

Promoting Critical Thinking in Higher Education: My Experiences as the Inaugural Eugene H. Fram Chair in Applied Critical Thinking at Rochester Institute of Technology

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Abstract From 2012 to 2015 I was the first Eugene H. Fram Chair in Applied Critical Thinking at Rochester Institute of Technology, in Rochester, NY. To the best of my knowledge it is the only such endowed position devoted solely to this at a major North American university. It was made possible by a generous 3 million dollar gift from an anonymous alumnus who wished to honor a retired faculty member who had taught for 51 years. The honoree was revered for his devotion to Bloom’s taxonomy and his academic rigor, which infused case studies and the Socratic method. A primary motivation for the chair was a belief that an alarming number of college graduates lack the necessary critical thinking skills in order to advance successfully in their careers. My responsibilities included collaborative leadership, advocacy and oversight for critical thinking across the entire campus. It provided a unique opportunity to reflect on the current state of critical thinking instruction—very broadly construed, as well as to examine its specific role at RIT, an institution with its own unique history, mission, and character.

Keywords Applied critical thinking · Definitions of critical thinking · Critical thinking instruction · Pedagogy · Curriculum · Assessment · Learning outcomes · Eugene H. Fram Chair · Rochester Institute of Technology

1 Introduction and Background

From 2012 to 2015 I was the inaugural Eugene H. Fram Chair in Applied Critical Thinking at Rochester Institute of Technology in Rochester, NY. To the best of my knowledge it is the only such endowed position devoted solely to critical thinking at a major North American university. The experience was filled with many triumphs and travails, as well as rewards, opportunities, pressures, risks, frustrations and challenges. It provided a unique opportunity for me to examine the current state of critical thinking instruction—very broadly construed, as well as to reflect on its specific role at RIT, an institution with its own distinct history, mission and character.¹ While engineering and the sciences have had a privileged position at the school, historically, there is also a strong commitment to art, crafts and design. In particular, the imaging arts and sciences play a major role, due to Rochester’s unique history as the birthplace of Kodak, Xerox and Gannett Newspapers. RIT is also home to the National Technical Institute for the Deaf (NTID), which is a national leader in the education of the deaf and hard-of-hearing. In addition, a majority of our students undertake a “co-op” or internship during their course of study in order to gain practical career experience and hopefully, to obtain meaningful employment after graduation. In other words, a career focus and learning that is technologically-centered is a mantra at our institution. Many of our students are extremely risk averse and almost exclusively immersed in their respective majors. For most,

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¹ This paper is a revised version of an invited talk presented at RACT 2015 in Lund, Sweden. I would like to acknowledge Frank Zenker’s friendship, encouragement and support as well as his many critical insights that have significantly strengthened my own thoughts on this topic. I’m also very grateful to the comments of the two anonymous peer reviewers, which have greatly improved this paper.

the fulfillment of the general education requirements is their only chance to venture beyond the major and explore the humanities.

The professorship was funded by a three million dollar gift from an anonymous alumnus, a very successful Silicon Valley entrepreneur who wished to honor a Professor Emeritus from the Saunders College of Business who had served on the faculty for 51 years. Eugene H. Fram was widely known for his rigorous teaching that infused case studies and the Socratic method, along with a devotion to Benjamin Bloom's taxonomy. A primary motivation for the establishment of the chair, according to the donor, was a belief that an alarming number of college graduates lack the necessary critical thinking skills in order to advance successfully in their careers. Even more troublesome was the concern that if critical thinking is necessary for an informed and fully engaged electorate to flourish, then our democratic society is in serious peril. Initially, my responsibilities were broadly defined to include campus-wide leadership, advocacy, oversight and management of critical thinking for the entire university. I reported directly to the provost, and my office was relocated to the division of academic affairs, which also provided key administrative and logistical support. The assignment included a full release from my teaching duties, and a stipend for research, travel and programming. From the outset, I was given a definition of critical thinking that had been approved already in 2010 by the key governance bodies (e.g. the Academic Senate and the Board of Trustees) as a part of our school's revised "Academic Program Profile" (APP). This document was the result of our school's decision to convert its academic calendar from three, ten-week quarters, to two, sixteen-week semesters. The APP states: "Embedded in every academic program at RIT will be a set of *five* Essential Learning Outcomes: critical thinking, global interconnectedness, ethical reasoning, integrative literacies, and innovative/creative thinking." It defines critical thinking as: "those processes required to understand and evaluate complex claims of various sorts. It involves the evaluation of information, evidence, arguments, and theories, and the contexts in which these are encountered. It entails the questioning of different and competing perspectives, and challenging the (sometimes hidden) assumptions and inferences that determine what will count as evidence or argument. Critical thinking is learning to think in a disciplined and evaluative manner, to analyze and interpret the processes by which various claims are made and reliable conclusions are reached." The definition that I inherited, in other words, emphasizes the logical analysis of arguments, and a model of problem solving that is committed to an ideal paradigm of reason and rationality.

