

## Talking Critical Thinking

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Beneath the quad's purple canopy of jacaranda blossoms, the dean of the faculty sat hunched over her laptop trying to gather her thoughts for her afternoon presentation to the Board of Trustees. As syncopated as a hip-hop beat, the approaching sound of a dribbling basketball invaded her consciousness. "What's the matter, your e-mail down?" asked the women's hoops coach, settling down beside her.

"No," replied the dean, "Just enjoying the day. The morning session with the trustees was, let's just say, challenging."

The coach tucked the ball under her arm. "Budget issues?"

"No. We're fine financially. They wanted to talk academic accountability. Don't get me wrong—half those folks are alumni, and they love the place. But this one guy, he owns an engineering firm, said he couldn't find any college graduates who knew how to think. That's all it took. Everyone was into it: attorneys, bankers, the mayor, what's-his-name who works at the capitol, all of them talking about critical thinking, and how colleges need to guarantee that their graduates can think."

"What's the problem? Isn't that what we do?"

"Sure it is! But, with basketball you have a win-loss record. It's easier..."

"Whoa there, Dean! Meaning no disrespect, but training athletes to think as a team isn't exactly easy."

“Sorry, coach. Didn’t mean to trivialize. But in sports there’s a clear definition of success. Our trustees probably can’t tell you what the term ‘critical thinking’ means.”

“I’ll bet they know it when they see it, right?” said the coach. “The average sportswriter can’t tell you all the rules of basketball, but they sure know good basketball from bad basketball when they see it. You don’t need a definition. Just agree on the basic idea. Then you get on with it. Introduce the core skills and have the kids play so they can begin enjoying the game.”

“We actually have a working consensus about critical thinking,” said the dean. “It comes down to reflective decision-making and thoughtful problem solving about what to do or believe. You know, analyze the situation, evaluate claims, draw good inferences, supply sound reasons, and check to make sure you haven’t missed something important.”

“Sounds like passing, dribbling, shooting, and playing good defense to me. But you have to put the skills together to win games,” said the coach.

The dean looked at her for a few seconds and then said, “Thanks, you’ve given me the start I needed,” and then began typing furiously on her laptop.

Watching, the coach added, “One more thing. Desire. With Kobe and Shaq, the Lakers were loaded with skilled players in 2004, but the Pistons won the championship because they had the work habits, drive, persistence, confidence, and trust in their teammates. The Lakers didn’t.”

“Same applies to critical thinking,” said the dean. “Nothing like a passionate desire to know the truth, the courage to follow the reasons and evidence wherever they lead, and the integrity to be objective even if you learn things that go against your own cherished beliefs. Wow, if a college education could guarantee that!”

“Yeah...and if our players were as hardworking as Ben Wallace, Steve Nash, Magic, or Bird, we’d never lose a game.”

“I don’t know, Coach. Those guys were blessed with serious talent.”

“Maybe, but I know that each of those guys practiced and practiced all through their careers. Even as a pro, Nash shoots 500 baskets a day in the off season. It may seem natural when

a player is at the top of his game. But there's no greater insult to an athlete than saying he or she became successful without hard work, dedication, physical training, and mental conditioning."

"I hear you, Coach. Skills and dispositions are mutually reinforcing. Expertise comes from practice and from the desire to continue perfecting your skills."

"And good coaching," said the coach, with a laugh. "If you practice mistakes, you're only reinforcing errors."

"We call that meta-cognition," said the dean.

"We call it half-time," said the coach. "We step back, evaluate things, and, if necessary, make adjustments." With that, she stood up, wished the dean luck with the board, and strode away.

Watching her, the dean wondered: What's my win-loss percentage? How many graduates left here last weekend with stronger critical thinking skills and dispositions than they came in with?

The chief financial officer shambled down the stone steps of the administration building and headed in the dean's direction. Reaching the shade where the dean was typing, he plopped his ample girth onto the bench across the sidewalk. "Heck of a board meeting this morning! I thought they were going to require all students to take a critical-thinking course."

"Good thing they didn't," said the dean.

"They could though."

"No argument there," said the dean. "Should we offer such a course? Yes. Should it be required? No. People have been learning to be good critical thinkers for millennia without taking formal courses. Not that an explicit requirement for critical thinking as a learning outcome wouldn't be useful. Actually I favor that. But we don't have to restrict students' choices to only one or two specific courses when faculty in every subject can teach for critical thinking. Say, let

me ask you something. You're an excellent thinker—I've seen your work on the budgets. Where did you learn to think so well?"

"I learned about budgeting, accounting, and financing in..."

"No, that's not what I meant. Where did you learn to analyze, follow reasons and evidence, ask insightful questions, draw warranted conclusions--things like that? Was it at home, or in school, or where?"

