Georgia Gwinnett
COLLEGE

Office of the President

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May 10, 2013

Dr. Linda Noble
Vice Chancellor for Academic Affairs
Board of Regents
University System of Georgia
270 Washington Street
Atlanta, Georgia 30334-1450

Dear Dr. Noble:

It is my privilege to endorse the nomination of Dr. Richard Pennington for the Regents' Teaching Excellence Award. My endorsement is based on my own first-hand knowledge of Richard as a teacher, scholar, and educational administrator. I have watched him demonstrate the skills that make him not only one of the profession's most gifted teachers, but also one of its most prolific scholars. I know well the characteristics that are critical for a successful teacher and educational leader. Richard's clearly demonstrated intellectual qualities, teaching skills, leadership and managerial talents, and strength of character make him an ideal candidate for the Regents' Teaching Excellence Award.

What makes Richard Pennington truly special is that he excels in the four critical dimensions that distinguish a truly outstanding faculty member: accomplished teacher and educator; credibility as a scholar; demonstrated leadership abilities needed to supervise faculty and to contribute to governance activities; and collegiality and the ability to work effectively with the multiple audiences with whom educators must interact.

Richard is a gifted teacher whose classes always are challenging and broadening for his students. He is an innovative and dynamic teacher who not only educates his students, but also inspires them to perform to the utmost of their abilities. What sets Richard apart from other teachers is his devotion to his students. He is genuinely interested in their intellectual and personal development. I have seen Richard spend countless hours counseling students on course material, reading improvement, writing development, and improvement of research and analytical skills. Richard is a teacher whose regard and concern for his students extends well beyond the confines of the classroom.

Dr. Pennington has not only helped to create and pilot one of the fastest growing programs at GGC (Chemistry), he has as well continued to refine his teaching skills. As his Teaching Philosophy submission describes, Dr. Pennington has gone "back to the future" in his approach to teaching. He commences each class

with the presumption that every student has prepared for the lesson, so there is little need for formal lecture. Students demonstrate their mastery of the material by working problems at individual whiteboards in the classroom. One-on-one discussions during the class highlight important points or indicate areas of general difficulty. Every student is engaged in every class, thereby ensuring not only each student's understanding of the material, but more important instilling in each student the understanding of the responsibility for his or her own learning. Consequently, Richard's students are not only successful in the individual course, they have laid the foundation necessary to become a committed life-long learner. At an institution where the entire faculty prides itself on its devotion to the teaching mission, Richard Pennington stands out as the very best.

The second of Richard's critical qualifications is his acknowledged status as a superb scholar. One need only review his impressive list of scholarly activities and contributions to understand the esteem with which he is regarded in the field of chemistry. Richard is a prolific researcher and author. Just since joining the GGC faculty, Richard has published five refereed articles and delivered numerous conference presentations, to include formal presentations on pedagogy. Taken together with the extraordinary teaching record described above, the extensive student mentoring responsibilities required of every GGC faculty member, and the wholehearted commitment to institutional service described in the paragraph below, Richard's sustained level of excellence as a scholar is even more remarkable.

The third aspect of Richard's extraordinary talent is his demonstrated leadership ability and commitment to participation in the supervisory and governance activities that require faculty time, attention, and talent. One of the interesting aspects of being a member of the faculty at a new college is the opportunity to create an institutional culture that is devoted to student development and teaching excellence. Richard has seized that opportunity with gusto at Georgia Gwinnett College. In addition to his full teaching load, Richard has been an invaluable member of a number of institutional-level committees as well as being a prime architect of the new Chemistry major for which GGC is seeking Board of Regents approval. The esteem with which Richard is regarded by his colleagues is evidenced by his selection to be the president of the Faculty Senate next year, a critical leadership role in which Richard will be responsible for defining and upholding the participation by faculty in important governance matters.

Richard Pennington is a gifted leader who knows how to inspire people and organizations to achieve and sustain excellence. Richard's insights, experience and judgment have been instrumental in helping the college develop the policies and establish the culture that will ensure an innovative, challenging, and supportive environment for both faculty and students in the years ahead. One has only to see the enthusiasm, intellectual vitality, and commitment to teaching excellence exuded by Richard every day to know how brilliantly he inspires faculty and students alike.

