The scene is the faculty club at a large midwestern university. Three faculty members are engaged in a lively discussion about contemporary college students. One visibly frustrated instructor describes the laborious three hours he devoted to preparing his most recent lecture, only to have his brilliant performance met by blank eyes and emotionless expressions. His young colleague counters that her students are often quite verbal, asking such profound questions as, How long should the paper be? Is this going to be on the test? How can there possibly be more than one answer to that question? And, Why do I have to take this English class? ...I'm a business major!

She laments, "I really love my discipline and I want my students to love it too, often for the simple pleasure of exercising their minds—but they just don't seem to care about learning anything." The senior member of the group listens intently and, with a sigh of resignation, comments, "You know, I've taught at this university for over 35 years and I simply don't understand my students. Where are the ones that value learning for learning's sake, who work autonomously and who originate their own applications of abstract concepts without asking for a concrete directive or example? Teaching used to be rewarding, but now it is pure drudgery. I tell you one thing, my classroom would be a much better place if students were more like me!"

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Faculty 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 underprepared, or less bright or motivated than previous generations. Clearly, the way contemporary students view knowledge and derive meaning are 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.

Most faculty have chosen their careers for the 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 had no idea why they gathered those nuggets and no understanding of how they related to each other. They were certain, however, that the more nuggets they gathered the greater their chances of being accepted to medical school. My colleague asked, "Must I resign myself to these nugget-gatherers all the rest of my professional life? Do I have to give up the goals, aspirations, and joys that made me choose teaching?"

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. This approach may work for us but it may not work for the majority of today's students. Students are changing dramatically, and we need to respond to those changes. What happens, for example, when the learner is not on the same "wavelength" as the teacher—when the connections simply aren't there? If we believe that what we are teaching has real value, then we can benefit from understanding the effect of how we are presenting it and to whom.

Learning Characteristics of New Students

For the past 15 years, my colleagues and I have been fascinated by Pat Cross's observations concerning new students. We have been struck by the similarity between the characteristics of Cross's new students and those entering our institutions. During this period, we obtained a variety of information on approximately 4,000 entering students, all of whom were administered the Myers-Briggs Type Indicator (MBTI), a widely used instrument based on Jungian typology.

The MBTI has been a very useful tool in contributing to our understanding of the role of individual differences in the learning process. Scores obtained from the MBTI indicate a person's preference on each of four dichotomous dimensions. The first two dimensions are particularly helpful in understanding learning styles: extroversion (E) versus introversion (I) indicates whether a person prefers to direct attention toward the external world of people and things or toward the inner world of concepts and ideas; sensing (S) versus intuition (N) indicates whether a person prefers perceiving the world through directly observing the surrounding tangible reality or through impressions and imagining possibilities.

In our initial studies, we focused most of our inquiry on two very broad learning patterns associated with sensing and intuition. The results indicate that approximately 60 percent of entering students prefer the sensing mode of perceiving compared to 40 percent who prefer the intuitive mode. The learning styles of those who prefer sensing are characterized by a preference for direct, concrete experiences; moderate to high degrees of structure; linear, sequential learning; and, often, a need to know why before doing something. In general, students who prefer sensing learning patterns prefer the concrete, the practical, and the immediate. These
Creating a better match between new student learning styles and faculty instruction approaches often means switching to a more active mode of teaching and learning. For students who respond to experiential learning, small group discussions and team projects can be highly effective.

(Photo by Kristin V. Rohler/Rutgers, The State University of New Jersey)
students often lack confidence in their intellectual abilities and are uncomfortable with abstract ideas. They have difficulty with complex concepts and low tolerance for ambiguity. Furthermore, they are often less independent in thought and judgment and more dependent on the ideas of those in authority. They are also more dependent on immediate gratification and exhibit more difficulty with basic academic skills, such as reading and writing. The path to educational excellence for sensing learners is usually a practice-to-

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theory route, not the more traditional theory-to-practice approach. Because these students find security in both structure and clarity, they often request specific information on the length of writing assignments, the content of examinations, and what they should know from lectures. This seemingly constant need for clarity and specificity can be a source of frustration and concern for faculty.

Contrast the sensing learning patterns to those of the intuitives. They are generally global learners, “big picture” types, who prefer to focus their perceptions on imaginative possibilities rather than on concrete realities. Intuitives love the world of concepts, ideas, and abstractions. Their path to excellence is from theory to practice, and they often prefer open-ended instruction to highly structured instruction. They usually demonstrate a high degree of autonomy in their learning and value knowledge for its own sake.

Our ongoing research also reveals some rather dramatic differences between these two learning patterns and goal preferences on the Cooperative Institutional Research Program (CIRP) questionnaire, which was routinely administered to each freshman class over a multi-year period. Students preferring the intuitive pattern indicated that they were attending the university primarily to: become accomplished in the performing arts; contribute to scientific theory; develop a philosophy of life; write original works; or, create artistic works. To the contrary, students preferring the sensing learning pattern indicated that their primary reason for attending the university was to be well-off financially and to have administrative responsibility.

