendly, supportive, motivational and achievement-oriented (Slavin, 1989-90; Johnson & Johnson, 1989). However, a positive group dynamic thrives only if those participating have at least one common goal, share explicitly expectations of group participation and performance, and hold the values necessary for collaboration.

One goal of all collaborators is to achieve together. Learners must know why they are working together as they reach for new knowledge and decision-makers as they work through disagreements. The knowledge that together they can accomplish that which cannot be done alone must be frequently reinforced (Avery, Auvine, Striebel, & Weiss, 1981). Effective groups have one common attribute—knowing the expectations for group participation and performance. Those using collaboration must be explicit about norms, rules, disagreements, inclusiveness, time, and output. Essential to the success of novice collaborators is knowledge of the values and framework that create the collaborative structure, process, and climate.

Collaboration simultaneously emphasizes community and attentiveness to the individual as a member of the group. This focus requires valuing that which contributes to group function and participating in ways supportive of the collaborative process. Successful collaborations occur among those who understand and

work well in what is a value-laden, socio-political process.
The complexity of collaboration is the reason many employers seek graduates who are practiced in group work. They want persons attuned to collaborative values and comfortable in building and supporting the frameworks of collaboration. Both businesses and institutions of higher education can utilize collaboration as they acculturate individuals into communities that work for improvement. This essay provides a basic framework for collaboration.

Values for Collaboration Collaboration is grounded in a specific set of values. These values are indispensable, and participants who do not embrace them derail collaborative learning and decision-making. Consequently, a teacher or leader must be confident that all share the values required for participation. The common values are as follows.

Community: The individual exists as a group member and development occurs through socialization. Collective knowledge and experience is a synthesized reflection of the previous experience of group members, catalyzed by their interactions. All members have equal access to power; and accordingly leadership may, and can be expected to, shift as the process unfolds.

Search for knowledge and truth: We learn and find truth by combining what we know with what others know. This is the basis for the evolution of ideas and collaborative learning. The quest for knowledge is dependent on group attitudes and behaviors, which may both expand and constrain what evolves (Bruffee, 1993).

Unity: Effective interdependence is achieved through the belief that the group can identify and promote a common good. Unity is maintained because discord and disagreement are operationally tolerated and considered beneficial to group process and goals.

Respect: All in the group belong and are worthy. Fostering this in the group process requires linguistic flexibility, attentiveness to interdependence, gentleness, and love of others. When members know others will respect them, it is likely trust will develop. Thus, respect is essential to building trust among group members who venture to contribute their perspectives.

Effective collaboration, including deliberation for consensus, requires us to consistently hold and express these values. The burden and reward of this requirement becomes readily apparent when the tone of discussion becomes emotional.

A Framework for Collaboration Collaborative pedagogy allows various approaches to group work. Consequently, the group is responsible for creating what is needed for them to collaborate. Since collaborators must evolve the structure, processes, and climate necessary to their success, a simple framework for exploring collaboration is provided below.

Through collaboration, knowledge is socially constructed and participants become socialized to the group linguistics, values and issues (Bruffee, 1993; Dewey, 1909; Ornstein & Hunkins, 1998; Whipple, 1987). Overall, collaboration is based on a common goal, synthesis of ideas, equal access to power, group ownership of ideas, mutual trust, respect for others, mutual responsibility, unity, and attention to process. The approaches to collaboration range from informal to formal. Informal collaboration requires participants to design the collaborative process, negotiate the rules of collaborating, meet deadlines, and be accountable. Formal collaboration, such as consensus decision-making, requires groups to follow defined procedures. For example, achieving consensus means everyone found the decision acceptable enough to support the group in choosing it and that the decision did not totally violate any individual's value system (Avery, Auvine, Streibel and Weiss, 1981). It does not mean everyone was satisfied.

Both informal and formal collaborators can create an environment conducive to group work if they focus on the following:.

Desired climate: Participants exhibit the values necessary to collaboration.

Purposeful groupings: Participants either self-select or are assigned to a heterogeneous group.

Goal continuity: At least one goal unites the group.