Finally, educational leaders must be able to deal effectively with the various audiences with whom they interact continuously: students, faculty colleagues, parents, alumni (we actually have a few), administrators, donors (past and potential), and distinguished visitors. Since unanimity of view

among these audiences is likely to be uncommon, faculty leaders have to deal with varying points of view graciously and respectfully. Judgment, character, patience, experience, and poise are required at every turn. I know of no one better suited to the task than Richard Pennington. Integrity, civility, and respect for others are a much a part of Richard as is his power of reason.

Richard Pennington combines all the attributes of a teacher, scholar, and leader with infectious enthusiasm and dynamism. He sets the pace for all around him. His is a special kind of leadership, one ideally suited to the tasks required of a senior educator. His life-long devotion to continued intellectual development ensures that he will be a vibrant and engaged leader of the curricular and extracurricular activities of Georgia Gwinnett College. Moreover, beyond his obvious professional, intellectual, and scholarly qualifications, Richard is a warm and gracious colleague who adds immeasurably to the GGC community. In short, Richard Pennington is one of the most extraordinary college professors I have ever had the privilege to know. I am honored to recommend him for the Regents' Teaching Excellence Award.

Sincerely,

Dr. Daniel J. Kaufman
President

Georgia Gwinnett
COLLEGE

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Academic & Student Affairs

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May 28, 2013

Regents' Teaching Excellence Award Committee,

It is without reservation that I strongly support the nomination of Dr. Richard Pennington for Regents' Teaching Excellence Award.

GGC's culture reflects its nature as a teaching-centric institution where each of our faculty is chosen because of their demonstrated excellence in teaching, Dr. Pennington, however, stands out as the best of the best. Because GGC is a relatively new college, we need superb leader/role models for teaching and scholarship among our faculty. Dr. Pennington is just such a faculty member.

As one of our earliest faculty hires, he subsequently developed new courses and pedagogies throughout the curriculum, particularly in the chemistry discipline. In doing so, he incorporated the latest concepts from the academic literature, the most appropriate practical applications, and the integration of cutting edge educational technology. He has incorporated active learning throughout the courses he offered. In addition to teaching, he was instrumental in developing learning outcomes and assessment measures throughout the entire chemistry program. That his students repeatedly rank him as an excellent classroom teacher is ample evidence of his dedication to the teaching profession. That his peers among the faculty selected him as Professor of the Year says even more.

One of the reasons Dr. Pennington is a sought after teacher is his use of educational technology. In fact, he was a member of a team that won the State-wide TAG Excalibur Award for the innovative use of educational technology. Realizing that our students are comfortable with technology, he developed video instruction to be used as aids to learn how to solve chemistry problems. The result has been very high (and improved) retention rates in our general and organic chemistry courses. These are courses that typically have high DFWI rates and result in high drop-out rates for STEM majors.

Of special note are Dr. Pennington's leadership skills. The faculty recently elected him to become the President of the Faculty Senate in recognition of those skills. This outstanding teacher, scholar, and leader is unsurpassed in his ability to do it all, and to do so in a calm, respectful and inspiring fashion. He inspires our ever-growing numbers of new faculty to become the best possible instructors. He inspires our ever-growing numbers of new faculty to become the best possible instructors; he is the total package and well-deserving of this USG honor.

I recommend in the strongest possible terms that he be selected for the Regents' Teaching Excellence Award.

Sincerely,

Stas Preczewski, Ph.D.
Vice President

Georgia Gwinnett
COLLEGE

Office of the Dean
School of Science & Technology

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May 20, 2013

Regents' Teaching Excellence Award Committee,

I wholeheartedly support the nomination of Dr. Richard Pennington for Regents' Teaching Excellence Award. The School of Science and Technology (SST) has so many excellent teachers it is hard to single out the accomplishments of a single faculty member. However, Dr. Pennington has shown himself to be a truly exceptional teacher. I have known Dr. Pennington since August 2007 when he joined the faculty at Georgia Gwinnett College as one of our early faculty hires. Dr. Pennington is one of the most active, vibrant, engaged, and dedicated members of the SST faculty. I have also watched with admiration as he has begun to establish his reputation as one of our most gifted and valuable faculty members. When new faculty ask me whose class they should visit if they want to see a good teacher, Dr. Pennington is at the top of my list.