2 Responsibilities and Duties

Almost from the outset, I sought to clarify and provide greater specificity to my responsibilities and duties. I undertook a deep and extensive immersion in the scholarly literature on critical thinking, from the classic works by John Dewey, Edward Glaser, Hannah Arendt, and Max Black, to more recent studies by Robert Ennis, Peter Facione, Diane Halpern, Deanna Kuhn, Stephen Brookfield and Daniel Kahneman. (Dewey 1910; Glaser 1941; Ennis 1962; Arendt 1977; Facione 1990; Black 1990; Kuhn 1999; Bailin et al. 1999; Halpern 1984; Halx and Reybold 2005; Kahneman 2011; Brookfield 2012) I was especially keen to understand the underlying theory, history, and pedagogical assumptions of the so-called "critical thinking movement," its different strains, allegiances, and viewpoints, in addition to its key players, as well as the main approaches to assessment. I identified several short and long-term goals, guiding assumptions and precepts as well as distinct institutional characteristics. Important questions were: how best to approach the lofty aspirations and expectations attached to the endowed chair by the donor? How to assess the present or current level of critical thinking in our students, as well as moving forward? Could the added value of this new initiative be proven without obtaining such a metric or baseline from its inception? Which assessment instrument was best suited to our institution? Should we create our own? What could we infer from indirect assessments such as the NSSE results and other surveys? Which key campus and community shareholders could I enlist for support? What conception of critical thinking do most of our faculty support or model, and how does it shape their pedagogy? Might this be linked to the definitions adopted by the national accrediting societies in their respective disciplines? What should count as rigor, quality and academic excellence? How best to foster broad and meaningful institutional change, especially among the faculty and students, and to create a vibrant institutional culture that values and respects critical thinking, and which provides repeated exposure and holistic integration of it throughout the entire curriculum?

Another task was to form a faculty advisory group, which aimed for broad representation from across each of RIT's ten colleges and schools. There was some redundancy here since it ultimately comprised fourteen members. I knew some of them very well, and felt confident that I could work with them. Others, I had never met or worked with before. Several had been on the initial internal Fram Chair search committee, so they were already somewhat familiar with my background, as well as the reasons for the chair's creation. At our first meeting we faced the formidable challenge of shaping a suitable definition of critical thinking. We discussed whether to accept the one that had already been approved, to modify

it, or whether to abandon it altogether and to propose something entirely new. One member stated quite emphatically that he regarded critical thinking as nothing more than informal logic and the rigorous analysis of arguments and evaluation of evidence, based on a firm commitment and belief in rationality. Another colleague proposed metacognition, the reflexive act of “thinking about thinking” as an initial working definition. Several underscored the importance of dispositions and attitudes, while another asserted that it suggested an ability to cope with ambiguity, uncertainty, indeterminacy and “unscripted events.” Another emphasized problem solving and decision theory, while heuristics and the elimination of biases was proposed too. We also discussed whether consensus on a definition was necessary given the wide divergence of opinion. In short, such a consensus on a definition of critical thinking was never reached in this initial meeting or any of our subsequent discussions. In retrospect, I realize that this is not unusual. Our second meeting focused on Stephen D. Brookfield’s *Teaching for Critical Thinking* (Brookfield 2012), which I had purchased, distributed and asked that they read in advance. Unfortunately, it was unclear how many actually had, or whether they had gained anything from it that they would incorporate into their classroom. An important take-away from his book is the idea that a disquieting, disruptive or unscripted event is necessary for critical thinking. In other words, he contends that it requires dramatically challenging one’s point of view, web of belief or conceptual scheme. Ultimately, he admits that this can be extremely threatening and unsettling to many students. Brookfield also candidly recounts his own poignant personal experience of being diagnosed with major clinical depression, and the radical change in his beliefs and worldview that ensued. His grit and resilience are remarkable, in my opinion, and they warrant consideration in any conception of critical thinking.