Leadership: Equal access to power is achieved through shifting leadership. Member roles: A facilitator, time keeper, devil's advocate, and encourager attend to group process (Avery, Auvine, Streibel, & Weiss, 1981).

Rules of interaction: The group designs rules necessary to support group interaction and productivity.

Meaningful discussions: Participants have purpose, communicate to test and tune ideas, make forward progress, and achieve goals.

Decisions: Techniques are used to manage participation, disagreement, and idea development.

Time: There is a common understanding of the behaviors expected when there are time constraints.

Implementation: The group takes action on decisions.

Evaluation: The group assesses both process and output.

Failure to effectively use collaboration may indicate that the players do not hold the necessary values or are not proficient at the process or that the methods are not yet fully developed. Attentiveness to why collaborations fall short of our expectations is necessary for us to develop ourselves and the process.

Ideologies Embracing Collaboration Implementing a collaborative pedagogy is impacted by the relationship of collaboration to ideologies. A facilitator must anticipate dogmatic support of, or resistance to, requiring collaboration of students or of those led. For example, the Quaker dogma, in part, includes unity of judgment (consensus) (Jones, 1965) and along with other religions advocates the use of collaborative skills, such as critical thinking, self-discipline for the good of the group, and constant definition of self in relation to others. This process may be acceptable to some but alien to others.

Ready participation may be expected from those who define learning as a social process. The ideology advocated in the *Theory of Education* (Dewey, 1943), Constructivist Psychology Theory

(Ornstein & Hunkins, 1998), and Cooperative Learning Theory (Johnson & Johnson, 1989; Slavin, 1983), is rooted in the assumption of the social construction of knowledge, which correlatively assumes that students bring ideas and experiences to learning situations that advance and enrich the understanding of others. Success in learning this way is achieved by those who have the authority to share their ideas and experiences. Those who feel unready will shift the leadership of learning to (a) person(s) believed knowledgeable and experienced.

Those who integrate easily into collaborative communities have a socio-political ideology of shared governance, equal power, and mutual respect. Among those with this egalitarian ideology are feminists and environmentalists who support collaboration and consensus to create a harmonious and balanced world (Sturgeon, 1997; Wheeler & Chinn, 1991). This is, however, not the only goal of feminism or environmentalism, and it is the other facets of those movements that cause some to wonder if a specific socio-political ideology is required of collaborators.

Collaborating is held by some, not all, as an ideal, and we should not be surprised by questions or resistance. Both the pedagogy and the ideological roots of collaboration run contrary to the American ideology of self-sufficiency, independence, privacy, upward mobility, and individual material reward.

Summary Collaboration builds knowledge of and experience with appropriate group interaction and productivity. If others do not act as we expect, we should consider some reasons for their actions. Do all know why the group is together? Does the group focus, and re-focus, on its common goal(s) as diverse opinions are heard and incorporated? Is there appreciation for the member who may share many of our values, but not our ideology or worldview? Are some working without knowledge of collaborative values or processes? If we expect collaboration, we must understand and work to support its individual and group requirements.

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Essays on Teaching Excellence
Toward the Best in the Academy
Volume 11, Number 6, 1999-2000

A publication of The Professional & Organizational Development Network in Higher Education (www.podnetwork.org).

Helping Students (Better) Evaluate and Validate WWW Resources

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The evolution of the World Wide Web has spawned a radical and sometimes problematic transformation of how and where students locate and use information. Given an assignment, most students are more likely to make a visit to the Web rather than to their academic library. Unlike their library, the World Wide Web never closes. And, unlike their library, students can enjoy a cup of their favorite beverage or watch TV while surfing for information. And, for many students, surfing the Web is perceived as fun while trudging over to the library is time-consuming and oh-so-boring.

Unfortunately, many faculty and most students are ill-equipped to make the most of the Web. Unwary faculty allow students to use information found on the Web without causing them to evaluate and/or validate that information. Uninformed students "look for information with search engines and use it without having any idea of how reliable it is, or - in some cases - without even knowing who supplied the information" (Hempstead, 1999). Uncontrolled and uncorrected, such use of the Web will certainly have a deleterious effect on the quality of student scholarship.

But all is not doom and gloom. As the Web has evolved, so, too, have our strategies for using the vast array of information it contains.