Dr. Pennington has been an outstanding teacher, engaging students in a breadth of courses including a First Year Seminar course, non-majors physical science courses, and chemistry courses for STEM and pre-nursing students. Most notably, Dr. Pennington has distinguished himself in the award winning design of technology tools to support instruction in chemistry. He has personally developed numerous videos that students watch on their computer, tablet or smart phone. He had modernized chemistry instruction for the digital age.

Dr. Pennington exemplifies all the attributes that we expect in our faculty. He provides an outstanding model that other faculty members strive to emulate, that is, a commitment to teaching and student engagement. I recommend in the strongest possible terms that Dr. Richard Pennington be selected for the Regents' Teaching Excellence Award.

Thomas G. Mundie
Dean, School of Science and Technology
Georgia Gwinnett College

David P. Pursell, Ph.D.
Associate Professor, Chemistry
School of Science and Technology
Georgia Gwinnett College

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Pursell GGC web profile

March 20, 2013

Dear Awards Committee,

I am delighted to offer my ***strongest*** support of Richard Pennington for the Outstanding Teaching Award. I know of no other faculty at GGC who have performed the teaching role with the same level of ***sustained eminence*** as Richard. I am honored to be his colleague and have learned much about teaching through our continuous interaction in developing courses, teaching students, assessing their progress, and helping them achieve their professional goals. While Richard's award portfolio outlines how he teaches, I will focus on the results of his teaching—the ***success of his students.***

Organic chemistry is a challenging, two-semester, course sequence with a laboratory component. Along with other chemistry courses, Richard and I have taught numerous sections of organic chemistry in our years at GGC. During the semesters that I have taught Organic Chemistry II, I have had numerous students who had Richard for Organic Chemistry I. The contrast between these students who had Richard for Organic I, and those who did not, is most remarkable. Richard's students come to my Organic II course ***enthusiastic*** about chemistry. Richard's students come to my course with ***disciplined study habits***. Richard's students come to my course with ***mastery of organic chemistry fundamentals***. Richard's students come to my course clamoring to ***participate*** in class and lab activities. Richard's students ***recognize the value*** of organic chemistry in their ***future academic and professional lives***. Richard's students come to my course ***ready to lead*** their classmates through the challenges of Organic II. Through his innovative approach to teaching Organic I, Richard's students come to my Organic II course ***prepared for success***! And not surprisingly, his students are ***highly successful*** in my follow-on Organic II course.

Dr. Richard Pennington ***enables students' future success***, not just in chemistry, but in all professional endeavors. For this his students are undoubtedly thankful. For his faculty colleagues, such as me, I am inspired by what he has done for his students and can think of no other colleague more deserving of the Outstanding Teaching Award.

Sincerely,

David P. Pursell

David P. Pursell

Regents Teaching Award Committee,

I could not imagine an individual more deserving of the Regent's Teaching Award as Dr. Richard Pennington. I have had the pleasure of working with Richard since my arrival at Georgia Gwinnett College (GGC) in the Fall of 2008. Since then, I have witnessed the profound effect he has had on students through his teaching. Richard and I collaborate on an ongoing chemistry research project in which we jointly supervise students in their scholarly endeavors. We also have served together on many committees. Each of these experiences has demonstrated to me what an inspiration Richard is to both students and colleagues alike.

Richard is one of the finest teachers I know. He soothingly describes chemistry, even when addressing complex topics and concepts in chemistry courses. He is passionate about his students' learning and works diligently to help them succeed. Several years ago, Richard began recording tutorial videos for his classes on various topics and found that students greatly enjoyed listening to his British accent again and again while mastering course materials. Based on the positive feedback he received, he designed a web page so that anyone at GGC or with access to the internet could use these resources and learn from them. Over time, his library of videos has grown to encompass all of the first 2 years of chemistry courses available at GGC. Using this resource has allowed Richard to efficiently "flip" his classroom, a factor that many of the organic faculty have utilized for their own courses, myself included.