I also organized, planned and led a series of faculty workshops during the first and second year in order to understand and stimulate greater interest in critical thinking. They were approximately 3 h in length and always included a short break, beverages and food. These were generally well attended, and they seemed to generate enthusiasm and a positive response. My workshops also aimed to spark reflection on the meaning of critical thinking within their specific disciplines. I desired for participants to consider how their respective fields have evolved, to identify and reflect on their teaching pedagogies, and other specific ways in which they could more deliberately infuse and model critical thinking into their subject areas, whenever possible. I encouraged participants to identify unknowns and unsolved problems that remain, as well as new paradigms that have emerged since their careers began. I also asked them to consider specific assignments and learning outcomes where critical thinking played a major role. We also discussed

rubrics. I surmised that if faculty adopted and modified the (American Association of Colleges and Universities) AAC&U Critical Thinking Value Rubric to assess learning outcomes, then they might be more invested in and supportive of our efforts. It seems to provide greater flexibility than other costly alternatives, and is preferable to an assessment instrument that is chosen and mandated top-down by the administration. The faculty workshops were another opportunity to discuss the many different definitions of critical thinking. I prepared a handout that compiled and summarized the most notable examples, along with parsed and extended definitions, and asked the participants to choose the ones which best suited their own preconceptions and teaching style. Finally, I reminded them that critical thinking is a *desideratum* of many of the national accrediting bodies for their respective disciplines, and therefore, something that they should take seriously. Above all, I sought to underscore that this new initiative was not intended to be an additional burden or added topic in an already very filled curriculum. Instead, I tried to suggest critical thinking as a way of re-present, re-engage and re-constitute what they were already teaching.

In addition, I purchased and hosted several webinars for faculty and staff on critical thinking, metacognition, grit and resilience, and other related topics for student success. These too were generally well attended. Unfortunately, I found them to be extremely disappointing. They were mostly superficial, formulaic, cliché-filled, and expensive in terms of their insights and value-added. Several were shockingly uncritical and filled with generalizations, buzzwords and platitudes. The webinars were my first real encounter with the vast and growing industry within higher education of vendors, consultants, publishers, authors, and professed academic “experts,” as well as the legion of designers of tests, rubrics and other assessment instruments, in addition to a growing array of supplementary materials—all clamoring to sell their products, services and advice. Critical thinking is an enormous business, an industry in and of itself. The complexity of contemporary higher education with its many different stakeholders, competition from the for-profit sector, obsession with rankings, urgent demands for accountability, rising tuition costs, declines in student retention, pressing calls for immediate solutions, and increased emphasis on careers and meaningful employment have only exacerbated this situation. (Bok 2013; Brooks 2014; Chambliss and Takacs 2014)

3 Challenges, Setbacks and Travails

The word “applied” in the title of the position also initially struck me as somewhat problematic, since it was at odds with my belief that critical thinking is deeply meaningful

and a virtue in and of itself. In other words, I had real concerns about the emphasis on utility and the term “applied” which I refused to ignore. I was also extremely circumspect about deferring to the conception of critical thinking formulated by the corporate model and business world. Why should they have any deeper insight into critical thinking? Furthermore, the honoree and anonymous donor were extremely involved in almost every decision that I made, and in frequent, almost daily contact. While I was immensely grateful for their interest, enthusiasm and support, as well as pleased to update them about my work, such intense involvement severely restricted my autonomy. I also wished to move beyond Benjamin Bloom’s taxonomy, to acknowledge its biases, limitations, and omissions as well as the subsequent revisions that have made its original formulation outmoded.² I believe that any taxonomy, by its very nature, always will have deficiencies and privilege certain perspectives while ignoring others.

Assessment was another extremely complex and tendentious issue from the outset. I was strongly encouraged to adopt or pilot a single assessment instrument or tool such as the established: Cornell Critical Thinking Test (CCTT), Critical Thinking Assessment Test (CAT), Collegiate Learning Assessment (CLA), or the latest version (CLA +) or some combination of these. I resisted many of these appeals due to my concern whether such a single assessment strategy or method might be effective, relevant or meaningful for every academic discipline across the entire university. While RIT is especially known for its strengths in technical fields such as computer science, engineering, imaging and color science, we also have robust programs in industrial design, film and animation, games and interactive media, photography, graphic art, medical illustration, painting, as well as furniture design, ceramics, metalworking, and glassmaking (within the School of American Crafts). In other words, a certain segment of our population regards critical making, visual/symbolic thinking, and thinking with objects as a meaningful and rigorous form of thinking.³ (Drucker 2014; Turkle 2007) It also seemed important that accountability and accreditation tools not to be conflated with those of assessment. Furthermore, I underscored the need to be vigilant toward the fallacy of uniformly measurable performance that aims to reduce all learning activity to a common managerial or institutional metric. Stefan Collini has argued “the activities of thinking