Getting Started Effective use of Web information begins with effective searching strategies. Both faculty and students need common skills to lead them to the information they seek. A basic understanding of the type of information various search engines

gather, how those search engines obtain information, and the techniques for actually locating the information found by a given search engine is crucial.

We know the Web at this moment is not the same Web as of five minutes ago. (The advent of mega search engines like *MetaCrawler*, *Ask Jeeves*, and *InferenceFind* further exacerbates the issue by returning hundreds, thousands, or even millions of hits for a given topic). The dynamic nature of the Web means that faculty need to spend time using search engines, locating and evaluating pertinent information, and sharing that information with students.

The results of an actual search illustrate the importance of knowing how to search effectively. Suppose you are teaching a marketing course and want students to prepare brief papers on the history of the Ford Motor Company. You suggest that they search for "Ford Motor Company" on the Web. On the day I conducted a search for "Ford Motor Company" using the following search engines, I found the following:

- Alta Vista (38, 118 hits)

- Infoseek (15, 256 hits)

- Webcrawler (220,545 hits)

- Excite (4,158,616 hits)

Obviously this particular search could be narrowed down by selecting additional key words. The trick is knowing how search engines find the information they reveal and how to extract that information. We, as faculty, need to know how to conduct effective searches, and we need to impart this knowledge to our students. We can start by studying the url's in the box below and sharing them with students.

Links to sites providing information about search engines and searching:

- http://www.itrc.ucf.edu/lqr/

- http://www.hamline.edu/Administration/Libraries/search/comparisons.html
- http://www.mwc.edu/ernie/facadac/search-eval.html
- http://www.monash.com/spidap.html
- http://www.voicenet.com/~bertland/search.html
- http://www.zdnet.com/pccomp/features/fea1096/sub2.html
- http://www.cl.ais.net/egsmlib/crawler.html

Evaluating Web Resources As the Web evolves (currently over one million new pages are added daily), so must our use of it. One of my basic premises is that students are, for the most part, uninformed — and, therefore, unsuspecting — consumers of the Web. Helping them do a better job of evaluating information they find on the Web is the next step.

When we "evaluate" something, we seek to judge its worth, appraise it, assess it, or measure its value. The evaluation of information found on the Web must start with the Web site itself, centering on a reflective analysis of the person(s) who created the site, its accuracy and currency, and its structure and ease of navigation.

We can help our students understand the vastness and complexity of the Web by causing them to evaluate sites from a number of perspectives. For example, who is the author of this site and what credentials support his or her authority on the topic? Are there other sites which contain the same information? When was the site last updated? How much of the site is primary source material? These and other questions should cause students to think twice before hitting the "Print" button on their browser.

The url's in the box below point to several sites which help students better evaluate and validate information found on the Web.

Useful Evaluation Sites

•http://www.vuw.ac.nz/~agsmith/evaln/index.htm

•http://library.monterey.edu/faq/eval.html

•http://www.science.widener.edu/~withers/webeval.htm

•http://www.ithaca.edu/library/Training/hott.html

•http://www.uwec.edu/Admin/Library/10cs.html

•http://www.refserver.lib.vt.edu/libinst/critTHINK.html

These and dozens of other links to sites providing information

on evaluating and validating Internet resources, searching strategies,

and citing Internet sources may be found at

http://chiron.valdosta.edu/dlgraf/default.html

Validating Web Resources It is not enough to cause students to *evaluate* the information they find on the Web. They also need to *validate* that information. Validation means that we seek to verify, authenticate, or confirm the accuracy of the information. In doing so, students substantiate that what they have found is indeed useful and accurate.

With such an incredible amount of information added to the Web every day, it would be a safe bet to suggest that there are many, many websites that include inaccurate or misleading information. To promote validation, I offer two basic principles you may want to consider sharing with your students:

- Always, always question the source (evaluation).

- Always, always confirm the source with a non-Web source

(validation).

But there is one more, final step toward helping students better evaluate - and use -Web information.

Web-Savvy Assignments Many of us have not yet reached a point where our assignments cause students to look critically at the information found on the Web. Merely replying "Yes," to the question "Can we use the Web to do this assignment?" does a disservice to students. A possible solution is to ensure that students are given web-savvy assignments.

