



Professional Judgment and the Disposition Toward Critical Thinking¹

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Professionals are expected to exercise sound, unbiased judgment in interpreting and analyzing information, determining the nature of problems, identifying and evaluating alternative courses of action, making decisions, and, throughout, monitoring the process and impact of their problem solving activity so as to amend, revise, correct, or alter their decisions, or any element that led up to those decisions, as deemed necessary. Judgment in professional practice, correctly exercised, is a reflective, self-corrective, purposeful thinking process which requires the professional to take into account content knowledge, context, evidence, methods, conceptualizations, and a variety of criteria and standards of adequacy. Professional judgment is what educators have called “critical thinking” but exercised in a practical, professional setting.¹ The exercise of sound judgment requires both a willingness and the ability to think critically.

The multiplicity of parameters affecting professional judgment has direct implications for the education of novice and more advanced practitioners. Given the relationship between professional judgment and the disposition toward critical thinking, scientific investigations of that disposition have direct implications for educating and evaluating professionals.

1. Professional Judgment and the Consistent Internal Motivation To Think

The exercise of core critical thinking skills, such as analysis, interpretation, inference, evaluation, explanation, and self-correction, is essential to the work of the millions who are program directors, administrators, supervisors, managers, military officers, health care providers, customer service representatives, law enforcement officials, educators, engineers, journalists, ministers, athletes, business agents, and entertainers. Poor thinking can easily be as costly as inexperience or inadequate knowledge of the professional field. But not every lapse of thinking is a failure of skills. Arguably indifference, mental

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laziness, or inattention lead to more mistakes than do inadequate analyses or unwarranted inferences. In addition to being capable of sound judgment, practicing professionals must be alert to situations requiring the use of their thinking skills and inclined to use those skills in those situations. The two equally required, although conceptually distinctive, dimensions of professional judgment are the ability and the willingness to think.

The disposition toward critical thinking is the *consistent internal motivation* to engage problems and make decisions by using thinking.² A national survey of employers, policy-makers, and educators found consensus that the dispositional as well as the skills dimension of critical thinking should be considered an essential outcome of a college education.³ For professional preparation at the collegiate level, the teaching of thinking must include, to the extent possible, the sharpening of students' cognitive capabilities and the nurturing of those habits of mind which alert students to opportunities to use thinking to resolve problems and incline students toward doing so.

How can we protect ourselves from professionals who lack either the willingness or the ability to make good judgments? Society has devised several strategies to insure that previously successful decisions are relied upon to solve recurring problems, that flawed and erroneous past judgments are not repeated, and, in general, to minimize the risks associated with relying too heavily on persons with poor or untested judgment. Table 1 lists five main strategies aimed at lowering the risk of flawed judgment.

Given that we can never anticipate every possible problem, or script and automate its optimal response, the fifth strategy, educating persons to think, remains our best defense hope. For the better part of the twentieth century *schooling* has concerned itself with developing techniques, skills and factual knowledge, *training* has concerned itself with supplying scripted solutions to predetermined problems. But *education*, as practiced in the better liberal arts based

Table 1: Judgment Risk Minimization Strategies

- î Build machines and program them to replicate previously successful problem-detection or problem-resolution paths.
- î Write procedural handbooks and protocols which reduce complex processes to step by step recipes.
- î Control access to decision making through requirements such as educational attainment, licensure, work experience, or previously demonstrated willingness, promise, and ability.
- î Limit discretion through legislation, or within an organization, by restricting signature authority, requiring consultation prior to action, line item budgeting, and reviewing decisions of a given magnitude centrally.
- ō Educate persons to think.

professional programs, is structured to include the goal of teaching people to think. Educators seek to instill in students the habits of mind as intellectual integrity, open-mindedness, mental alertness, systematic diligence, confidence in the use of reason, intellectual curiosity, and prudent maturity of judgment, at least within a given discipline or professional field, if not also to use more generally in their personal and civic lives. So, the question transforms itself from the defensive -- how can we protect ourselves -- to the developmental: How can we nurture and strengthen the desirable habits of mind? To do this we must understand the many varied parameters within which professional judgment occurs.

2. The Parameters of Professional Judgment

Using critical thinking as the foundational concept, as a working definition *professional judgment* can be characterized as a goal-oriented decision-making or problem-solving process carried out in the interest of one's client wherein one gives reasoned consideration to relevant information, criteria, methods, context, principles, policies, and resources.¹ The parameters of professional judgment -- as applied in a given discipline or practice field -- should determine how judgment in that field is taught and evaluated.

Teaching judgment requires creating educational contexts which prepare persons to handle the variety of kinds of judgments the future professional must be prepared to address. We can conceive of a judgment context as a particular constellation of specific judgment parameters. **Assessing judgment** achieves greater validity in so far as the professional judgment being assessed is judgment exercised in the maximal number of contexts. If a context is a constellation of parameters, even a cursory analysis of the actual parameters of professional judgment reveals a substantially challenging array.