and understanding are inherently resistant to being adequately characterized in this way.⁴” His remarks typify many of my own misgivings about assessment and the growing instrumentalist paradigm within academia. The quest for national rankings, ratings and the branding of individual colleges and universities also strikes me as deeply troubling, and potentially ripe for abuse. The financial stakes are just too high, and the possibilities for abuse, too apparent. In other words, who accredits the regional accreditors, and who ensures that the largely self-reported assessment numbers and statistics from institutional research are accurate? In fact, I believe that there is a kind of ferality to learning and education, something necessarily and unavoidably messy, quirky, inefficient, unpredictable, discontinuous, as well as multi-modal at its core that must not be ignored. No one learns, develops cognitively, or processes content or information in quite the same way, and we must resist the urge to sort this into tidy blocks or simplify such complex intellectual activity. Ultimately, after repeated prodding and administrative pressure, I suggested that we adopt the AAC&U Value Rubric. I hoped that our faculty would strive to modify and tweak it to conform to their specific courses, disciplines and teaching styles. I believed that this allowed for more faculty autonomy, respected their agency and thereby, that it would promote greater faculty support. Assessment ideally should consist of a variety of different stylistic formats (graphs, charts, maps, static and dynamic images) and modalities (e.g. written, oral, visual, auditory, tactile, etc.). This makes alignment with specific learning outcomes and parameters exceedingly difficult.

Another major challenge that I faced was reconciling the desire for quick, readily identifiable results, clearly quantifiable metrics, and neatly packaged deliverables with the belief that critical thinking is a difficult, time-consuming, complex, non-linear and iterative activity that is never truly complete. I struggled with the emphasis on product over process, quantity over quality, surface versus depth, as well as the pressures of marketing, publicity, branding and public relations. It was surprising and disconcerting to learn that many within higher education and the university administration seem willing to defer to employers, as well as the corporate and business conception of critical thinking. Why should they dictate what critical thinking means or implies? This seems on a par with the alarming trend on the part of many colleges and universities to regard their students as consumers whose demands must be satisfied at all costs, and their institutional rivals as competitors clamoring for students and wealthy donors.

² For revisions to Bloom’s taxonomy see (Krathwohl 2002).

³ “Thinking about Making” is a graduate course currently offered within our College of Imaging Arts and Sciences. For more on making and handicraft as a mode of critical thought see (Somerson and Hermano 2013), (Pallasmaa 2009), (Turkle 2007). For an appreciation of the intellectual demands, rigor, and critical reflection required by common work, yet all too frequently unacknowledged see (Rose 2004).

⁴ (Collini 2013) Stefan Collini’s frequent reviews and essays on educational reform in Great Britain for the *London Review of Books* provide a trenchant critique of the current state of affairs with great relevance to North America that should be heeded.

I worked closely with a number of key faculty and administrators from the start, including the director of the university writing program, the provost's faculty associate for general education, the director of university assessment, and the faculty chair of the general education curriculum committee. They became a kind of special advisory team for me within the division of academic affairs, and I was especially grateful for their counsel. The advice and unflinching support of the Senior Associate Provost for Academic Affairs with whom I met regularly, was also decisive. At the end of my first year I organized and led a small faculty team, including two of them, to Richard Paul and Linda Elder's 33rd Annual Critical Thinking Conference, organized by their Foundation for Critical Thinking, at the Claremont Hotel and Spa in Claremont, California. Unfortunately, it was a tremendous disappointment and failed to meet our expectations of rigor, depth and nuance. There was an almost cult-like atmosphere to some of the meetings and a great deal of superficiality and repetition. The wide range of participants too was surprising. It ran the gamut from secondary schools, community colleges, and vocational schools, to liberal arts colleges and research universities. It was a costly meeting and I was very grateful to the provost for helping to fund the trip. This was my first direct experience of their organization, and I was very relieved not to have contacted them earlier, and that I had resisted early suggestions to invite Paul and Elder to our campus to speak. After this experience I was much less enthusiastic about their work. I ceased purchasing and distributing their small guides to critical thinking in my faculty workshops, as well as other occasions, and I became much more skeptical about their value.