After a long pause the CFO answered, "A couple of places. My uncle would come for Sunday dinner when I was a kid. He loved to argue with my parents or me or anybody who was around. Mostly we'd disagree about religion or politics. He'd open walnuts by smashing them on the tabletop, and at first he could smash my arguments just as easily. Each week I'd think about what I should have said and what I'd say next Sunday. Over time I got better at defending my ideas--and at poking holes in his too. Sunday dinner with my uncle — those were some fun times."

"Where else did you learn good critical thinking?" asked the dean.

"I don't know if you'd call it 'critical thinking' but I'll tell you what, I learned a heck of a lot from my old high-school geometry teacher. He was a huge bear of a fellow, a former football player who could put the fear of God into the heart of any 15-year-old. Wouldn't let us take notes in class. Called five kids to the board every class to prove a theorem or solve homework problems. We had only two choices. Option one: memorize every theorem, every step of every proof, and every reason for every one of those steps. Option two: learn to think our way through problems. Those who tried memorization didn't make it past mid-terms. At first I hated it, but in the end he was the best teacher I had in high school."

"What about college?"

"I liked the faculty who used case studies, experiments, and group projects. You know, puzzle your way through a big messy situation, figure out what the issues are, sort out the

information to see what's relevant, come up with some options, then test them to see how they work.”

“What about great lecturers? Didn't you learn to think in their courses too?”

“I remember one, a history professor my sophomore year. I loved his classes. Always something new. His take on the war, on civil rights, on almost everything always left my head full of more questions than answers. He used to say, for example, that any administration's sole purpose in going to war is not to win the war, but rather to wage the war. He argued that governments stay in power by convincing the people that they're necessary in order to combat some evil and fearsome enemy—if not a physical one, like some dreadful dictator or rogue nation, then an abstraction, like terrorism or communism. Always an enemy to fear, always a war to keep us all safe, always chipping away at civil rights, always expanding executive powers, always an urgent need for the present administration.”

“That professor turned you into quite a cynic. Yet here you are, a CFO 'suit.’ ”

“I didn't say I agreed. I said he really got me thinking. He'd say outrageous things and make cogent arguments, but if you tried to agree with him in class—or worse, give him his own views back on a test—he'd destroy you. I remember once I tried that on a term paper and he wrote in red, 'These opinions are not yours and I am not loaning them to you. Live in your own house, not mine!' It wasn't about his opinions. It was about the way he demanded that we think rigorously and make careful interpretations of the facts before we opened our mouths.”

“Sounds like a great teacher,” said the dean.

“He was.” The CFO hoisted himself off the bench. “Thanks for the chat.” He started toward his office and then turned back to say, “You know, I hope our students get opportunities to learn with professors who open their minds the way that guy did.”

“They do,” said the dean. “I'm sure of it.” And although the dean was in fact quite sure of it, she started wondering how she might demonstrate that to someone who didn't know the faculty as well as she did.

As the dean typed a few more notes, Pat and Chris from the development office came strolling along talking. The dean could hear “marketing problem” and something about “brand identity.”

“Hey, Dean, glad we caught you. Here, look,” said Pat, thrusting a batch of page proofs at her. “Check out these color palettes and type fonts for our enrollment-management materials. Do you like lemon yellow Verdana on a magenta field, or navy blue Cornet on burnt silver?”

Ugh! thought the dean. I didn’t get a Ph.D. in Psychology for this! “Whatever you pick is fine with me,” she said, handing back the proof. “It’s what we can say about the education here that matters. Parents want to know that their sons and daughters will learn to think critically here. They don’t care what font we use to say that.”

Pat, clutching the page proofs, replied, “Well, we’d be happy to print it, if we could prove it.”

“How we going to do that?” blurted Chris. “Give students a test?”

“I’m not the dean. Ask her,” replied Pat, still smarting from the dean’s comments. “If she believes we’re teaching students to think, there should a way to show that they get it—‘truth in advertising.’ ”

“Well, I don’t see how a person can test for critical thinking,” said Chris.

“Actually,” said the dean, “there’s been over a century of research on how to construct valid and reliable tests of intellectual skills and dispositions. There are several good ones out there for critical thinking.”

“Multiple choice tests?” asked Chris.

“Yes,” said the dean. “Usually the test questions provide students with something interesting to think about, including relevant information they wouldn’t be expected to know. The answer choices are written so that students with stronger analytical, inference, and evaluation skills can reason to the best choice in the group. Those with weaker reasoning skills gravitate

toward the poorer choices. The questions aren't easy to write. But that's how professors should write some of their exam questions when they want to grade students in part on critical thinking."

"How can you tell if one critical thinking test is better than another?" asked Chris.

