

## **RIT Aspirations for RISC: Research, Innovation, Scholarship, and Creative Work**

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**Context:** In a very short amount of time, RIT has seen considerable change and growth in our research, innovation, scholarship and creative work environment. The rise in sponsored research award dollars over the past four years has been impressive, as we have grown from \$30 million in awards to over \$60 million. But sponsored research is just a piece of the puzzle. Our faculty has never been more productive in writing books, creating works of art, performing, and helping graduate and undergraduate students become engaged with discovery and innovation. The RIT faculty has clearly risen to the scholarship challenge.

In the early fall of 2010, the Research Advisory Board hosted a small retreat of interested faculty to discuss the current research environment and to make recommendations to the vice president for research, the provost and the president. The recommendations settled into three broad categories – vision, strategic planning, and support. In particular, the participants were clear that the campus needed to see a vision or direction where RIT was headed with regards to research, and that this articulation needed to come from the president, provost, vice president for research, deans and others. After close consultation with President Destler, this paper addresses this need along three lines:

1. A characterization of where we are today with research, innovation, scholarship and creative (RISC) work;
2. A description of what we aspire RIT to become in regards to research; and
3. An outline of a series of action steps to move forward.

**A characterization of our current state:** In describing the current state of research at RIT, there are five key characteristics – it is valued, inclusive, supported, evolving, and applied.

First, RISC is valued as a major part of the work of faculty. The faculty is rewarded for their work in research, innovation, scholarship and creative work by annual merit awards, tenure, promotion and sabbaticals.

Second, RISC is inclusive at RIT. By this we mean that RISC is defined widely so that all faculty can identify themselves in this space. RIT embraces the four types of scholarship as defined by Ernest Boyer:

- *Scholarship of discovery*: traditional scholarship, or the research into one's discipline and discovery of original ideas
- *Scholarship of application*: applying the knowledge of the disciplines to the real world, as well as allowing the world of social needs to define areas of investigation
- *Scholarship of integration*: synthesizes and interprets the original ideas of the scholarship of discovery, and adds new insights, often making scholarship more public and useful as a result.

Boyer states that it is "making connections across disciplines, placing specialties in larger context, illuminating data in a revealing way, often educating non-specialists, too... through connectedness research is ultimately made authentic." (18-19)

- *Scholarship of teaching*: careful planning and continuous examination of pedagogical procedures

Indeed, from our perspective, research, scholarship, innovation and creative work MUST be peer-reviewed, documented and disseminated to have the kind of impact that the world expects of RIT. Of course, we support the variances that are inevitable. Some faculty will focus on scholarship, others on research, others on innovation and still others on creative work; we must be inclusive and allow all faculty to find their niche. Some will tend toward teaching and less research; others will lean towards more research and less teaching. The use of workload portfolios will allow these variances. This is expected and right.

Third, RISC is supported at RIT. The university is committed to the success of its faculty and this is why RIT strives to

- balance teaching loads with scholarship expectations;
- provide adequate space and resources necessary for scholarship;
- share the work that we do with others; and
- support scholarship that is meaningful, impactful and substantial.

Fourth, our research environment is definitely evolving and will continue to do so for years to come. RIT embarked on a serious scholarship path in 2004 when policy E4.0 was changed. Since then, the campus has been modifying policies E5.0 and E6.0 to reflect a need to bring an external validation of faculty research, innovation, scholarship and creative work.

Finally, RISC at RIT has always had a strong sense of application and impact. Perhaps this is attributable to roots of RIT stemming from the Athenaeum and Mechanics Institute. The Rochester Athenaeum was a society devoted to learning about recent developments in science and technology, while the Mechanics Institute was founded to provide training in technology and industrial arts in a humanistic context. Through these learning and training pursuits, faculty work – whether it is the research, innovation, scholarship, or creative work – has been characterized by its application in real world settings and problems.

**Aspirations for RIT RISC:** Just as with our current state, our aspirational state for RIT RISC has certain fundamental characteristics. In particular, we aspire that RIT embrace the teacher-scholar model, that RIT become an international leader in key, strategic, and focused areas, and that RIT, through the work of the faculty and the students, has meaningful impact on our society that culminates in the improvement of the welfare of human life.

First, RIT aspires to embrace the teacher-scholar model. In the teacher-scholar model, faculty actively and intentionally integrate their research with the education of their students; specifically, they bring their scholarship into their teaching and their teaching into their scholarship.

