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**Challenges of Doing Research at a Teaching Institution**

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**THE SUBJECT** of this article speaks to the heart of academia. Research has always been importance to what college teachers do. Since most exercise physiologists are college teachers, research is what exercise physiologists do. That is, aside from being healthcare professionals.

Over the years, colleagues have said that you can teach or do research, but not both – at least not very well. I disagree. I believe college teachers can teach and do research at the same time. I’m not saying it is easy, just that it is possible. I can say this after teaching 300+ academic courses and approximately 6,000 students.

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| To be an effective college teacher requires not only quality teaching but also quality research. Generally, college teachers are good at teaching, so they must learn to be effective researchers. |

If you are a college teacher, you understand that research is an integral part of what they are and what they do. You know that it is important for continuous learning, for personal and professional success, and for meeting productivity, retention and promotion criteria, as well as to gain peer recognition.

At the close of the 2008 Fall Semester, the seniors in exercise physiology presented their research to other students and the EXP faculty. I was impressed by their work, given that this was their first completed research project. The seniors were motivated by the class requirement to do the research. The question is whether they will be motivated to do research after college. Will they actually find the time to publish their work? Will they make a commitment to doing research wherever they may be, regardless of the type of work they are doing?

In thinking about these questions, frankly, I’m not very optimistic. Much of my experience with master theses and dissertations argues for very little follow-up afterwards. Probably less than 10% of the exercise physiology students actually find the time and commitment to publish their research.

Incidentally, among those who go on to earn the doctorate degree and then find themselves teaching at the college level, I have found that many do not make time to publish their work beyond the bare minimum necessary to get promoted or tenured. Often, I believe, the reason is that most people don’t enjoy rejections.

Dealing with rejection is part of life. I have faced rejection many times so I speak from experience when I say rejection can leave you feeling devastated. Last year, I submitted a poem for publication in a St. Scholastica journal. It was rejected. I still think about the question, “Why was it rejected?”

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| The final piece of the puzzle is to make sure the graduates with the doctorate degree are ready to teach and do research. It appears that too many discount the need to research a topic and, thus rely on old information. |

If you have a history of research and publishing, you have experienced the same feelings that I have when a manuscript is rejected. You know that if you don’t get back on the paper and make the corrections early on rather than later, the chances are the paper will get lost in the pile of unpublished manuscripts.

Well, there are several simple steps we can take in dealing with rejection. One strategy is to focus on the fact that it is a game! Rejection or failure of any kind is not what we think it is. Rather, it is failing to try again -- and again. Second, we cannot afford to take rejection personally. Third, we must learn from the rejection and move on. Being rejected by a publisher is not the end of the world.

Since the doctorate program at Florida State University, I have talked more than once about my advisor, Dr. Ronald Byrd. I remember going to his office and presenting him with a complex research design, and he said very calmly: “Tommy, why not start with just this one box?” Strangely enough, I didn’t disagree. Looking back, after years of doing research, I still do “simple” research. It makes sense and, in fact, almost everything I’ve done in the research area is unbelievably simple. My research goal is to ask one question and then identify as many dependent variables as possible to address the role of the treatment variable.

Understandably, leading edge research is often more complex, and there isn’t anything wrong with aspiring to engage in complexity as we do with simplicity. My point is that inspiration is hard to come by when the idea of research is too complex. I believe some of you know what I’m saying, and this brings me to this comment: “We are responsible for our actions or the lack thereof. We can choose to do research with what we have, where we are or we can wait until all the stars line just right before taking the first step.”

Imagine the opportunity to mentor students, to redirect their thinking, to teach them technical and creative writing skills, and to help them believe in themselves. Imagine the power of feeling in charge of new information that you created and, when published, becomes part of the historical knowledge base.

Hardly anyone more so than you has the opportunity to give to the nation the next generation of critical thinkers with the scientific knowledge and hands-on skills to lead others. Thus, regardless of the obstacles, each of us must search for opportunities to think differently, to see what others have failed to see, to write a book (or books), or to capture data in ways few have considered.