The first parameter is defined by those **stakeholders** who are most directly affected by the judgment. The client, in whose interests the professional is working, warrants primary consideration. There are a number of secondary level stakeholders; for example, the professional who makes the judgment, that person's employer or colleagues, people with interests similar to those of the client if that case is precedent setting, and the client's family and all those others whose interests may be enhanced or may be jeopardized if the client's interests are maximized. We know of conflicts of interest where the unscrupulous have duped and defrauded clients. Sensitivity to issues of professional ethics, an understanding of how to apply relevant normative principles as approaches to the resolution of such issues, and a habitual readiness to do so are program outcomes addressing concerns relating to the stakeholders in professional judgment. Such judgments exemplify critical thinking skills and habits of mind in the context of ethical professional behavior.

The parameters of professional judgment include the **setting** of the problem or decision which the professional is required to address. The problem or decision at hand can be described along several different dimensions. To oversimplify let us imagine that these continua are simple dichotomies. Even so, the problems or the decisions to be made can be (1) high stakes or low stakes, (2) time-constrained or unconstrained, (3)

novel to the professional or familiar, (4) unexpected or planned, (5) requiring specialized knowledge or accessible by knowledge commonly shared, (6) requiring resolution by the professional working alone or working collaboratively, (7) well-structured/paradigmatic in the field or ill-structured and highly unusual.

If we consider only these seven setting parameters, and then only in the oversimplified sense that they represent sharp diadic contrasts rather than long continua, there are 2 to the seventh or 128 different *kinds* of possible problems. Preparing future professionals in the health sciences, military science, law, business, and other professional programs requires that they be trained in the making of judgments in high stakes, time limited, highly complex work environments. Is it enough to test the judgment of trainees in a subset of these potential contexts and trust that their performance levels will be similar in other judgment situations where the context differs? Educating and assessing professionals, if it is to be reasonably valid relative to actual practice context, must take these varieties into serious consideration.

Beyond the stakeholder parameter and setting parameters, the difference between **problem framing** and **problem resolution** characterize professional judgment. Training programs have long been capable of providing novice professionals with scripts to follow in problem resolution. Once we know what a problem is and how it is best resolved, it is easy to tell students that if they find this problem they should respond in a given way. But educating people with regard to the subtleties of problem identification, interpretation, differentiation, and diagnosis is another story. Often what distinguishes the novice from the more expert practitioner is pattern recognition which comes from reflecting on experience and leads persons to learn what to be alert to, how to interpret situations and events, how to distinguish and evaluate alternative diagnoses, and how to decide that one has, in fact, finally identified the problem or problems. Too often “bad judgments” are the product of problem framing rather than problem resolution.

The **standards** of practice form the fourth set of parameters. Alternative, and at times divergent or conflicting, sets of standards apply when evaluating the adequacy of the judgments made. Professionals must test potential standards resolutions against the probable consequences and they must monitor and adapt the resolution selected for implementation against the actual outcomes being produced. Apart from the parameter of effectiveness, other standards apply as well, such as cost, efficiency, or politics. The standards of law, ethics, and cultural acceptability apply as well. Many professions have codes of conduct and standards of practice which specify additional criteria for when, where, and how judgments must be made. Lastly, social and cultural considerations powerfully influence not who has the ability and desire to make the judgement, but who has the privilege of expressing judgments with socially powerful implications. These parameters again multiply the number of potential contexts of judgment.

The daunting number and kinds of parameters create such a plethora of contexts for professional judgment that any effort to cover all of them with scripts to be memorized would overwhelm educators and assessors. However, education, in contrast to training, does not require covering every possibility. Education

implies preparing professionals with the content knowledge, reasoning skills, and habits of mind necessary to make whatever kinds of judgments might be required.

3. Reflective Problem Solving, Expertise, and Art

The disposition toward engaging in critical thinking is a product of having positive attitudes toward the perceived consequences of thought-guided behavior and the general valuation of the results of using thinking, instead of some other strategy, to select solutions to problems. Such attitudes and valuations are evident in one's personality and can be reinforced or diminished by formative successes or failures in attempts to use thinking to actually solve problems.⁴

We learn to function in complex and highly stimulating and challenging environments by recognizing patterns of context and action which signal familiar problem states. Perhaps, after some meta-cognitive assessment to verify our pattern recognition, we set about reflectively carrying out template or scripted problem solutions which we have crafted in the past and which have been evaluated as ameliorating the dilemma to some degree and better than other scripted solution attempts. With experience and reflection we begin to notice and respond to subtle but important differences, we recognize more and more patterns and the variations within and among them. This is the art of the expert practitioner. Although it can feel automatic, expertise comes only to those who reflect on their practice experience, not to those who merely accumulate experience. This art of practice includes becoming familiar with an ever greater repertoire of problem-patterns as well as becoming familiar with their differentiating characteristics, so that one becomes both more accurate and more efficient in problem diagnosis and problem resolution. As a result, the expert can confidently carry out familiar problem solution paths.⁵ This is not to say that the expert cannot or does not make mistakes. In fact, failure to be appropriately analytical can lead the expert to act too automatically, which in turn can lead to very serious errors.