In short, I attempted to learn from the mistakes and false starts of other schools that had already adopted similar plans to strengthen and infuse critical thinking into their curricula. I also contacted a number of them about their experiences, and was especially alert to what they had found effective in addition to identifying false starts and missteps that I hoped to avoid. This wasn't always possible, however. In fact, it was an extremely enthusiastic recommendation from one such contact that prompted me to lead a team to the Paul and Elder Conference. I read every QEP (Quality Enhancement Plan) devoted to critical thinking that I could find. Most notable in this regard were Florida State University, University of North Carolina at Chapel Hill, NC State University, Eastern Washington University, and numerous community colleges. Without exception, almost every QEP that I examined was limited to a very short duration, typically, 5 years, after which the funding ended; or they were supposed to become self-sustaining. Many were extremely costly, and there was a great deal of variation among the institutions, especially between community colleges, traditional liberal arts

schools, and major research universities. I later learned that Paul and Elder had written many of the QEPs or had served as paid educational consultants.

It seems likely that meaningful results will often exceed such a narrow time-span, since lasting institutional change is often extremely slow and very resource dependent. In order for a plan to be truly effective, it must be ongoing, continuously funded, and revised as necessary. It cannot be mandated by the administration from the top-down. Nor can it rest entirely on a single individual. Ideally, a broad and diverse group of stakeholders must believe in it, and lend their support. First and foremost, the faculty and students must support it.

Over the course of my 3-year term the expectations, objectives and demands frequently changed and shifted, while the responsibilities and pressures increased. While I was clearly our institutional spokesperson for critical thinking, I was only a single voice, and thereby, extremely limited in what I could actually do. The delivery of course content and oversight of the curriculum ultimately, is the entire faculty's responsibility, while the curriculum committees within the individual departments and colleges have control. At times, it seemed of little consequence if I noted that many of the national accrediting societies demand critical thinking as a learning outcome. In short, I argued that the faculty must embrace and advocate for critical thinking, consider what it means for each of their respective scholarly fields, as well as their individual teaching pedagogy. It is their responsibility to model critical thinking and to demand rigor. Some will always, inevitably perform this better than others. Ironically, pedagogy is rarely discussed or required in most graduate training, and it is often more of an afterthought. While a faculty member might be an astute critical thinker, this does not imply that they are adept at teaching critical thinking to their students or in modeling it. There are also clear risks for non-tenured and tenured faculty who embrace it. For example, one faculty member who had attended several of my workshops informed me that he had completely redesigned his introductory course in psychology in order to emphasize critical thinking. His students however, had balked at this new approach. They complained that it was too difficult, too disorienting and far too demanding and challenging. He reported that they preferred not to have to think so hard. Many demanded simply to be told what they needed to know for the tests. They expressed their dissatisfaction in their course evaluations, and this colleague feared for his annual evaluation and how it would impact his overall performance review due to the negative student ratings. This incident led me to recommend that any instructor who undertakes a more robust critical thinking approach in the delivery of their course content should not be penalized, and that some form of

“amnesty” or protection in their course evaluations is needed. If anything, such pedagogical risks and course redesign should be recognized, incentivized and rewarded. My suggestion, however, never received any significant traction with the administration.

It is noteworthy that Richard Arum and Josipa Roksa always conjoin “critical thinking and complex reasoning” in their discussions of education (Arum and Roksa 2011, 2014). They never explain why the terms are distinct nor do they differentiate between them. I do not believe that they regard critical thinking to be simple or straightforward. Yet, it is not uncommon in the literature to find critical thinking used almost interchangeably with “complex” and “higher order reasoning.” Roland Case has argued that lower order thinking can also be critical, and he has questioned the legitimacy of such distinctions as simple/complex, higher/lower, and hard/soft orders of cognition (Case 2005).

As already noted my appointment to the position coincided with my institution’s academic calendar conversion from quarters to semesters. Faculty fatigue increased due to this laborious bureaucratic process, which required that every course be rewritten, internally reviewed and approved by the campus governance bodies, before being submitted to the NY State Education Commission for final approval. The general education requirements were also a bit of a moving target at this time, as well as the proposed freshman seminar, which made specifying a critical thinking outcome within them very challenging. Apathy and indifference also might explain some of their different reactions, as well as a belief that this initiative was an added burden or yet another administrative mandate to an already stressful schedule. Some faculty reported that they were already modeling critical thinking, and that they had nothing new to learn or any improvement needed. Unfortunately, some of these very same faculty resisted or ignored my appeals to discuss or share their views.