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| All learning starts with the first step, whether it is learning to teach or learning to do research. Everyone’s burden is the same. So take that first step. It is just a matter of time and you will be thinking differently. Start now and continue. |

We are (or we can be) teachers who do research. But, first, we must believe in the necessity of doing research at the same intensity as we do teaching. Research does not belong to the research institutions no more so than teaching is often said to be better at a teaching institution. Both can and do exist in all academic institutions, although admittedly there is more emphasis on research at the larger universities.

Unfortunately, too many faculty members at the larger institutions believe they are excused from solid, credible teaching. They believe it is all about the number of publications, posters, and meeting abstracts. They also believe that the TAs can teach their courses for them. On the other hand, far too many college teachers from smaller institutions believe they are excused from publishing because the emphasis is on teaching. My sense of it is that neither is the better teacher because there exist a mix of good and bad teachers in the large (research) and small (teaching) institutions and within all disciplines.

After all, does anyone actually believe a doctorate program teaches a person how to teach? No, absolutely not. Most freshmen doctorates – meaning, college teachers who are still within five years of getting the doctorate degree, aren’t likely to agree with me and maybe many of you disagree as well. That’s okay. I will finalize this point by saying it isn’t what the freshmen doctorate knows that concerns me it is that the faculty member thinks he or she knows everything. There is something to be said for “experience.”

Another problem is the typical perception of a small (teaching) institution vs. a large (research) institution. I have heard statements such as: “There is no way a really good professor would work at a small college.” Or, “Small colleges hire people who can’t locate an academic position at a larger institution.”

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| To be effective, teachers have to move out of their comfort zone and trade ideas with colleagues. Big or small ideas allow for a new way to think. Often, it builds the inner desire to find one’s proximity with what is actually true. A new view or a new understanding, whatever gives rise to the culture of learning that is critical to individual passion and creativity. This is not such a far-fetched idea. |

Such statements are flatly incorrect. It is the equivalent of the statement, “When I retire, I can always teach.” I always say, “No, you can’t unless you are a teacher!” Do you hear anyone saying, “When I retire, I can always practice medicine.” However subtle the thinking, it is a matter of respect for teachers and their respect for themselves.

From my perspective, there shouldn’t exist the “teaching-oriented college” versus the “research-oriented university.” Academic institutions are exactly that, whether they are small or large. It is the same to me as discrimination among institutions based on race, color, religion, and national origin. If we believe there is a difference between the quality of an education at a small institution versus a large institution, we are living an illusion.

There is no reason that a difference should exist, based simply on size of the institution. Quality teaching and quality research is just that; it isn’t defined by the size of the institution. Here, I think it is important that the administration understands this point. After all, they are responsible for requiring the faculty to do research just as they expect them to teach “x” number of courses.

Nobody said college teaching was going to be easy, although I have come to understand from some of my colleagues that teaching 9, 50-minute lectures per week is an impossible obstacle to doing research. Last I heard, most people “in the real world” work 40 hours a week or more. Even with three hours of preparation per course per week, that equals to 18 hours per week, leaving 22 hours per week for other things. If we substrate two hours per week for committee meetings, we still have 20 hours left to do research! Okay, substrate 5 hours per week for advising students. Now, we have 15 hours per week to do research.

Over the years, I have become aware that a certain percent of our colleagues enjoy working between the hours of 10 am and 2 pm, three or four days a week. Some in fact work elsewhere one day a week, often a full 8-hour job! It is no wonder they do little to no research, and yet I have observed they get upset when they fail to get promoted or tenured.