Less expert practitioners recognize patterns less often and with far less sensitivity to their nuanced differences than does the expert professional.⁶ Unlike the novice whose attention is often on a detail taken out of proportion to its significance, the expert reflects on the adequacy of the problem solving itself. Is the solution path producing the desired and expected results? If not, has the problem and all its relevant parameters been delimited correctly? Should an alternative solution be attempted or the current one continued? At what point should and by what means will it become evident that further decisions are indicated?

Even if a problem presents itself as ill-defined, under-structured, ill-structured, or novel, the expert may yet feel reasonably confident, for perhaps as the problem is more fully delineated it will be clear to the expert which well worn solution path will suffice. But perhaps not. Sooner or later professionals encounter problems for which a solution path must be crafted where previously none existed. If we are experts in the field we are likely to know at this point whether there is existing knowledge that can guide the crafting of such

a solution. If we are novices, we are likely to believe that we must ask the experts what to do, for we are likely to think of the problem as new to us but not new to the discipline more generally.

4. The Seven Habits of Mind that Dispose One Toward Critical Thinking

Whether experts or novices, some approach problems confident in their own ability to reason them through, others mistrust themselves as decision-makers, thinkers, or problem-solvers. Some people are open-minded, others are intolerant. Some seek to approach problems in diligent, focused, and systematic ways; others tend to be scattered, disorganized, and easily distracted. Some seek for evidence and reasons as they consider what to do; others eschew data and principled approaches preferring rather to decide on the basis of impulse, whim, fashion, pressure, or caprice. Some have high levels of professional integrity, others seem unable to step past personal biases, fears, self-interest, or preconceptions. Some see the complexity and subtlety of problems and note multiple possible resolutions; others see things in starker, more dualistic terms, such as good or bad, right or wrong, true or false, black or white. Some people are curious as to the workings of things, they wish to know much more about the problem than simply how to resolve it; others are more than content just to know what to do, and prefer not deal with the why or the what if.

These attitudes, values, and inclinations are dimensions of one's personality which relate directly to how successful we can expect different people to be in the application of their reasoning skills to problem framing and problem resolution. The characteristics which describe the ideal critical thinker have been determined more precisely through two independent studies using social psychological research methods.^{1,7} Seven distinctive elements emerged within that description when statistical techniques of factor analysis were applied. In their positive manifestation, these seven characterological attributes or habits of mind, if you prefer, are named **truth-seeking, open-mindedness, analyticity, systematicity, critical thinking self-confidence, inquisitiveness, and maturity of judgment.**⁴

Of course, there are vices which are the negatives of each of the seven virtuous habits of mind. The antithesis of the ideal would be a person who habitually approached thinking by being *intellectually dishonest, intolerant, inattentive, haphazard, mistrustful of reason, indifferent, and simplistic*. While the virtues are obvious assets to the practicing professional, the vices are perhaps even more obvious liabilities. From the research perspective, what becomes interesting is how different persons and groups of persons profile on these seven characteristics. Without the preconceptions forced by excessively complicated theoretical models, an equally interesting empirical question is how the disposition toward critical thinking correlates with overall skill at critical thinking, academic success, personality, personal development, and the appropriate exercise of professional judgment in a given context. How will these seven characteristics influence the quality of professional judgment in relation to the parameters outlined above? What are the individual and societal costs when judgment is intrusted to professionals who are ambivalent or negative on one or more of those seven?

5. Early Findings: Age, Ethnicity, and Gender

Even today the most widely known and widely used measures of critical thinking are skills tests.⁸ It was not until the publication of the *California Critical Thinking Disposition Inventory* (CCTDI) in 1992 that researchers had a valid and reliable measure by which to profile a person's critical thinking habits of mind.^{9, 10} The CCTDI reports scores ranging from 10 to 60 on seven scales: truth-seeking, open-mindedness, analyticity, systematicity, critical thinking self-confidence, inquisitiveness, and maturity. A score of 40 or above indicates affirmation of the characteristic, a score of 30 or less indicates the opposite, a disinclination or hostility toward that same characteristic. A score of 31-39 indicates ambivalence. The CCTDI reports a total score, which is the sum of its seven scale scores, ranging from 70 to 420. A total score of 280 or higher indicates a positive overall disposition toward critical thinking, whereas a total score of 210 or lower indicates the negative disposition averring critical thinking.