One of my most notable experiences of Richard's teaching efforts came in Organic Chemistry II. Richard was the principle investigator of a mini-grant designed to redefine the course's laboratory experience. Due to this funding and Richard's efforts, we successfully discarded ALL of the "cookbook" laboratory procedures previously associated with the course, and replaced them with a semester long research project. Students, for the first time, experienced solving a problem from its inception by gathering literature information and translating the information to the lab. Although students experience some setbacks in the lab (which is a large part of research after all), they also learn how to use resources available at GGC, identify chemistry reaction products and have a greater sense of satisfaction upon completing a successful project. Students have expressed extreme gratitude for this opportunity.

I also have had the pleasure of working with Richard in the research laboratory. Last Fall semester, I was on maternity leave, but one of our research students, Jonathan Demart, made some interesting observations regarding a reaction that we had previously run many times. Through Richard's guidance, Jonathan made a major breakthrough in our research. By changing the reaction conditions slightly, he was able to produce a large amount of product quickly and efficiently. Jonathan shared with me how the experience has changed his life. He now knows he is meant to be in the lab due to Richard's guidance. Similarly, other former research students of ours, Anthony Rojas and Kaelin Priger, have now transferred to Georgia Institute of Technology to pursue their love of Chemistry and have expressed their extreme gratitude for gaining research experience in the lab. Each of them is excelling at Georgia Tech and both have attained competitive research opportunities this summer.

In short, I highly recommend Richard for the Regent's Teaching Award. Richard is constantly seeking new ways to engage his students and it is evident in his teaching, research and service at GGC. His picture is often used on the school's website and pamphlets as well as during meetings. In many ways, Richard IS the face of GGC. I would be remiss not to mention that Richard also is a genuinely good and trustworthy person. I work with him more than any other individual on campus simply because he makes it easy. I know that I trust him impeccably and can talk to him about many issues to gain his insight and advice. I am sure his students benefit greatly from this characteristic as well. Thank you for your consideration and please do not hesitate to contact me should you have any additional questions.

Thank you,

Julia E. Barker Paredes, Ph.D.
Assistant Professor of Chemistry,
Georgia Gwinnett College,
Cell: 404-734-1386

To whom it may concern,

Below is my signed nomination and teacher recommendation for Dr. Richard Pennington:

My first semester at GGC began in the spring of 2012. I had graduated from the University of Georgia 3 years prior with a degree in speech communication and came back to college in the pursuit of fulfilling medical school prerequisite classes. My plan was to retake all of my science courses in which I had done poorly my first time around at UGA. Unfortunately, on enrollment day, I learned that all of the general chemistry courses were full. At UGA I slipped out of gen chem with a 'C' and was eligible to take organic but was horrified with the thought of diving head first into it at GGC. Being that it was my only choice, I took the plunge and enrolled in organic chemistry. Little did I know that I would be so lucky to have Dr. Richard Pennington as my professor.

My first day in organic I, I was not at all confident in my abilities to do well in Dr. Pennington's class. I addressed him with my concerns at the end of his first lecture and immediately he put me at ease by saying that as long as I worked hard and prepared daily for lecture, I would do well in his class. It was clear from the first day of class and every day onward that Dr. Pennington cares very much about the success of his students. His daily class schedule is set up to ensure that his students do well. Daily lessons prepared me for class each day, a little material at a time, so that studying for exams was easy. Dr. Pennington would take a small amount of time at the beginning of class to go over the key points for the daily lesson, then the remainder of the class was spent problem solving. The last 10 minutes of class we would take a quiz on the material we learned for the day. This method of teaching forced me to prepare for class a little bit every day which made it a lot easier to convert the subject matter into long term memory. This helped greatly for test taking and is certainly helping me now while studying for the MCAT exam. I remember more from my organic chemistry class than any other class I took while attending GGC.

Aside from his excellent teaching structure, something must also be said about his character. Of all of my professors at GGC, Dr. Pennington had the most approachable personality. It was always clear, whether during lecture, problem solving, or outside of class, that he was always willing to give extra help to any student who asked. Most professors say they are willing to help, but none are as easy to talk to as Dr. Pennington. He is great at explaining and is clearly very passionate about chemistry. He has gone above and beyond in his profession by creating informational videos on specific chemistry subjects that are harder to understand. I needed some extra help on some spectroscopy questions and his videos gave me the ability to answer all of my spectroscopy related questions in the text book.