The provost requested that I draft a plan for critical thinking across the entire undergraduate curriculum. I submitted it in January of 2014, and subsequently presented it to the provost’s council of academic deans, my faculty advisory group, the executive committee of the Academic Senate and selective faculty and departments. In particular, I met with the chair of the philosophy department, who encouraged me to send it to the entire philosophy department faculty and to discuss it with them at a faculty meeting. The document identified *four* specific goals. They were: (1) that all RIT undergraduates will satisfy RIT’s critical thinking student learning outcome(s) which are deliberately infused in each program of study, as well as within the GE (general education) framework, (2) an optional GE immersion and an internal RIT certificate in critical thinking will be offered for our students as a way to demonstrate their competency and

commitment to it, (3) faculty will demonstrate a deep and comprehensive commitment to critical thinking by overtly modeling it as a part of their teaching pedagogy across all programs, and as an expectation and outcome in most courses, (4) university stakeholders, alumni and employers will recognize that critical thinking is a distinguishing characteristic of RIT graduates, irrespective of their major, and that RIT embraces critical thinking as a core institutional value as operationalized through its consistent infusion in the undergraduate experience. The plan also identified *eleven* possible strategies by which to achieve these goals. It did not discuss resources or specify the financial framework to achieve them, however.

The sheer vastness and complexity of the critical thinking landscape, with its many experts, competing interests and stakeholders is remarkable. Philosophers, sociologists, educational theorists, cognitive psychologists, cultural critics, academic administrators, management experts, and futurists have all staked claims and helped to shape the current debate (e.g. Daniel Kahneman, Amos Tversky, Robert Ennis, Richard Paul and Linda Elder, Richard Arum, Jon Elster, Stephen Brookfield, and Ralph Johnson, The Foundation for Critical Thinking, The Rotman School of Management in Toronto, the Windsor Ontario Group with its emphasis on argument theory and informal logic, Jackson Nickerson at Olin School of Business at Washington University, as well as Ronald Case and the Critical Thinking Consortium in Canada). While there is much to be praised in this work, there is no consensus or broad agreement.

4 Notable Accomplishments and Steps of Progress

There were several notable accomplishments during my 3-year term. Public programming aimed towards increasing community awareness and promoting campus dialog about critical thinking clearly was a success. These events generated large audiences and attention in the local media. An annual Eugene H. Fram lecture held to coincide with the start of the academic year was established. N. Katherine Hayles, a distinguished professor of literature at Duke University, as well as an RIT alumna (BS in Chemistry, 66’) accepted my invitation to be the first speaker in October 2012. Her book, *How We Think* (Hayles 2012) had recently appeared. It boldly argues that technology has impacted cognition and literacy, especially, in terms of how we read and process texts, and that our modes of attention, attentiveness and ratiocination have radically changed with the advent of digital media. The second lecture in 2013 was delivered by Richard Arum, the noted NYU sociologist and educational theorist, whose book *Academically Adrift* (Arum and Roksa 2011) sent a shock wave throughout the

higher education establishment. It sparked a healthy and important debate about its core mission, and called for a renewed emphasis on writing, complex reasoning and critical thinking. In 2014 Genevieve Bell, a renowned cultural anthropologist, futurist, and executive at Intel Corporation delivered the third fall lecture. Her topic was “Making Life: A Prehistory of Robots and its Importance for Metacognition, Society and the Biopolitical Future.” Richard Arum returned to campus again in the spring of 2015 for yet another Fram Lecture based on his follow-up book *Aspiring Adults Adrift* (Arum and Roksa 2014). His return visit was also very well attended and a great success. I also co-sponsored several other lectures, with colleagues from other departments (John Tagg of SUNY-Binghamton, David Cay Johnson of Syracuse University, Frank Zenker of Lund University, and Nick Sousanis, University of Alberta) during my 3-year term.

In the spring of 2014 RIT hosted the annual meeting of ANNY (Assessment Network of New York). I organized and led a panel discussion “The Assessment of Critical Thinking: Challenges, Opportunities, Risks and Rewards” which included assessment experts from University of Rochester, Syracuse University and Rensselaer Institute of Technology. It afforded an opportunity to discuss our initiative and to obtain constructive criticism from these colleagues.