A variety of research projects using the CCTDI began almost immediately. For example, in 1992 Ferguson and Vazquez-Abad performed a principle components analysis of pretest and post-test CCTDI data on 254 French speaking Canadian seventh grade science students which provided additional evidence of the construct validity of the CCTDI.¹¹ In this study CCTDI scores significantly correlated ($r=.35-.37$, $p<.001$) with the GALT, a tool which measures formal reasoning skills and with the TIPS II, a test of scientific reasoning procedures, ($r=.22-.44$, $p<.001$). These students showed a statistically significant mean gain from 290 to 296 on total CCTDI score over the course of the year of junior high science ($t=4.54$, $p<.001$), which suggests that growth in the overall disposition toward thinking may occur in the context of instruction focusing on the skills and procedures associated with good reasoning in a content area. If it can occur with these young students, what does that mean for cognitive development and education in general, and what does it mean for teaching novice professionals about the thoughtful exercise of judgment?

Ferguson and Vazquez-Abad reported an overall CCTDI mean score of 296 for 254 French speaking seventh grade science students. By contrast, a study of 85 English speaking **junior high students** in Texas reported an overall CCTDI score of 260, which indicates that as a group these students were generally ambivalence toward critical thinking.¹² Lowest among the seven scale scores was the *truth-seeking* with a mean of 33.6, which indicates that the students in this sample were ambivalent at best with regard to asking tough questions, seeking best knowledge, and pursuing reasons and evidence even if these might conflict with their cherished beliefs or self-interest. We might wonder what environmental differences produced the overall positive scores from the Quebec schools and the overall negative scores from the Texas schools? Certainly more data on junior high students' thinking dispositions need to be gathered before we might presume to understand these differences. Conversations with many around the world seeking to develop or evaluate programs to nurture positive habits of mind lead us to urge that *modeling and cultivating a healthy culture of learning and inquiry* may be as important, or more important, than any instructional content. We must develop ways to externalize the critical thinking used in professional judgment so that students and

colleagues can observe and learn from the thinking skills and habits of mind exhibited and so that the judgments made by students and colleagues can be better evaluated.¹³

Ethnic and societal differences are often thought to be related to critical thinking. In a public high school in Phoenix which enrolls native English speaking students and native Spanish speaking immigrant students, critical thinking data was gathered from students using both Spanish and English language forms of the CCTDI and CCTST instruments. The mean for the English speaking high school students on the CCTDI was 270 ($N=271$), while the native Spanish speaking students ($N=240$) scored 275 ($t=2.03$, $p<.04$). Both totals support the findings of the McBride study indicating aggregate high school student indifference toward critical thinking. There was considerable overlap in the seven scale scores of both groups, although a few statistically significant differences were discernable, with native Spanish speaking students scoring higher on inquisitiveness, systematicity, and confidence, as compared to the native English speaking students who scored higher on truth-seeking and cognitive maturity. However, in no case did one group differ from the other as to overall positivity or negativity for any of the seven dispositional scales.¹⁴ These data may partially debunk preconceptions about whether the disposition toward thinking might differ by language or cultural-ethnic group, but it reinforces concern about the possible broad weakness of this vital habit of mind among high school aged students in the United States.

In a study of 393 Latino public high school students in Southern California's Riverside and Orange Counties near Los Angeles, the disposition toward critical thinking was positively correlated to the academic success indicators: grade point average; high school basic proficiency examinations in mathematics, reading, and writing; and mathematics achievement. Interestingly the disposition toward critical thinking was inversely related to socioeconomic status suggesting strong values placed on education in economically disadvantaged neighborhoods in those students who remain in the educational system.¹⁵

Taking the question of ethnicity from the schools to the workplace we find that accents, culturally-based thinking styles, values, and physical appearance are perceived by employees as assets or liabilities in the corporate world.¹⁶ However, when Mancinelli studied adult Mexican-American and Anglo-American **middle managers** in Portland Oregon, he found that, as compared to their Anglo counterparts, the Mexican-Americans had equal or stronger critical thinking skills. Yet, the Mexican-Americans experienced significant economic disadvantages in terms of salary and promotions.