A web-savvy assignment is one which guides students by specifying the extent to which the Web can be used for the assignment and causes them to evaluate and validate the information they find on the Web. In creating web-savvy assignments, faculty are encouraged to:

• ensure that the students know exactly how the Web may be used in completing the assignment;

• identify any specific web sites you want students to use or avoid;

• include language which specifically requires students to evaluate and validate Web-based information;

• clearly spell out the deliverables required of the assignment.

Several instructors I know promote a very critical approach to the use of Web information. If students choose to use information from a website when completing an assignment, they must print out the appropriate pages from the website and include them with the final assignment. Additionally, students are required to identify secondary source material and confirm the accuracy of the information from a print source. Finally, students are required to include the url's of all sources they visted in researching the assignment. These and other strategies do much to further student understanding of the limitations of the Web.

To see some examples of web-savvy assignments, consider using *Lycos* to search for the phrase "web assignments" or "internet

assignments" (be sure to include the quotation marks!).

Regrettably, students don't much care for the "extra" work required to evalate and validate Web information. If, however, we are to fulfill our role as teachers, facilitators, and role models, we need to show our students a path allowing them to become informed consumers of the Web.

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Essays on Teaching Excellence
Toward the Best in the Academy
Volume 11, Number 7, 1999-2000

A publication of The Professional & Organizational Development Network in Higher Education (www.podnetwork.org).

Fostering Student' Moral Development

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Moral or ethical issues are central to our lives. Our personal relationships can be positive and enhance our lives or be destructive. Societal norms can be based on fairness and ethical values or involve favoritism and disrespect toward certain groups. Ethical behavior is essential in a democracy where, as citizens, we regularly make decisions affecting others.

Since the time of the earliest colonial colleges, American higher education has had a mission to foster its students' moral development. Today, there is concern about a growing incivility and an apparent decrease in level of caring for each other. In addition, some of the highest officials in the land—all college graduates—regularly display unethical behavior that may confuse the nation's understanding of morality. High rates of academic cheating by college students suggest we have a significant moral challenge—and opportunity—for student learning and development.

Now our efforts to foster our students' moral development can benefit from four decades of empirical research, the findings of which can help us have a powerful impact on our students' lives and, through them, society more broadly.

What Research Tells Us This essay focuses on aspects of moral development for which there is robust empirical support and sound guidance for teachers. A person's morality is influenced by a variety of internal and environmental factors. In one conception, moral action is determined by four components: (1) moral sensitivity (comprehending moral content when present in a situation), (2)

moral judgment (determining what is the moral thing to do), (3) moral motivation (choosing to do what moral rather than other values dictate), and (4) moral character (having qualities such as strength of ego, perseverance, and courage to act) (Rest & Narváez, 1994; Rest, Narváez, Bebeau, & Thoma, 1999). (Unless otherwise indicated, descriptions of research and data are drawn from these two sources.)

All four of these components, and perhaps others, work together to influence a person's behavior. Development in one component does not guarantee development in another; all four are necessary for moral action. Of the four components, the second, moral reasoning or judgment, is the most fully researched. It is a cognitive variable upon which we know colleges and universities can have a powerful impact.

The conception of moral judgment used in this essay is based on the pioneering work of Lawrence Kohlberg as modified by more recent research by Rest. Kohlberg hypothesized six different stages or moral philosophies through which people can pass as they develop.

Stage 1: A morality focusing on obedience—yielding to the wishes of those who are more powerful and thus avoiding punishment.

Stage 2: An instrumental morality that seeks personal benefit with little concern for the needs of others. This is the Stage of "The Deal": *caveat emptor*.

Stage 3: A morality that seeks to maximize the quality of relationships. A person does what will gain others' approval.

Stage 4: A morality of law and order: One has a duty to obey the law and maintain the social order.

Stage 5: A morality that focuses on social contract: What is moral is what people have previously agreed to.

Stage 6: A morality that uses abstract, universal ethical principles to decide what is the moral act. Reasoning at this stage respects all people without regard to their ethnicity, age, class, or other personal characteristics.