I was very lucky to start my overall experience at GGC with Dr. Pennington as my professor. Not only did I learn so much in his class, but I also thoroughly enjoyed myself. He created a great environment for learning. I feel like he gave me the confidence in myself that I needed to excel; not only in his class but in all my classes. I finished his class with an 'A' and I owe him much gratitude for making it possible for me.

Thank you.

Tyler Davis Bowerman

Richard Pennington, Ph.D.

Reflective Statement: "No lectures from me – inside or outside the classroom."

I. Students' Being Active Participants Inside the Classroom

What are the criteria that guarantee a person will be successful in what they do for a living? For me personally, that answer is two-fold. Firstly, I consider myself blessed that my job is also what I love to do. My job allows me to look forward to work each and every day; I find it a very enjoyable experience being in the classroom. Secondly (and this is *why* I love what I do), the feeling that my work is making a difference in my students' lives cannot be overstated. I experience this every semester, from the way students interact in the classroom (with me and with each other), to the emails and thank you notes that they write (see examples of these later on in this statement) - their words speak to me as to *how* I have made a difference in their lives, and there is simply no better feeling than that.

My goal as an instructor is to give students the tools to learn on their own, develop a strong work ethic and become lifelong learners. I wish to impart to them ***innovative and effective ways of teaching and learning*** that I was not exposed to as an undergraduate student.

My particular teaching style (the Thayer method, see 'Teaching Philosophy' for more detail) places considerable pre-class preparatory responsibilities on the shoulders of the students. The box below contains an introductory piece (taken from my syllabus) that describes the running of my class, preparatory expectations of the students, and the tools I provide to help them achieve that preparation:

> "I don't lecture in my class - our class time is instead spent with you (as a student) interacting with other students, as well as with me (as the instructor) during problem-solving sessions. I approach the study of chemistry as a problem-solving exercise, and so in my class you will learn skills such as how to effectively ***read*** problems, ***extract*** the important information from them, and then effectively ***solve*** them.
>
> In order for this method to work, I will be asking you to perform pre-class preparation ***before each and every class of the semester***. It may sound intimidating at first, but if you stick with it, you will find that this work really pays off. In order to aid in your success, I will provide you a set of tools - (i) a daily schedule document that lays out the entire semester (course goals, reading and problem assignments for each day, prep videos to watch, dates for all quizzes, exams and laboratory activities); and (ii) a set of preparatory videos (prepared and recorded by myself, and available at the link shown at the top of this syllabus) that will help you if you get stuck during your class preparation. ***Stick with it - it will work out if you do!*** My goal is to give you a work ethic that will prepare you well during your time at GGC and beyond."

With this teaching method in place, I am afforded during class the luxury of being able to focus on student engagement. My experiences during my undergraduate studies taught me that the classes I found the most interesting were the ones in which I worked the hardest, and thus performed the best. I try to bring that mindset into each of my classes - if my students are kept busy and engaged during class, if they are ***active participants*** (rather than ***passive observers***) during class time, the likelihood is that they will enjoy the class more, will be willing to invest more time and effort, will retain the material more effectively, and ultimately will perform at a higher level on quizzes and exams.

II. Students' Being Active Participants Outside the Classroom

However, effective teaching methods in the classroom are only one facet of what makes a successful professor. Below I have detailed a variety of activities through which I engage with my students ***outside of the classroom***.

- ***Student Mentoring:*** Each GGC student is assigned a faculty mentor at the beginning of their freshman year. I officially meet at least once during the semester with each of my 40+ mentees; I have many mentees who request other appointments to talk about a wide variety of things - issues with registration and/or class enrollment, issues with their classes or instructors, or to ask advice about problems they are experiencing outside of GGC. Whatever their situation though, each time I meet with a mentee to discuss classes that they should take the next semester, I always make a point of asking them how things are going, both inside and outside GGC.