Gender, like ethnicity, is a target of societal prejudices about differences in thinking. However in the Phoenix high school study no significant differences on *overall* CCTDI scores between females and males in either language group were found. The English speaking high school females ($N=115$) scored significantly higher than the English speaking male students ($N=156$) on open-mindedness ($t=2.58$, $p<.01$) and cognitive maturity ($t=2.29$, $p<.02$). Spanish speaking females ($N=127$) scored significantly higher than Spanish males ($N=113$) on analyticity ($t=2.0$, $p<.05$), while the Spanish speaking males scored significantly higher than

the Spanish females on truth-seeking ($t=2.39$, $p<.02$). But, as before, one gender group never showed a positive mean score while the other showed a negative mean. These findings regarding the fundamental equivalence of males and females on the overall disposition toward thinking, with some nuances of difference in some scales scores, are consistent with those we reported in our studies of college students.¹⁷

6. Intellectual Dishonesty and Ambivalence Toward Seeking Truth.

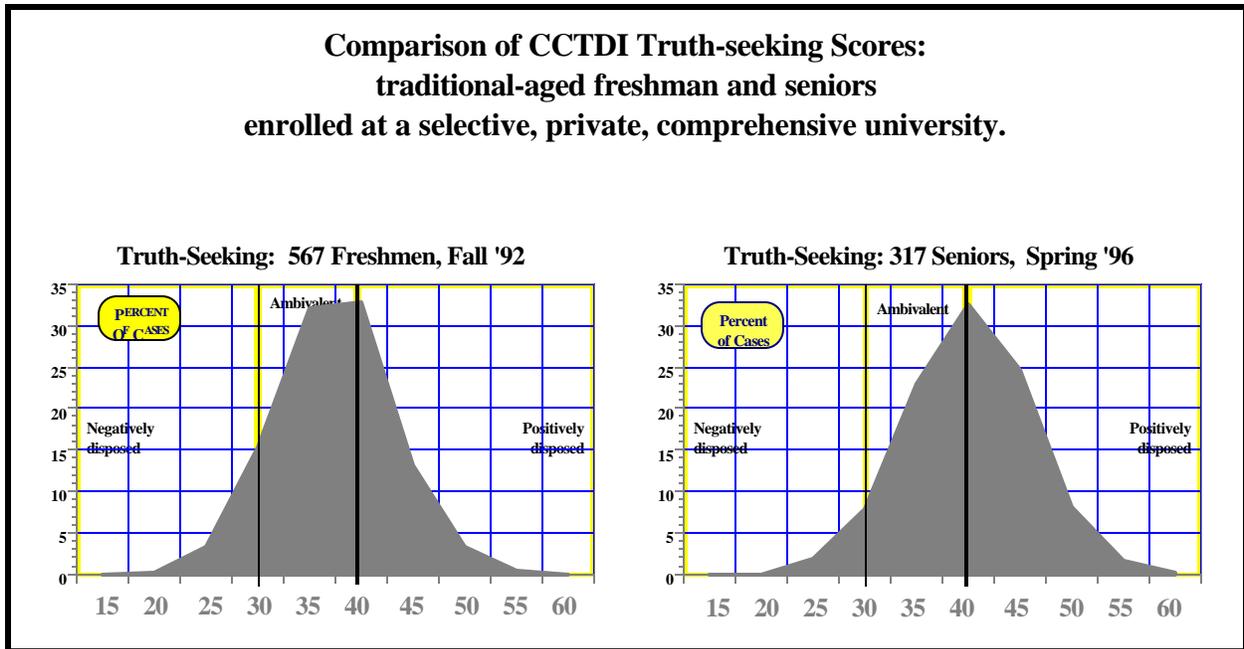
Although decision-makers and practicing professionals readily affirm truth-seeking as a value, this virtue appears as a definite strength in less than half of those individuals tested so far.² *Truth-seeking is the consistent internal motivation eagerly to seek best knowledge in a given context, to be courageous about asking questions, and to be honest and objective about pursuing inquiry even if the findings do not support one's self-interest or one's preconceived opinions.* In short, truth-seeking is courageous intellectual honesty. From the data collected at scores of settings in a wide variety of contexts it would appear that the majority of us are disposed not to seek the truth courageously and not to pursue reasons and evidence wherever they might lead. Although there are a number of exceptions and individual pattern differences, most of those many thousands of persons surveyed to date appear to be inclined to discount evidence which runs counter to preconceptions, to minimize reasons which disagree with conclusions already embraced, and not to engage questions or problems which are frightening or where the solutions might be disturbing. This apparent societal weakness in intellectual integrity does not bode well for those seeking strong candidates for admission to professional preparation.

Thus, apart from the more general question of how to nurture the overall disposition toward critical thinking, educators and mentors must confront the more worrisome question of how to instill in students and professionals a measure of intellectual integrity. This is not a case of strengthening an inclination already present, but more often, of moving a person from intellectual dishonesty or ambivalence with regard to best knowledge in a situation to a position where the person comes to value and courageously seek best knowledge. The first questions must be, can this even be done?