*Teacher-scholars are committed to high-quality undergraduate education, pursue an active program of research and scholarship, and are presumed to enliven and enrich their*

*teaching and the student experience by incorporating insights from their own research into their instructional activities, student advising, and related work. Teacher-scholars are also expected to promote deep approaches to learning through activities that encourage students to process information in ways that help them make qualitative distinctions about the merits of data-based claims or the persuasiveness of logic-based arguments.<sup>1</sup>*

The teacher-scholar may directly involve students in helping to carry out research or they may involve them as part of the research itself such as student subjects of research studies. Faculty may inform their research through their insights and ideas presented in the classroom and they certainly will bring back their research to the classroom.

Why is the teacher-scholar model important? There are several reasons:

- A teacher who is also a scholar, artist, innovator or researcher is clearly modeling the same behavior we want our students to emulate. *“When [students] collaborate with faculty on research, students learn firsthand how experts think about and solve practical problems; their teachers become role models, mentors, and guides for continuous, lifelong learning.”<sup>2</sup>*
- Through scholarship, the faculty member is learning and therefore demonstrating a commitment to lifelong learning, another skill we wish our students to have.
- The teacher-scholar model promotes deep learning for our students: *“It is encouraging that there is a positive relationship between the amount of time faculty spend on research, particularly research with undergraduates, and the emphasis on deep approaches to learning in their courses. In fact, the strongest positive relationship is between the importance faculty place on research with undergraduates and the emphasis on deep learning. This latter result suggests that it is critical to promote among faculty members the value of connecting research and teaching, especially since—at the institutional level, at least—this will have an impact on student outcomes.”<sup>3</sup>*
- The teacher-scholar model, or more specifically student research, broadens the ‘experiential learning’ footprint at RIT, retaining its leadership role in this area.
- Students are exposed to the thrill and excitement of discovery, creation and innovation when faculty are engaged in this work.

Second, RIT aspires to be an international leader in key, strategic, focused research areas that require contributions from multiple disciplines. Of course, RIT has many areas of great expertise and we are proud of all of them. However, to truly excel and lead, we must focus on a few exceptional strengths. Examples of these exceptional strengths include the work done in imaging science, deaf education, sustainable manufacturing, and in design. Indeed, we are often identified as the premier international leader and we have received a large number of awards and funding as a result of our expertise in these areas.

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<sup>1</sup> George D. Kuh, Daniel Chen, and Thomas F. Nelson Laird, “Why Teacher-Scholars Matter: Some insights from FSSE and NSSE”, **Liberal Education**, AAC&U, Fall 2007. (See [http://www.aacu.org/liberaleducation/le-fa07/le\\_fa07\\_perspectives2.cfm](http://www.aacu.org/liberaleducation/le-fa07/le_fa07_perspectives2.cfm))

<sup>2</sup> The Catholic University of America: <http://ir.cua.edu/res/docs/G1-1-08-NSSE.pdf>

<sup>3</sup> Kuh, Chen, Laird, *ibid*.

What are the characteristics that describe these areas of excellence for RIT? There are many but those that stand out include inter- and multi-disciplinary research work; clusters of faculty and students engaged in these areas; large amounts of sponsored or external support; international recognition manifested in rankings, awards, and invited keynote talks; the thorough integration of this work with students; and the offering of terminal degrees in the area.

In these areas, we will look more like a ‘Research 1 University’ but this is not something to fear. Indeed, great Research 1 universities have truly embodied the teacher-scholar principles and so have achieved great recognition for their research while maintaining a reputation of teaching excellence. All tenured and tenure-track faculty are expected to emulate the teacher-scholar model; as a result, even in those areas of excellence, our faculty will be engaged with, and excel at, both the undergraduate and graduate education of our students. Two very good examples of such universities that have captured this aspiration are Dartmouth College and Carnegie-Mellon University.