During July of 2014 I led a small group of faculty and administrators to the AAC&U Summer Institute on Integrated Learning Across the Departments, held at Cal State University, Fullerton. Our participation required the acceptance of a draft proposal that I had written and submitted in the spring. I argued that our team intended to use the meeting in order to obtain critical feedback and expert guidance on the plan’s refinement, as well as specific, tactical details regarding its implementation. We also sought to address such questions as: How to balance and reconcile an appreciation for the intrinsic value of critical thinking, in and of itself, with a need to deepen our students’ integrative capacities and their engagement with practical everyday problems? How to conjoin and link critical thinking to civic responsibility, global interconnectedness, as well as creative/innovative thinking? What co-curricular and experiential models can we use? How should these be assessed and what are the resource implications? How can critical thinking enrich and strengthen an already rigorous curriculum? How can we foster, strengthen, and support a vibrant campus culture that values and respects it? Unfortunately, we did not obtain the guidance and critical input that we had hoped for at the meeting. Nevertheless, we had extremely constructive discussions as a group, and we returned with a set of suggestions and revised goals. We also felt a sense of confirmation that we were on the right path based on our interactions and discussions.

The national publication, *Inside Higher Education*, profiled the Eugene H. Fram Chair in a front-page story by

staff writer Colleen Flaherty on September 16, 2014 that was widely read and discussed. I had contacted her editor several weeks before, introduced myself, described my work and suggested that a profile on our efforts at RIT might be of interest. Following this, I received many phone calls and email inquiries from scholars across the country, which provided an opportunity for further networking and outreach.

In the fall of 2014 RIT adopted a new 10-year strategic plan. I advocated for a more prominent place for critical thinking and the Fram Chair’s mission within it, arguing that it is a distinctive feature of our school and that we are uniquely poised to leverage these circumstances. My suggestions were heeded. Exactly how this will be implemented moving forward, remains to be seen.

While I am somewhat dubious about the effectiveness and long-term impact of specific, stand-alone critical thinking courses, especially when their duration is a single semester, I recommended that we double the number of sections of the introductory critical thinking course currently taught by the philosophy department. Fortunately, this too was done. The content, choice of readings and approach taken, however, is entirely up to the individual instructors. Since I am not a member of the philosophy faculty, I could only advise and make suggestions. I also advocated successfully for an advanced course in CT beyond the introductory level, which would take the introductory course as a prerequisite, and would be taught by a philosophy faculty member. Here too, I could only make suggestions regarding possible topics and texts. Furthermore, I proposed an immersion in critical thinking as one of the strategies in my plan with the hope that this might eventually become a major in the future. The philosophy department would most likely play a key role in shaping such an immersion, but I would hope that it could be broad and interdisciplinary. In other words, I do not regard a critical thinking course to be the exclusive purview of the philosophy faculty. Ideally, each college should have such a course in my opinion.

As already noted RIT is well known for its career and vocational focus and technical orientation. The majority of our students take some form of a co-op (a paid or unpaid internship or practicum) during their undergraduate experience. In certain majors, this can lengthen their time to graduation by a semester or sometimes, an entire year. Since a written evaluation of the experience is always performed (by the student and the supervisor), I recommended that it should include more specific questions about critical thinking. While this is an indirect means of assessment, I do believe that it is a useful data point. Similarly, I recommended that we include more specific questions about critical thinking on the NSSE survey (National Survey of Student Engagement), administered biannually, to the

freshmen and seniors. The office of institutional research has also recently created an alumni survey. Here too, I suggested that more specific questions about critical thinking should be included, and this suggestion has been adopted.

While the curriculum is the most obvious and compelling area in which to teach critical thinking I also recognized other extra-curricula opportunities. These included discussions and workshops of critical thinking with the tutoring staff in student support services, as well as the team of academic advisors. In addition, I organized a faculty panel during graduate education week at the invitation of the dean of graduate studies. It was also through his contacts and initiative that I was invited to Lima, Peru in the spring of 2015, to conduct a workshop on critical thinking, as well as several guest lectures. I accepted many other faculty invitations to speak in classes throughout my 3-year term as the Fram Chair. I also recommended that additional resources be dedicated to relevant library acquisitions and journal subscriptions, especially given the steady stream of scholarship on critical thinking, argument and decision theory and metacognition. Since a renovation and possible expansion of the library is a major component of the new strategic plan I hope that this suggestion will be followed.

I have also underscored that we not lose sight of the fifth learning outcome in the RIT APP namely, “creative/innovative thinking,” and its possible complementary relationship to critical thinking. (Boden 2003) I agree with Kerry S. Walters’s claim that “critical thinking and creative thinking, then, are not incompatible with one another or mutually exclusive. Indeed, genuine success in one entails facility in the other.” (Walters 1990) The strengths of our academic portfolio in art and design coupled with the technical disciplines lend support to this idea. I believe that visual thinking, along with the use of argument diagrams, drawings and other modalities can play an important role.⁵ (Sousanis 2015; Somerson and Hermano 2013; Pallasmaa 2009; Turkle 2007; Rose 2004; Arnheim 1969).