In the spring of 1996 we surveyed undergraduates at the same selective private university where we had gathered data on entering freshmen four years earlier. The mean for 1992 freshmen ($N=567$) was 300.5, with a standard deviation of 26.8, and a range of 190 points. The mean for 1996 seniors ($N=317$) was 309.4, with a standard deviation of 29.2, and a range of 165 points. A pretest posttest analysis of 155 cases showed a gain from a mean score of 303.4 in 1992 as entering freshmen to 310.8 as exiting seniors in 1996. ($t=3.244$, $p<.001$). As with the study of French speaking junior high students, this is a small but encouraging sign that while the disposition toward critical thinking is a relatively stable thing, growth is possible.

As with other studies, the scores on truth-seeking were disappointingly ambivalent in both the freshman and senior samples. A cross sectional comparison of the 567 traditional college freshmen who entered college in 1992 with the 317 graduating seniors at that same selective, private, comprehensive

university in 1996 showed that the truth-seeking scores of seniors were generally in the ambivalent to positive range, whereas the scores of freshmen were in the ambivalent to negative range. The figure below illustrates these differences.



Data on the 155 fall 1992 freshmen who were graduating seniors in the spring of 1996 showed significant overall gain on the CCTDI. Two scale scores showed significant gains: truth-seeking which moved from a mean of 36.1 to 38.8 for the matched pairs sample ($N=155$, $t=5.7$, $p<.001$) and critical thinking self-confidence, which moved from a mean of 42.7 to 44.8 ($N=155$, $t=4.39$, $p<.001$). For these 155 students, the means on the other five scale scores were greater than 40 and were equally or higher in 1996 than in 1992, but none showed significant change over the four years of their baccalaureate education. However, the movement of the scores in truth-seeking showed considerable dispositional transformation over the four years, with 15% of the 155 students moving from a negative disposition in 1992 to recording ambivalent attitudes toward truth-seeking in 1996. Another 26% moved from ambivalence as freshmen to a definite espousal of truth-seeking as seniors. Only 1% transformed from negative to positive, but no students showed movement from positive on truth-seeking to negative.

While we conceive of these dispositions as habits of mind, it is disconcerting that a college education does not impel or attract more students to move from ambivalence to a positive inclination and attitude toward intellectual honesty, objectivity, and courageous desire for best knowledge. Our hope is that those who espouse truth-seeking will discover rewards as a result of this habit of mind in their personal as well as professional lives. We hope those who are truth-seekers in some situations but not others will come to value

their more intellectually honest endeavors at following reasons and evidence objectively and, thus, will expand the number and kinds of situations in which their truth-seeking inclination overpowers the blinding influences of self-interest, bias, fear, preconception.

7. Cognitive Development and Critical Thinking

King and Kitchener have scientifically investigated the relationship between comparable personality features and intellectual growth.¹⁸ They present a stage-theoretical model of the development of reflective judgment. Although the person's view of the nature of knowledge and the person's concept of what counts as justification differ and become more sophisticated as the person matures through the various stages in the King-Kitchener model, within each stage persons are able to exercise critical thinking skills, even if not reflecting meta-cognitively on their own thinking at the early stages.¹⁹

Just as with theories of moral development, progress on the reflective judgment model is occasioned by the sense of conflict or dissonance felt when the given stage is less than adequate for making the kinds of judgments the context demands. As the view of the nature of knowledge and the concept of justification come to be seen as inadequate, progress to the next higher stage is possible. Intellectual growth is accomplished by an education which challenges students with problems and decisions which, by not conforming to the paradigms of a given stage, lead students to realize that knowledge and justification require more sophistication. Nurturing students during the uncertainties associated with transition from lower to higher stage thinking is as vital to the educational process as the cognitive dissonance the challenge creates. We believe the proper combination of challenging and nurturing fosters in students an appropriate confidence with respect to their own reasoning and provides positive contexts within which to grow in truth-seeking.

The preparation and mentoring of novice and developing professionals follows a similar regimen. Challenging and yet nurturing, the mentor presents ever more complex problems or cases which, to the one being guided, are novel and ill-structured. Thus impelled to make more ever nuanced judgments, one comes to an ever more sophisticated understanding of professional practice as one becomes familiar with its judgment parameters and the extent of its problem contexts. Thus, one achieves a more mature and nuanced understanding of the nature of knowledge in the professional field and of what counts as justification for the decisions made in practice. And, one becomes more artful at demonstrating cognitive maturity in critical thinking; for example, deferring judgment when the context allows, or achieving closure when the parameters of the problem demand.

Concern to improve how people think, in contrast to what they know, may seem misguided, given the small gain in the disposition toward critical thinking reported in the four year longitudinal assessment of college students. Similarly disconcerting might be the statistically significant but small gains reported in critical thinking skills in a pretest posttest control-group longitudinal study of 1169 college students at a public urban

comprehensive university in 1989-90.²⁰ Measures of critical thinking skills are highly correlated with measures of mental ability.²¹ Similarly, measures of critical thinking disposition are highly correlated with personality measure that are stable, rather than volatile.^{7, 10, 15} Findings like these raise questions about what we should reasonably expect from a college education. Perhaps the educational objective should not be to produce resounding gains in abilities or transformational changes in habits of mind, but to educate students to be willing and able to use the thinking abilities they possess in ever broader and more diverse domains of knowledge and practice.