Comprehension of the various stages is gradually developed, provided one has appropriate experiences. Stages 5 and 6 involve using *principles* to think about relationships among people rather than *rigid laws* given by authority (Stage 4). What is moral is what advances implementation of a principle.

Most people, including college undergraduates, primarily use the moral reasoning of Conventional Stages 3 and 4. Stages 1 and 2 are thus known as Preconventional and 5 and 6 as Postconventional. Many people never develop the capacity for substantial Postconventional reasoning. Although rigid Stage 4 authoritarian moralism and legalism may seem repugnant from a Postconventional *principled perspective*, achieving the shift from the more selfish personal perspective of Stages 1-3 to the sociocentric *maintaining norms perspective* of Stage 4 reasoning is an important moral advance, certainly over Preconventional lawless or criminal behavior.

Developing upward through the various stages, one's reasoning is increasingly concerned with others' needs and less exclusively with one's own. There is a development in capacity to deal with the increasing cognitive complexity and abstraction required to comprehend the reasoning of each successive stage.

Research shows a person can understand not only his/her reasoning currently used when dealing with moral dilemmas but also the reasoning of the stages below, having developed through all of these stages. However, s/he will tend to reject the lower stage reasoning as inferior, too simple, or childlike.

Of the methods of measuring moral reasoning, the most widely used is the Defining Issues Test (DIT), a technically strong, objective paper-and-pencil test. In use since the 1970s, the DIT has been employed in more than 40 nations with hundreds of thousands of people in over 1,500 studies, with around 150 being published yearly. The DIT presents several moral dilemmas to test-takers, who are asked to respond to questions about each dilemma. A P Score, the percentage of Stage 5 and 6 principled reasoning people use in responding to the dilemmas, is calculated from the results and represents their current level of moral reasoning development.

Numerous studies have examined factors that might influence the development of moral judgment. Findings show that although age is associated with stage of moral reasoning, the best correlate is level of schooling. Junior high school students have P Scores that average 21.9 (percent); senior high school students, 31.8; adults in general, 40.0; college students, 42.3; graduate students in business, 42.8; medical students, 50.2; law students, 52.2; liberal Protestant seminarians, 59.8; and graduate students in moral philosophy and political science, 65.2.

Apparently, association with school activities is important for growth. Older people who have completed only high school tend to perform on the DIT like current high school graduates, and older college graduates appear stuck at the level of current college graduates.

Some (e.g., Gilligan, 1982) have suggested women conceive of moral issues in terms of care-giving and relationships rather than justice as in Kohlberg's scheme. But available studies give mixed results (Evans, Forney, & Guido-DiBrito, 1998), and there are no significant gender differences in scores from DIT samples of thousands of people. Many dozens of studies have examined a possible Western cultural bias of Kohlberg's six stages of moral judgment. Meta-analyses of these studies reveal widespread, possibly universal distribution of these forms and this sequence of moral reasoning.

What Teachers Can Do College experiences can have a significant impact on students' moral reasoning. In fact, some of the strongest college effects found in the literature are on moral reasoning (McNeel, 1994). This impact is particularly strong in liberal arts colleges and in disciplines that explore people and values. Students in more vocationally oriented disciplines such as business and education have shown considerably lower DIT score growth over their college experience. In fact, after reviewing research on this issue, McNeel (1994, p. 34) has remarked, "There may be a moral development problem nationally in the areas of business and education," two fields with an enormous impact on society.

Numerous studies in moral education suggest practical tactics teachers can use that will help their students move toward more complex, principled ethical reasoning. Listed here are some methods

consistent with the findings of research on fostering students' moral judgment.

- Have students discuss controversial moral dilemmas. Identify disciplinary issues with moral content—that relate to moral values. Develop cases, problems, or scenarios that involve these values for students to discuss.
- Have students play the roles of and explain the reasoning used by others to resolve moral dilemmas.
- Allow students to discover how various cultural groups reason about moral issues.
- All courses, even in disciplines such as mathematics or statistics that on their surface may appear to lack obviously moral content, offer rich opportunities for helping students develop their skill in moral reasoning. Every course can become a learning community where values of mutual respect, sensitivity to others' needs, and cooperation are emphasized and discussed.
- Ensure all students have ample out-of-class contact with faculty members.
- In addition to high involvement tactics, directly teach Kohlberg's model of six stages of reasoning as one would teach other, disciplinary concepts.
- Use the DIT to help both teacher and students understand their moral reasoning and track and improve program effectiveness.