Finally, RIT aspires, through the research, innovation, scholarship and creative work of both our faculty and students, to have true impact on our society culminating in improving the welfare of human life. We have great role models for this aspiration. For example, the mission of the National Science Foundation, as specified in the National Science Foundation Act of 1950, is “To promote the progress of science; to advance national health, prosperity, and welfare; to secure the national defense; and for other purposes.”<sup>4</sup> But there are many examples of research missions that serve the greater good; for example the University of Pennsylvania Engineering research statement is “our research enterprise constantly evolves in order to focus on initiatives that will not only advance science and engineering, but will also dramatically impact society as a whole.”<sup>5</sup>

In addition, there is plenty of evidence to support the claim that areas of greatest impact will be those that require a multitude of disciplines working together to solve the great challenges we face – climate change, homeland and cyber security, healthcare, and education. So we aspire not only to have impact but lead in multidisciplinary and interdisciplinary research.

Our history stemming from the Athenaeum and Mechanics Institute has kept our work real and our culture continues to drive this reality-based work. In the future, our students will keep us honest – honest to our teaching values and honest to our RISC work being applied, down-to-earth, and fundamental. This is because we are increasingly finding that our students are coming to RIT with this notion in mind. This year, our freshman class was characterized by the fact that one out of 90 students had already started their business. An even greater ratio of students had discovered new knowledge by participating in university-level research. And an increasing number of our students have been engaged with the community learning.

Just look at our own initial inductees into the RIT Innovation Hall of Fame: Professor Wendell Castle, Katherine Hayles (B.S. Chemistry, 1966) and Professor James J. DeCaro. These individuals represent the ideal of true impact in the area of art, digital media and deaf education.

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<sup>4</sup> National Science Board 2020 Vision for the National Science Foundation, December 2005, <http://www.nsf.gov/pubs/2006/nsb05142/nsb05142.pdf>

<sup>5</sup> U Penn Engineering, <http://www.seas.upenn.edu/research/mission.php>

The ‘real’ work of these pioneers and the rest of our great faculty define the path we must continue to follow. It is imperative for RIT to continue its overall emphasis in applied work that has been nurtured over time and thereby distinguish RIT amongst its peers.

**An action plan to move forward:** While we may know where we have come from, where we are, and where we want to go, the real work will occur in the action we take to get to where we want to go. What follows is a small set of steps RIT will take in the months and years ahead.

1. Criteria for tenure and promotion will be open to new ways faculty can contribute to impacting our society.
  - a. Tenure committees, chairs and deans must embrace innovation work by faculty, such as that represented by patents, licenses, or new business start-ups.
  - b. Faculty work with students that result in student research, innovation, scholarship and creative work must be recognized.
  - c. External funding coming from grants, foundations, or governments should be viewed as important evidence from outside experts that validates the impact of faculty work.
2. A strategic plan for RISC will be developed, approved, resourced and implemented under the guidance of the vice president for research, the provost, and the Research Advisory Board.
3. A thorough study of space, especially space used for RISC at RIT, will be completed and a set of recommendations for policy, process and practice should be made to the president and the provost.
4. RIT will continue to support faculty to be successful with research, innovation, scholarship and creative work.
  - a. While expecting faculty to embrace the teacher-scholar model, RIT must also enable faculty to pursue their research work.
  - b. RIT should expand the use of portfolio systems of defining faculty workloads and, in some areas of excellence, support reduced (but not non-existent) teaching loads of faculty.
  - c. RIT must adopt progressive policies and approaches to allow all faculty to achieve a work/life balance.
  - d. Increase administrative support, particularly post-award support, for faculty conducting externally sponsored research.
  - e. Support faculty who wish to collaborate, particularly with faculty from other disciplines.
  - f. Incentivize departments to support RISC at RIT.
5. Recognizing that celebrating our achievements not only encourages more excellence but also markets our good work to the outside, RIT will seriously acknowledge, rejoice, and commemorate the work done by faculty and students.
  - a. Publish an electronic annual report that captures the published papers, books, and articles, the performances and artistic creations, the patents, invention disclosures and business start-ups of our faculty and students.
  - b. Establish college-based and institution-based awards for research, innovation, scholarship and creative work.

- c. Develop a collection of dissemination events that allows undergraduates, graduate students and faculty to display their work.

**Closing words:** RIT has come a long way from the days of the Athenaeum and Mechanics Institute. But its history has shaped what it has become and will point to where it needs to go. In its own very unique way, RIT must advance and promote the research, innovation, scholarship and creative work our faculty and students perform while ensuring it retains its teaching excellence values. Embracing the teacher-scholar model, growing strategic areas of excellence, and maintaining a culture of high impact describe the RISC environment of the RIT future. We have more work to do, but RIT will rise to the challenge.