8. The Assessment of Professional Judgment

As a standard for the assessment of professional judgment we propose that **the parameters of the anticipated judgment situations dictate the parameters of the authentic assessment of judgment.** With this standard in mind, data gathering for assessment purposes must be structured so that those whose judgment is being assessed will display the process of judgment, not just the product, in as many kinds of situations as is typical for the level of practice being evaluated. Table 2 lists considerations when structuring one's strategy for the assessment of professional judgment.

9. A Tool for Assessing Judgment in Novice Professionals

The assessment of professional judgment requires attention to both the ability to make

Table 2: Elements of the Professional Judgment Assessment Context

- * Evaluators' concurrence on the criteria and standards which will determine adequacy or proficiency for the level of persons whose judgment is being assessed.
- * Tasks which require attention to the interests of the primary and secondary stakeholders represent the range of expected problems as determined by setting parameters require attention to problem framing and as well as problem resolution call for the application of the knowledge domain within which judgments are required and expected require application of appropriate legal, professional, ethical, and cultural standards.
- * Evaluators' adjustments for the domain-specific elements which may influence the quality of judgment within that domain.
- * Evaluators' determination of the kind and quality of the evidence which may be obtained and used to determine whether those persons being evaluated have achieved the desired standard for judgment across that domain.
- * Evaluators' selection of the methods whereby to gather that evidence.
- * Evaluators' interpretation of that evidence relative to the decision that those being evaluated do, in fact, engage in the higher order thinking in the workplace.
- * Method for establishing the reliability with which different evaluators are able to determine whether persons satisfy the standards and criteria which have been established.

sound professional judgments and the inclination to do so. The expression “willing and able” is apt. Skill without disposition is a non-starter. Disposition without skill is a poor finisher. Development as a professional requires sharpening the skills and nurturing the dispositions. And this means that we must be able to recognize their manifestation in a professional’s behavior and attitude.²²

Evidence of positive habits of mind with respect to making professional judgments is not that difficult to observe, if one is looking. In films, novels, and real life it is not uncommon to see professionals deeply engaged in the process of resolving ill structured problems; objectively seeking for reasons and evidence to support decisions, claims, accusations; endeavoring systematically and analytically to identify problems, interpret situations, and anticipate consequences; inquiring about new knowledge, following up on possible sources of new information; reconsidering past decisions in the light of new information; and avoiding hasty judgments but moving toward necessary decisions in timely way. And in many novels, films, and real life contexts we have seen the potentially disastrous consequences of not exercising good judgment.

To facilitate and operationalize the measurement of professional judgment in the academic settings and the workplace requires efficient instrumentations which can be implemented by practicing professionals as part of employee development. Useful tools can be built if one draws on a sound theoretical understanding of critical thinking and the pragmatic sensitivity to the weak or strong thinking which is so evident in actual professional practice. For more academic settings we introduced the *Holistic Critical Thinking Scoring Rubric* in 1994.²³ For professional workplace settings we suggest the newly developed *Professional Judgment Rating Form: Novice / Internship Level*,²⁴ [A copy of this rating form is appended at the end of this paper.]

10. The Agenda for Research on Professional Judgment and Critical Thinking

The science of the measure of thinking dispositions in general and in relationship to professional judgment is in its infancy. There are far fewer scientifically developed instruments and validated theories than the empirically-minded require. Far more is yet unknown than known. But several questions worthy of scientific investigation become evident as this new area of empirical research emerges from its speculative and philosophical origins:

- < What effect do various personality characteristics have on professional judgment?
- < Which variables in the judgment context influence the quality of the judgment?
- < How do the values, customs, and cultures of the workplace and the profession affect one’s critical thinking habits of mind over time?
- < What works to make persons both willing and able to engage in critical thinking in the exercise of professional judgment?
- < How are positive and negative critical thinking habits of mind related to other dimensions of personality and professional practice, such as humor, persuasion, and leadership?

< Beside strong thinking skills and the disposition to use them, what else is required if we seek to educate professionals of conscience and compassion as well as competence?

One thing is definite, however, the education and evaluation of professional judgment requires that critical thinking must not be trivialized as a mere kit bag of clever skills and must not be relegated to the irrelevancy and sterility of the lecture hall. As individuals and as a society we expect and require that professionals shall be both willing and able to exercise sound judgment and that intellectual integrity should not be something about which practicing professionals are merely ambivalent.