The results of these various studies led us to speculate that there is a very strong link between students who prefer the sensing learning pattern and the learning styles exhibited by new stu-

dents. In comparing our results with data obtained from the Center for the Application of Psychological Type in Gainesville, Florida, we found that on many campuses students who prefer the sensing learning pattern are now in the majority. This is particularly true for relatively non-selective institutions that do not place a premium on entrance examination scores. One might wonder why so many students with the sensing preference are entering college. The reason is fairly obvious when we consider that approximately 75 percent of the general population has been estimated to prefer the sensing learning pattern. As the egalitarian movement emphasizes greater access to higher education, the college population is beginning to reflect the makeup of the general population.

Learning Patterns and Student Performance

During the past 20 years, a great deal of research utilizing the MBTI has focused on the relationship between psychological type and various aspects of the educational process. Our understanding of learning pattern differences is further enhanced when the preferences for extraversion/introversion and sensing/intuition are combined to produce the following patterns:

- ES pattern: concrete active
- IS pattern: concrete reflective
- EN pattern: abstract active
- IN pattern: abstract reflective

These patterns are not evenly distributed in the general population. The ES pattern is the most frequent, representing about 50 percent of high school seniors; the IN pattern is the least frequent, representing about 10 percent. The other two patterns fall fairly evenly between ES and IN. On most college campuses, the distribution is similar, with students exhibiting the strongest preference for the ES (concrete active) pattern followed by IS, EN, and IN. Concrete active learners are action-oriented realists, the most practical of the four patterns, and learn best when useful applications are obvious. The concrete reflective (introverted sensing) learners are thoughtful realists preferring to deal with what is real and fac-
tual in a careful, unhurried way. The abstract active learners (introverted intuitive) are action-oriented innovators having wide-ranging interests and liking new possibilities as challenges to make something happen. Finally, the abstract reflective learners (introverted intuitive) are thoughtful innovators, introspective and scholarly, interested in knowledge for its own sake; they value ideas, theory, and depth of understanding. The concrete active pattern is the most pragmatic and least academic of the four, whereas the abstract reflective is the most academic and least pragmatic. Not surprisingly, there are significant differences in academic aptitude, interests, and achievement between the four patterns.

Under the direction of my colleague, Dave Kalsbeek, staff in the Department of Student Life Studies at Saint Louis University initiated a comprehensive, longitudinal, eight-year study called TRAILS (Tracking Retention and Academic Integration by Learning Styles). A primary objective of TRAILS was to provide educators necessary institutional data on how student characteristics related to choice of major, academic aptitude, and curricular areas, and attrition. The TRAILS database included such institutional information as MBTI scores, ACT/SAT scores, high school grade point average, demographic variables, and students’ responses to the CIRP questionnaire.

Project results suggested some fascinating relationships between learning patterns and such variables as academic aptitude, college achievement, and choice of major. For example, the mean SAT score for concrete active (ES) learners was 932 compared to 1110 for the abstract reflective (IN) learners. This difference of 178 points was statistically significant and such patterns have been remarkably consistent across several institutions. Interestingly, this relationship between learning patterns and scores appears to be consistent on all standardized timed aptitude measures such as the GRE, MAT, MCAT, LSAT, etc. That is, INs score the highest followed by ENs, ISs, and ESs. Although it might be easy to assume that these differences indicate different intelligence levels, the evidence does not support this hypothesis. Because sensing students take longer to read questions, often going over them several times, they seem to be disadvantaged on timed aptitude measures. Furthermore, the argument is often made that sensing intelligence cannot be measured by paper and pencil instruments, and that sensing students (especially extraverted sensors) are at a disadvantage on any timed examination that focuses on the ability to quickly manipulate symbols and see patterns in relationships between words and concepts.

Data from the TRAILS project also revealed fascinating differences in first-year academic performance between the four learning patterns. As a group, students preferring the abstract reflective (IN) pattern make the highest grades while those preferring the concrete active (ES) pattern receive the lowest grades. The results are not surprising since on most campuses students take general education courses during their first year. For the concrete active learner, many of these courses are viewed as obstacles because they have little practical utility. These students are eager to move beyond these required courses and focus their interest on their major. Core curriculum courses can be tremendously challenging to these students if they do not understand their "practical" value or see relationships between these courses and their majors. Interestingly, TRAILS data indicate no differences in academic achievement for the four learning patterns from the beginning of the junior year through graduation.

Not surprisingly, students with different learning patterns often choose to enroll in different academic majors and schools. The TRAILS project revealed that the concrete active (ES) pattern was the dominant pattern in schools of business, nursing, and allied health. The abstract reflective (IN) pattern was disproportionately represented in arts and sciences but significantly under-represented in nursing, where only 9 percent of the students scored as abstract reflective learners.