With such efforts we can indeed foster our students' moral development – for the good of all.

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Essays on Teaching Excellence

Toward the Best in the Academy

Volume 11, Number 8, 1999-2000

A publication of The Professional & Organizational Development Network in Higher Education (www.podnetwork.org).

Higher Level Learning: A Taxonomy for Identifying Different Kinds of Significant Learning

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Two major changes are occurring in higher education that will have a significant impact on teaching and learning if they converge. One is a paradigm shift for institutions from "providing instruction" (the teaching paradigm) to "producing learning" (the learning paradigm) (Barr and Tagg, 1995). Second, in recent years a number of organizations and individuals have been calling for more significant kinds of learning by college students (Association of American Colleges, 1985; Gardiner, 1994). In general, the call is for students to acquire more significant kinds of cognitive learning (e.g., critical thinking as well as "understanding and remembering"), but also for something more than just cognitive learning.

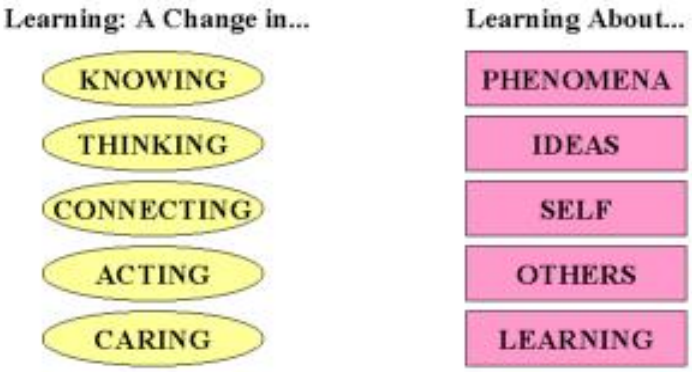
In the past, some teachers have turned to Bloom's classic taxonomy for guidance in providing more significant kinds of learning (1956). However, this taxonomy needs to be updated and broadened considerably. Still others have turned to the powerful concept of active learning (Bonwell & Eison, 1991; Meyers & Thomas, 1993). As valuable as this concept is, it is ultimately a concept that is focused on *how* people learn, not on what they learn. I propose that the higher education community needs a parallel concept that is focused on *what students learn* and that an appropriate name for this concept is "Higher Level Learning."

A Model of Learning In order to respond to the need for new kinds of learning goals, it seems helpful to start by re-conceiving what we mean by "learning." My own rethinking of the concept of learning has been based on my observations of what people are learning when they learn something that they (or others) deem significant. This rethinking has led to the construction of a model of learning that consists of ten components. (See Figure 1.) These components are, in essence, responses to two general questions:

- What are students learning *about*?
- What are the *kinds of change* that occur in learners?

Figure 1

The Components of Higher Level Learning



In any learning experience, students may learn *about* a number of things. They learn *about*...

- **Phenomena** - the "things" in life, e.g., rocks, human behavior, historical events, literature, etc.
- **Ideas** - interpretive perspectives that give meaning to particular kinds of information, e.g., evolution, Marxism, style periods.
- **Self** - one's own personal characteristics, self-image, self-ideal (i.e., what I want to be).

- **Others** - people with whom one has an actual or potential relationship: how they respond to events, how they communicate, what affects them, etc.
- **Learning** - what learning is, how it takes place, what affects it, one's own learning patterns, what helps one learn more effectively.

Regardless of what students are learning about, the learning experience can also result in different kinds of change in the learner, e.g., a change in...

- **Knowing** - an increase in students' "understanding and remembering" of information, relationships, concepts, etc.
- **Thinking** - the ability to think critically, creatively, and/or practically.
- **Connecting** - the ability to connect and integrate, for example, different kinds of information and ideas with each other, classroom learning with other parts of one's life, etc.
- **Acting** - a readiness to "engage in an action": physical actions (e.g., playing the piano), skills (e.g., communication, computer literacy), and/or the ability to organize large complex projects.
- **Caring** - one's feelings, interests, and/or values.