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**PROFESSIONAL JUDGMENT RATING FORM:
NOVICE / INTERNSHIP LEVEL
CRITICAL THINKING ABILITIES AND HABITS OF MIND**

Name: _____

Position Title: _____

YES NO:

I would describe this individual as:

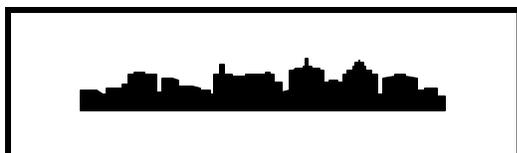
- | | | |
|-----|-----|---|
| ___ | ___ | 1. Willing to engage challenging problems in the workplace. |
| ___ | ___ | 2. Systematic in approaching problems and available solutions. |
| ___ | ___ | 3. Indifferent to problems constraining performance of co-workers. |
| ___ | ___ | 4. Too quick to define problem situations in ways that neglect relevant context. |
| ___ | ___ | 5. Too quick to discard potential alternative solutions for a problem. |
| ___ | ___ | 6. Inclined to respond to problems with familiar but inappropriate strategies. |
| ___ | ___ | 7. Intolerant of potential solutions outside of existing protocols or procedures. |
| ___ | ___ | 8. Willing to reconsider decisions in light of new information. |
| ___ | ___ | 9. Mindful of relevant considerations when addressing a dilemma. |
| ___ | ___ | 10. Likely to be the person to identify a problem that requires attention. |

This individual is one who:

- | | | |
|-----|-----|---|
| ___ | ___ | 1. Seeks clarification of the problem and the terminology used to discuss it. |
| ___ | ___ | 2. Seeks reasons and evidence to support offered assertions and evaluations. |
| ___ | ___ | 3. Belittles the views, opinions, suggestions, or perspectives of others. |
| ___ | ___ | 4. Applies policy or performs tasks without reflecting on quality or impact. |
| ___ | ___ | 5. Focuses more on the concerns of self or co-workers than on the needs of clients. |
| ___ | ___ | 6. Worries more about the origin of an idea than its quality. |
| ___ | ___ | 7. Generally declines to participate actively in problem solving strategy discussions. |
| ___ | ___ | 8. Integrates new information and adjusts direction to resolve a difficult problem. |
| ___ | ___ | 9. Anticipates consequences likely to occur as a result of decisions. |
| ___ | ___ | 10. Anticipates potential difficulties and suggests possible responses before problems arise. |

Evaluator: _____

Date: _____



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www.calpress.com

Professional Judgment: To be effective professionals persons must be willing and able to make sound judgments. That is, they must have the skills and the habits of mind which lead to decisions which give due consideration to the relevant methods, evidence, contexts, theories, and standards. The critical thinking skills of analysis, inference, and evaluation are central to this process, as is the ability to reflect on one's own problem solving and make needed corrections. Equally important is the consistent internal motivation to use one's thinking skills correctly. That motivation is manifest by being inquisitive, systematic, analytical, confident, judicious, open-minded, and intellectually honest as one makes judgments that are as precise and well-informed as the circumstances of one's professional practice will permit.

Scoring and Interpretation of the Rating Form

If you do not know this individual well enough to answer **at least 17** of the twenty items with reasonable confidence, you should not complete this rating form. Critical thinking abilities and habits of mind are manifest with a possible top score of 20. To score the rating form:

Score +1 point for each YES on items 1, 2, 8, 9, and 10.
+1 point for each NO on items 3, 4, 5, 6, and 7.

Scores 18-20 Very Strong: Constantly demonstrates the consistent internal motivation and mental ability to make professional judgments in the workplace. Makes judgments that are mindful of relevant considerations, contexts, methods and criteria. Has a style that reflect a judicious, open-minded and honest approach to judgments in the workplace.

Scores 15-17 Positive: Adequately demonstrates the ability and habits of mind to make professional judgments in the workplace. Generally fulfills the demands for professional judgment of the quality required of individuals holding this position.

Scores 8-12 Marginal: Inconsistently demonstrates the ability and motivation for making professional judgments in the workplace. At times appears to lack the motivation or to lack the ability to make judgments of the quality required by individuals holding this position.

Scores 7-9 Negative: Demonstrates the lack of mental ability or personal motivation for making professional judgments in the workplace. Appears indifferent, resistant, closed minded, disorganized or biased. Most often appears to be unable or unwilling to make judgments of the quality required by individuals holding this position.

Scores 0-6 Very Poor: Constant demonstration of lack of thinking skills and a motivation not to make professional judgments in the workplace; has an aversion to honest engagement of reasons and evidence; makes thoughtless, unreflective, self-serving, or uninformed judgments. Has a style which reflects imprudence, intolerance, disorganization, and immaturity of judgment.