I suggested that an inventory of our entire course catalog should be done in order to determine which courses mention critical thinking in their course description as well as which identify it as a learning outcome. This should become a priority for future courses as they are developed and approved by the respective college curriculum committees. Instead of a single mandated course in critical thinking I believe that it can and must infuse the entire curriculum, and become a fundamental tenet in the teaching philosophy of every faculty member. Team-taught courses provide an important opportunity for multiple voices and enriched perspectives. I recommended that they be increased and

encouraged. Capstone projects and senior theses can also play an important role in demonstrating critical thinking as a learning outcome. A significant first-step should be considering how critical thinking is addressed by future courses, minors, majors and emerging fields of study. This has important implications for faculty tenure, evaluation and promotion as well as recruitment. Enrollment management and admissions, as well as the upper administration must do more to underscore the efforts underway to make critical thinking a signature part of our institution.

5 Conclusions

A more capacious conception of critical thinking is needed in my opinion, one that extends beyond the traditional focus on heuristics, argument analysis and theory, informal logic, the study of fallacies, the identification of binaries, analysis of probabilities, rational decision theory, problem solving and the elimination of cognitive biases.⁶ Critical thinking need not be drily cerebral; it should include the playful, poetic, ironic and creative dimensions.⁷ It should also not ignore such core intellectual virtues as civility, courage, humility, integrity, and empathy. Multimodal conceptions of information and the evaluation of evidence must be recognized, and the presence of NTID with its large deaf population provides a special opportunity for this. Skepticism, curiosity, and a willingness of engage in critical inquiry are perhaps, the most important virtues. Protean intelligence without empathy, imagination and common sense only goes so far. I agree with Michael S. Roth’s recent remark that “critical thinking is sterile without the capacity for empathy and comprehension that stretches the self.”⁸ (Roth 2010) This idea is consistent with the emphasis that Ennis and Facione later placed on dispositions and affects in addition to skills and abilities in their conceptions of critical thinking.

Educational reform remains an extremely contentious issue in contemporary discourse. The enormous amount of media attention currently devoted to critical thinking poses a risk that it has become a cliché or, even worse, a commodity streamlined and attenuated to conform to a market ideology. This would be very unfortunate. The ubiquity of the term “critical thinking” is no guarantee that deep and meaningful engagement with it is occurring. A large body of evidence suggests that students tend to overestimate

⁶ This more capacious conception of critical thinking is beyond the scope and focus of the present paper, but I do plan to address it in a future publication.

⁷ The work of Margaret Boden is exceptional in this regard, as is the research and scholarship published in the *American Journal of Play*.

⁸ See (Roth 2010; Chambliss and Takacs 2014). Michael S. Roth is President of Wesleyan University in Middletown, CT and a fierce advocate for the role of critical thinking in a liberal arts education.

⁵ Nick Sousanis’s doctoral dissertation at Teacher’s College at Columbia University which has recently been published to great critical acclaim provides a notable example. (Sousanis 2015)

their abilities and that their beliefs concerning competency are deeply problematic. (Arum and Roksa 2011, 2014) Furthermore, anyone that claims to have discovered the exclusive, exhaustive or definitive method for critical thinking instruction is highly suspicious, in my opinion, since I do not believe that any such single monolithic or uniform approach can have meaning. I reject that there is any one right way to think that will apply to every problem that a student will ever face in their future professional and personal life. As educators we must do more than merely prepare our students for a job; we must also resist deferring to a conception of critical thinking mandated by the interests of business and industry. We must encourage our students to become fully engaged global citizens, nimble and resilient thinkers, who can respond and adapt to sudden change, uncertainty, and paradox with grit, humility and verve. Ideally, our students should possess confidence and a secure belief in their own intellects. They should recognize the power of reason and logic, as well as have an awareness of their own, human-all-too-human, limitations. They must learn to cope with the limits of knowledge, to accept that not all problems can be solved, to admit complexity and cope with indeterminacy. Critical thinking is no easy task. It entails an ongoing process of continual refinement that is never truly complete, and which can be quite humbling. This should not deter us from the challenge, however, just as it should not preclude us, from aspiring to become exceptional critical thinkers. Thinking in a critical way, regardless of the subject or circumstance, can empower one for a lifetime. It should be a top priority for all of our students and faculty. In a deeper and more profound sense, critical thinking can help them to understand themselves, the world, and their place within it.

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