"Same way you and Pat can tell if one color palette is better than another," said the dean.

"Apply the established criteria--in this case for validity and reliability."

"And the ... what did you call them, 'dispositions'? ... same answer?" asked Chris.

"Yes," said the dean. "You and Pat know that cultivating a donor to make a major gift to the college isn't about teaching him how to do it. The person has the money, and it doesn't take much skill to make a gift. So it's about nurturing in him the values, beliefs, and motivation to make the gift. It's not so different with thinking skills. By nurturing students' beliefs, values, and motivation, good teachers guide students toward wanting to use critical thinking to solve problems."

"And you can test for this?" said Chris.

"Yes," replied the dean. "Inventories of students' learning dispositions ask 'agree-disagree' questions about their beliefs and values—whether they have ones that will lead them to be open-minded, systematic, willing to ask and answer tough questions, and use reasons and evidence."

"The format reminds me of the conversation-starters we use with focus groups," said Pat.

"Yeah, but you can't just ask students if they value critical thinking," objected Chris.

"Obviously," said the dean. "But your comment about focus groups has me wondering what we might learn about students' critical thinking if we observed them working together on a group project. If we developed a scoring rubric..." Captivated by the possibility, the dean said, "You'll have to excuse me, I'm preparing some remarks for the trustees meeting. ... Oh, and Pat, sorry about my earlier comments about colors and fonts. Leave the proofs and I'll look at them."

Pat put the proofs on the bench next to the dean, who had already started typing again.

Moments later the dean looked up and saw the provost only a few steps away. “Mind if I sit?” he asked.

“Please,” replied the dean. “What’s on your mind?”

“After the trustees session this morning, I went on the Web and found a publisher that had aggregate college-student norms for its critical-thinking skills tests. I’m sure our board would be pleased if the mean for our graduating seniors were above those norms. We could use the data for accreditation too.”

Retorted the dean, “I’ll bet the board would prefer to know that our students graduated with *strong* critical thinking skills.” Then, seeing a new worry flash across the provost’s face, she added, “Maybe our graduating seniors as a group will score above the aggregated norm, maybe not. Either way we learn something important about the cohort and about what we’re good at and what we should improve. Ideally we could see if our students’ scores improved from their freshmen year to their senior year.”

“You know, if we had a measure of critical thinking for our entering students, we could use it as a diagnostic. Maybe predict pass rates on licensure tests or the GREs or the MCATs,” suggested the provost.

“That could be useful for program admissions and for academic advising. Knowing a student’s test scores on critical thinking skills and dispositions, an advisor would better understand the student’s motivation and ability when it comes to engaging in thinking and learning,” added the dean. “Also, maybe we could do something in our Freshman Seminar program about any weaknesses we find.”

While the dean paused to type a few more notes, the provost mused, “I know that most students go to college to get whatever degree, credential, or certificate they think will qualify them for a better job. We’re the ones who need to make sure they get a good education along the

way. I, for one, wouldn't want to trust my health care to a nurse or doctor who isn't skilled at critical thinking or who isn't inclined to use those skills in taking care of me."

"Yeah. And how about trusting your innocence to a judge, lawyer, or jurors who are close-minded or and anti-intellectual? Or how about trusting your well-being to government officials who aren't disposed to anticipate problems or who don't have the skills to make accurate forecasts and contingency plans in any case?" said the dean.

The two academic leaders sat silently contemplating their — and the nation's daunting educational agenda. With schooling today so focused on content and training, when and where were the young people ever going to build their critical thinking skills and dispositions? And, thought the dean, we all need them to learn to think well for the good of the democracy, but they need it too, to be successful in their chosen fields. After all, what are the half-lives of content knowledge and technical skills these days? A couple of years at best! Then without another word, the provost got to his feet and started toward his office, just as the campus minister came sauntering along in their direction. "Hi, John," said the minister to the provost as he walked past.

Cheerful as ever, the minister added, "Hi, Dean," and plunked herself down on the bench. "Great day to be outdoors."

"Yes." replied the dean with a smile. "How's the religion business?"

"Redemptive! But let me ask you something. I heard that the trustees wanted to talk about critical thinking in the curriculum today. And, you know, I was wondering, not teach critical thinking along with ethics? With all the ethical problems we see around us these days, we'd have lots of interesting things to think about."

"That would be one way to teach critical thinking, Reverend."

"Great. I want to create such a course. Should I go to the religious studies department or to philosophy?"

“Well, Reverend, first let’s be sure we’re both talking about using ethical problems and issues to get the students to exercise their critical thinking skills in a fair-minded, objective, systematic, and mature sort of way. I’m not interested in a course that leads them to predetermined dogmatic answers.”

“Agreed,” said the campus minister. “But surely some ethical views are more defensible than others.”