Adding Significance According to this model, there are two ways that teachers can add significance to teaching and learning. One is by helping students **learn about additional things**, e.g., about themselves, about others, about learning. A second way is by helping students **change in different ways**, e.g., by attempting to change their ability to think about the subject, their ability to "do" something, their ability to connect different kinds of knowing, or the degree to which they "care" about something.

Figure 2

A Taxonomy of Higher Level Learning

Type of Significance	Key Component of Learning Involved	Special Value
Learning how to learn	Learning	Provides capability for long-term continuation of learning.
Motivation	Caring	Provides the energy (short term or long term) for learning; without this, nothing significant happens.
Human Dimension	Self, Others	Connects one's self to onself and to others; gives human significance to the learning.
Integration	Connecting	Adds power by connecting different ideas, disciplinary perspectives, and/or realms of life.
Application	Thinking, Acting	Allows other learning to become useful.
Foundation	Knowing	Provides necessary information for other kinds of learning.

The components in this model of learning can be used to construct a "Taxonomy of Higher Level Learning," as shown in Figure 2. Each category represents a distinct kind of learning with a particular kind of value. These six categories, and the key component(s) of higher level learning involved in each category, are briefly described, starting at the bottom of Figure 2 with the most familiar kind of learning.

- **FOUNDATION (knowing):** This is what (we hope) happens in most courses now. Students acquire some basic knowledge, something they understand and remember, usually about some "phenomena" and set of "ideas." This information and understanding is a necessary foundation for other kinds of learning, especially "application" and "integration" learning. However, "knowing" can be about self, others, and learning as

well.

- **APPLICATION (thinking, acting):** When students take foundational knowledge and learn how to think about issues and/or how to become ready to act in regard to that knowledge, they are learning how to "apply" that earlier learning.
- **INTEGRATION (connecting):** Two kinds of integration are currently recognizable in higher education. First, interdisciplinary courses integrate two or more realms of ideas, e.g., an understanding of the biological environment and public policy on the environment. Second, students sometimes learn how to integrate two or more realms of their life, e.g., classroom learning with work life, community life, or personal life.
- **HUMAN DIMENSION (self, others):** Sometimes a course allows students to better understand themselves and/or how to interact with other people. This may happen because of the course content (e.g., studying psychology or sociology) or because of the kinds of learning activities used (e.g., well-designed small group activities). When this kind of learning happens, students are learning about the "Human Dimension" of life.
- **MOTIVATION (caring):** Some courses change the way we feel or care about something, e.g., about the subject of the course, ourselves, or learning. When we care about something, then and only then do we have the motivation and energy necessary to learn about it in a lasting way. Caring creates a desire to learn; without it, little of educational significance happens.
- **LEARNING HOW TO LEARN (learning):** The idea of helping students "learn how to learn" has been around a long time. When students do learn about learning and/or how to learn, they have a greater capability for better learning, both in their present courses and in future learning situations. Therefore, this kind of learning has the potential for generating even more learning in the future.

Using the Concept of "Higher Level Learning" The primary application of the concept of "Higher Level Learning" will be in instructional design. When teachers design learning experiences for their students, this concept and the associated taxonomy can identify several ways for them to formulate learning goals that are truly significant for their students. Also, teachers can use this concept to

weigh the advantages of alternative and innovative ways of teaching. For example, problem-based learning is particularly effective at promoting "application," interdisciplinary learning addresses the need for "integration," and role playing can greatly facilitate learning about the "human dimension" of life.

The concept of "Higher Level Learning" has several other uses as well. Two examples include the following: (a) students can use the concept to guide their own learning when constructing learning portfolios; and (b) institutions, when evaluating the teaching of faculty members, can ask for evidence of the degree to which their courses promote higher level learning.

Ultimately the hope is that the concept of "Higher Level Learning" will provide a "road map" for teaching and learning that is simple and focused, yet rich and complex, for any individual or organization wanting to promote more significant learning in higher education.

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