**Faculty Characteristics and New Students: A Mismatch?**

Colleges and universities today show an increasing disparity between faculty and students, between teacher and learner. What suffers as a consequence is the learning process itself—an observation that pervades in numerous national reports on the status of higher education written in the 1980s. Unfortunately, the natural differences in learning patterns exhibited by new students are often interpreted by faculty as deficiencies. What may be happening, then, is a fundamental "mismatch" between the preferred styles of faculty and those of students.

When comparing the preferred learning patterns of faculty to those of students, it is not surprising to find that faculty prefer the abstract reflective (IN) pattern. MBTI data collected over the years on faculty on numerous campuses reveal that over 75 percent of faculty prefer the intuitive learning pattern, with the vast majority of these preferring the abstract reflective (IN) pattern. On many of these campuses, fewer than 10 percent of the faculty prefer the concrete active (ES) pattern.

Concrete active (ES) learners come to class seeking direct, concrete experience, moderate-to-high degrees of structure, and a linear approach. They value the practical and the immediate, and the focus of their perception is primarily on the physical world. Their IN instructors, on the other hand, prefer the global to the particular, are stimulated by the realm of concepts, ideas, and abstractions, and assume that students, like themselves, need a high degree of autonomy in their work. In many ways, the contrast between the ES learner and the IN teacher characterizes the kinds of frustrations experienced between many students and teachers; and it may be that this basic incongruence is the root of the dilemma in today's college and university classrooms. As faculty, we often create classroom environments that are rewarding to us and to students like us, but these settings can be extremely frustrating for the new students.

**Bridging the Gap**

Information provided by the MBTI and TRAILS project suggests a number of perspectives for designing learning opportunities and academic programs that respond effectively to the diversity of learning characteristics ex-
hibited by today’s students. By utilizing such information, we can achieve greater congruence between teaching styles and learning styles, thereby increasing the probability of students’ ability to master content, acquire critical thinking skills, and understand increasingly complex issues. This knowledge can be particularly helpful to the abstract reflective (IN) faculty member who often struggles to understand the concrete active (ES) learners to connect with their academic values—especially their value of knowledge for its practical utility. Secondly, small groups of students can form learning communities in which to discuss and analyze cases in a relatively non-threatening, supportive peer environment. The interaction that such a setting encourages is also particularly helpful to students with a preference for extroversion, because they learn best by talking about ideas and concepts. Finally, the case method approach helps students apply theoretical perspectives to real-life situations.

Obviously, there are many additional approaches that could be employed in designing learning environments that respond more effectively to the needs of new students. We have seen, ourselves, they want a great deal of feedback from their teachers. They adapt quite well to group activities and collaborative learning. Carefully reviewing assignments, classroom methods, and tests according to how well they match up with the way students learn can be an effective learning process for faculty.

Ongoing assessment of both student learning and the learning environment is also a critical ingredient in “bridging the gap.” It is apparent that new students need frequent feedback on their performance. What is not so obvious is our need as faculty for frequent feedback from our students on their perceptions of our teaching and the effectiveness of the learning opportunities we provide them. I utilized ongoing student evaluations in one of the classes I taught this spring. At the end of each class, students completed a brief form that provided an overall numerical rating of the class and included space to describe the most and least interesting aspects of the class, as well as suggestions for improvement. Although students were not asked to sign their names, they were requested to enter their MBTI learning pattern preference on the form. This frequent feedback enabled me to constantly monitor student reactions to different pedagogical approaches and helped me adapt my approach based on specific patterns in the evaluation.

As we are often reminded by various reports on the status of undergraduate education, learning is not a spectator sport. If we can expand the repertoire of learning activities open to us, perhaps we can greatly increase both our own satisfaction and our students’ learning. I am certainly not suggesting, however, that we treat each student differently, designing 20 or 30 instruction plans for a single class. What I am suggesting is that an overall understanding of how students learn and where they are in the process can help us meet the needs of the new students who sit in our classrooms.

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radically different learning style of the concrete active (ES) learner.
There are many ways to create a better match between new student learning styles and faculty approaches to instruction. In general, these can be categorized primarily as active modes of teaching and learning. For students who prefer the ES pattern, experiential learning that actively engages their senses in the subject matter is often highly effective. Examples include small group discussions and projects, in-class presentations and debates, carefully monitored experiential learning, peer critiques, team projects, service learning, field experiences, developing simulations, and utilizing the case method approach.
In my own teaching, I have found the case method to be particularly effective for a number of reasons. First, because case methods enable students to move from practice to theory, from experiential to theoretical, they allow for example, that new students prefer concrete learning experiences on which they can build toward an abstract understanding. Assignments can be structured to present experience early, theory later. Furthermore, new students appear to need a great deal of structure. Knowing precisely what is required of them and when enables them to gain confidence to attempt the challenge of learning. They prefer sequential learning tasks—building a linear concept rather than having a global concept presented all at once. Because they seem to find open-ended assignments, independent projects, or self-designed learning situations to be extremely challenging, too much diversity in ideas, classroom environment, or assignments can cause the new students anxiety.
Finally, new students, compared to their more traditional predecessors, prefer a high degree of personalism. Because they are often unsure of them-