1. Where is the passion for research?
2. Why aren’t doctorate students taught that long days at work adds up to 8-hour days and hardly anything more?
3. Why can’t the faculty at a small (teaching) institution believe they can do quality research even with modest laboratory facilities?
4. Why not they pick a topic that is doable with what they have where they are?
5. Why not ask for help from the fund-raising office if it is necessary to write a grant proposal?
6. Why not consider collaborating with another colleague doing research?
7. Why not embrace the administrator’s push for research by requesting the necessary scientific equipment?
8. Why not get students involved with your research?
9. Why not expect areas like management, education, and law to do research with the same intensity as disciplines like science and economics? The promotion and tenure guidelines aren’t discipline specific, right?
10. Why aren’t faculty members able to get research done during semesters when they are given a break in their teaching load?
11. Why not think small about research projects, say one scientific publication per year?
12. Why not work with undergraduate students on their research projects. No one said that researchers must have graduate students, postdocs, or full-time technicians to collect quality data.
13. Why not require a course in research design whereby the students have at least one opportunity to be involved in a study, perhaps, assisting the faculty?
14. Why not form a department or multidiscipline research group where students and faculty members meet regularly one hour per week to discuss and assist ongoing projects and/or develop and implement a research study?

Answers to these questions support research opportunities at small institutions. Will it be easy, NO – but it is possible. What is needed is passion and ingenuity.

From my own experience when I was at Wake Forest University in the 70s, we created a cardiac rehabilitation program to rehabilitate post-myocardial infarction patients. The number of research studies in the form of a thesis is certainly in the hundreds by now.

Later, when I was Graduate Coordinator at the University of Southern Mississippi in Hattiesburg, MN, aside from developing the Gross Anatomy Laboratory whereby students could dissect cadavers, the exercise physiology faculty along with the doctorate students presented 15 to 20 research posters each year for 4 to 5 years at the Southeast Regional ACSM meeting. When there is passion for research, it can be done.

Faculty members at St. Scholastica are as challenged as most college teachers to find time and to secure the necessary equipment when it comes to research. Just recently, the administration purchased a $50,000+ Medical Graphics CardiO2 metabolic analyzer for instruction and research purposes. This happened after four years of requests based on the benefits of the analyzer for teaching and research purposes.

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| I won’t sugarcoat this. Getting your faculty to do research will be hard, particularly if you work in a teaching (small) institution. The raw truth is that they can learn to do excellent research. It is within the grasp of college teachers to do both.  |

Please appreciate that I’m not suggesting that finding money for research equipment is easy. I’ve found that hardly anything in life is easy, especially when dealing with funding for research that requires verification and financial guarantees that are often very complicated to comply with. On top of that, the funds are generally insufficient to complete the research. Together, both tend to weaken the faculty’s involvement in university-funded research.

Also, I’ve witnessed research committees that make it difficult for faculty members to obtain funded research due to their biased and subjective attitudes. Furthermore, there is little incentive to do research when the promotion-tenure system is driven by what I consider an “'old-fashioned” way of thinking, whereby insufficient attention (or none at all) is given to the significance of research if it is designed to evaluate and/or confirm the findings of previous researchers.

Maybe, worse yet, I’ve witnessed where the administrative infrastructure fails to support research published in electronic-only scientific journals. I have been told by colleagues that there is no use to publish, for example, in the *Journal of Exercise Physiologyonline* (*JEPonline)* because the administration will not acknowledge the publication as credible for promotion and/or tenure purposes. This thinking makes no sense to me.

Also, frankly, it makes no sense to me that “Being a good teacher with a so-so (meaning, one or two articles per year) research record will typically not get you tenure.” Yes, I understand that the three criteria (teaching, research, and service) are weighted differently depending on the institution and department. And, while it is common to say, “A small college might emphasize more teaching and service and have less emphasis on research, while a top research university will emphasize research over the others.” The question is this: “If it is true, then, is it 5% or 25% of the academic institutions?”

Research universities are not research institutes, and if research universities are to have a future, they can only exist from a collaborative and productive realization of their responsibility to teach and do research. Unfortunately, too often at research universities, top faculty members try to avoid teaching undergraduate courses. Also, undergraduate programs are often geared toward creating graduate students, rather than students with a degree that is worthwhile in its own right in accessing viable career opportunities in the pubic sector.

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| The starting point is to define what is important to you, your academic institution, and your profession. Then talk about it, and then decide what can be done to get underway. Might as well be a trailblazer, right? Anything is possible. Be bold and imaginative, and deviate from the established way of thinking.  |

Clearly, research is valued for all the obvious reasons. But why is the idea that new knowledge should be valued more so than quality teaching. After all, teaching so-called “old knowledge” has stood the test of time and is likely therefore to be more valuable. Often, new knowledge is trivial, if not revised, further researched, or even discarded. Perhaps the short answer is that new knowledge (i.e., research) is valued by the faculty because it is generally of a personal interest to them.