“Yes,” said the dean. “But we should teach students how to make their own ethical decisions based on solid information and reasoned judgment. It wouldn’t be a critical thinking course if we demanded conformity to any preconceived orthodoxy, whether it’s religious, philosophical, or political.”

“Again, no problem,” said the campus minister. “As long as you’re not saying our educational goal is mindless relativism or ethical agnosticism. Good critical thinking doesn’t necessarily make you an ethical person--that’s obvious. But it seems to me that teaching people to think well is an important step in teaching them how to make ethical decisions well. Wouldn’t you agree?”

“I would,” said the dean. “Let me e-mail the philosophy department chair as a way of opening the door for you.”

“Thanks. I’m going to talk to colleagues in other departments too. It would be foolish of me to ask students to discuss things like world hunger, AIDS, environmental justice, immigration, religious nationalism, and economic policy without benefit of the expertise we have here in our own faculty.” As the campus minister departed, the dean typed another note.

The afternoon sun knifed down between the jacaranda branches as the dean closed her laptop and started toward the trustees’ afternoon session. Recognizing a colleague from the psychology department colleague heading the same direction, the dean greeted her and shared a

few of the ideas about critical thinking she had gathered from chatting with the afternoon's passersby.

When she'd concluded, the colleague said, "I'd suggest you say one more thing to the trustees. Let them know that human decision-making is very complex."

"I know," said the dean. "The research on cognition gives us a remarkable look at everything that goes into it: availability, affect, risk aversion, anchoring with adjustment, -- those sorts of things."

"But have you been following the latest theorizing about decision-making? We humans operate with two cognitive systems of decision-making that function in parallel. One is our *pre-reflective system*—I like to call it 'reactive thinking.' It's quick, associative, almost instinctive. The other is our *reflective thinking system*. It is more procedural, deliberative, and analytical. This is the system we associate with critical thinking. It's the one we educators focus on."

"Is one system considered superior to the other?" asked the dean.

"Not really. We need and use them both. But if a person allows his pre-reflective system to dominate, he's more likely to make mistaken decisions in certain contexts. It depends on how novel, urgent, complex, and high stakes the problems are. Oh, and another thing you might want to tell the trustees about is called 'dominance structuring.' It'll help them understand why we all feel so confident in our judgments, as if the choice we picked is so obviously right and all the other choices are so obviously wrong."

"This is a trustees meeting, not a seminar on cognitive psychology. Just give me a reference or two I can share with them."

The professor reached into her attaché case. "Use this. It's the essay I have all my undergraduates read. It ties all of this together,"

"Thanks," said the dean. She took the essay and started confidently up the steps to the library where the afternoon session was about to convene. She knew she was ready. First she would locate that fellow from the engineering firm. She would find a diplomatic way to suggest

that to screen potential new hires for critical thinking, why not add a critical thinking test to the application process? Next she would give her report. She played a movie of it in her mind: There she was looking very professional in her dark jacket. She had her facts in order and her voice was confidently delivering her report with precision and clarity. Ten crisp points and the whole thing topped off with an excellent background article for the trustees to peruse at their leisure. The simulation bolstered her confidence. In her mind's eye she could see the trustees listening, liking what they heard, and learning too.

“It’s show time!” thought the dean as she stepped to the podium, where her laptop was already connected to the overhead projector. As it had during all her years of teaching, that silent mantra made her feel ready to give a great talk. She smiled at her audience. “Yes, indeed,” she thought, “this is a good day.” And then spoke from these notes to the trustees using a straight-from-the-shoulder, succinct, businesslike style other strong leaders could only admire:

#### **On Critical Thinking: A Report to Trustees**

1. Why CT → workplace and economic life, family and personal life, making democracy work.
2. Consensus → CT is reflective decision-making and thoughtful problem-solving about what to believe and do.
3. Skills → a combination of analysis, interpretation, inference, explanation, evaluation, fair-minded self-correction.
4. Dispositions → courageous truth-seeking, open-mindedness, persistence, thoroughness, intellectual integrity, confidence in reasoned decision-making, maturity of judgment.
5. Effective faculty → those who demand that students learn *how* to think, rather than *what* to think.
6. How → assignments and examinations which engage the skills and foster the disposition to think critically.
7. Measurement → valid and reliable objective skills tests, Likert disposition inventories, and performance measures.
8. Norms → local norms to gauge progress of one’s own students over time.
9. Contexts for teaching → engaging, content-rich, capacious issues of genuine concern--e.g. ethics, integrative seminars, etc.
10. Cognitive science → key empirical findings about how humans make decisions.
11. Handout → “Critical Thinking: What It Is and Why It Counts – 2007 Update”-- free PDF download from [www.insightassessment.com](http://www.insightassessment.com).