There is also the issue of students as customers, who pay for an education that is pushed aside for research purposes. It seems almost certain that an excellent teacher creates more research-minded people than research alone.

The argument is that teaching is only as a good as the new knowledge that continues to test the value of the old knowledge. For example, the role of LDL cholesterol in coronary artery disease, the notion that for decades the post-MI patient shouldn’t exercise, or that stroke volume always levels off with progressive incremental exercise. Each of these and many others are now taught differently today than 15 or 20 years ago because some researchers demonstrated what was being taught was wrong!

Take the physiology of sex before an exercise performance. Is the energy cost of sex actually a deterrent to an athletic event? The answer is 100% “NO.” How about laughter? Is it actually an important form of exercise as some individuals believe? Again, “NO.” Okay, what about a change in body position from supine to upright to head down, does blood pressure change with postural change? NO. We know from research that much of what was believed true is actually not true at all.

How about carotid palpation for exercise purposes? Thus, textbook authors may make conceptual errors in areas where they do not have personal experience, which may be detected by someone who has personal experience through doing research in that area. Understanding such errors teaches the student to read with discretion, not to believe everything that is written, and also shows them that the truth is learned through research.

In addition to what I’ve already said, other challenges to engaging in research include the following:

1. Lack of tangible resources (technical, software, equipment, materials)
2. Lack of infrastructure support (lab space, no grant office)
3. Lack of financial resources
4. Lack of help in dealing with the externally funded grant administrative and financial system that is more often than not too complicated and unfriendly
5. Lack of human resources (no research assistants, homogenous/scarce participant pool)
6. Competing time demands (teaching, administration duties, meeting needs of other majors)
7. No institutional or departmental rewards for doing research
8. Unpopular research/political incorrectness of research
9. Lack of understanding and value of certain research topics (complementary and alternative medicine, such as massage therapy)
10. Lack of research-based/focused courses
11. Research not a priority and doesn’t “count”
12. Frequent changes in administration

Understandably, there are other obstacles. Most of them, like the ones just mentioned, can be removed with time, resources, and funds to promote research. It requires teaching ourselves how to deal with the complexity of doing research while minimizing bias with non-traditionally designed studies. And, it is important administrators work at putting fun back into research by reducing the proliferation of rules and regulations, paperwork, and the administrative complexities of doing research.

There is a proverb of unknown origin, which says that “He who does not research has nothing to teach.” Most of us would agree that research strengthens teaching by keeping the teachers up-to-date and mentally active, and providing them with novel ideas, materials or approaches, gained through personal experience.

Administrators at universities, faculties and departments must ensure that young people are freed from an excess of administrative duties and supported to do research, in addition to performing their teaching duties. Senior established investigators are also needed to provide encouragement, advice and help as mentors. Scientific research is essential if we are to compete in this knowledge-driven world.

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| To believe we should teach and do research equally is to reshape our thinking, values, and norms. It means taking risks and starting something new simply because it is the right thing to do. |

The "return-on-investment" can be measured by the number of published manuscripts, state and national conference presentations, and federal and non-federal funding. Such achievements recognize institutions at the local, state, and national levels. Hence, it is imperative that resources are allocated for research, including space, faculty time, and a designated administrative assistant and research associate. With these basic resources and support the research framework has the opportunity for growth.

Also, although it is true that universities have not historically collaborated with each other nor have they regularly collaborated with industry, this is increasingly no longer the case. Universities now work alongside industry to help create technology and innovations. As you know, many universities are leading the way in the commercialization of university-born inventions, thus creating a seamless system of transferring technology from the research lab into the marketplace.

In closing, if you wish for additional information on this topic, go to the following URL: <http://faculty.css.edu/tboone2/ASEP/RESEARCHPresentation.ppt> The content consists of 40+ slides that address a number of the important challenges and considerations to doing research at an academic institution.