- ***Extra study sessions outside of class time:*** Each semester I have students who ask for extra study sessions before exams, and perhaps the final exam. In fact, at the end of the Spring 2013 semester, I had students from each of my two classes (Nursing Chemistry I and Nursing Chemistry II) who desired this extra study time. I decided to schedule both study sessions for each of the two classes together in the same room, and split it down the middle. I had two boards going, one board for each class - after finding out what the students from one class wanted help with, I would put sample problems on their board, and while they were working on those, I would do the same with the students from the other class. I organize my study sessions in a similar way to my classes, in that I don't dictate what happens - ***instead, I let the students tell me what they need help with.*** I have to be on my toes with this approach simply because of the wide variety of topics I could be asked about, ***but I find that the students get much more out of study sessions in which they come prepared with questions, and are able to get them answered.***

- ***Student research presentations:*** Undergraduate research can be a great and rewarding experience for both the faculty members and students involved, and our group has been lucky to have some excellent students since we began our research program in 2010. ***Seeing the students grow as researchers is an experience that you simply cannot get from a laboratory experience tied to a particular class***; you can only see it when you drop these students in 'the deep end' of a traditional research program and tell them - '*OK, this is what you need to do - go and look up how to do it, and we will take it from there*'. Then, when they come back and we start the lab work together, and slowly their self-confidence increases, they get more comfortable in the research setting; ***it's a joy to behold***. The other rewarding piece of the research process is watching the students present their work. Our students have presented the results of their research (*both in the forms of posters and presentations*) at GGC and at regional conferences. ***Watching the students professionally present their work in front of both faculty and students, knowing that they are doing a great job as they do so, it's fabulous to see - and it makes me very proud of the job I have done.***

III. My Being Actively Student-Centered

Interactions with students inside and outside the classroom are vital criteria to be a successful faculty member, but equally so are that faculty member's professional development activities. Below I present information about my **successfully funded student-centered grant proposals, book chapter, and other pedagogical publications.**

- Co-PI on proposal for the '**Marie Curie Scholar Program**' at the College of Saint Mary (Omaha, NE). $450,000 National Science Foundation (NSF) Grant - ***This grant was specifically written to provide full 4-year scholarships for women wishing to pursue degrees in STEM (Science, Technology, Engineering and Math) fields***. A good GPA

was a requirement, but the most important criteria was that the students demonstrated financial need. ***None of the women who won these competitive scholarships would have been able to attend the college otherwise.***

- Co-PI on proposal for $205,653 National Science Foundation Academic Research Infrastructure Program: Recovery and Reinvestment, **'Renovate A1190 Chemistry Research Lab'**. This proposal provided funding to rework one of our chemistry teaching labs into a research lab. GGC had no previous laboratory research space, and this provided space and equipment for several faculty members to pursue research projects with undergraduate students. ***As a result of this funding, many undergraduate students have completed research projects with GGC faculty members and have presented their findings at regional and national conferences.***

- PI on USG-STEM proposal - **'Enhancing Research Skills and Attitudes in Undergraduate Organic Chemistry via Organic Synthesis'**, $14,000. This funding allowed me to completely reimagine our organic chemistry II laboratory experience; the idea was to do away with the traditional lab structure (a set of separate, disconnected experiments, one run each week), replacing it with a semester-long project in which students would (a) research the preparation of a *sulfa drug*, and then (b) make it in the laboratory. *I chose sulfa drugs* as target molecules because as some of the earliest examples of widely-used antibiotics, for many students the term '*sulfa drug*' is one they recognize. ***I wanted to give the students much more of a real-world laboratory experience. I wanted to give them the opportunity to make something from scratch which had real relevance to their lives outside of the organic chemistry laboratory.*** The sulfa drug synthesis project is currently in its fourth semester as the organic chemistry II laboratory experience, and has proven to be an enormous success. This project was the first STEM mini-grant to be featured in a story on the GGC website, and the work involved has been presented at four regional scientific conferences so far.

- My colleagues and I have been able to publish a book chapter and 6 pedagogical publications in peer-reviewed journals since 2009 (all revolve around the use of mobile technology in the classroom and how it relates to using a ***'flipped classroom'*** approach to teaching), and a selection of these are shown below:

Book Chapter:

- ***"Engaging 21st Century Students in Undergraduate Organic Chemistry,"*** David P. Pursell, Joseph C. Sloop, Richard Pennington, Julia Paredes, Mai Yin Tsoi, Sonal Dekhane. **Advances in Teaching Organic Chemistry, 2012**, American Chemical Society (ACS) Books: Washington, DC. In press.

Publications:

- Pennington, R., Pursell, D., Sloop, J., Tsoi, M., Paredes, J. 'Engaging Science Students with Handheld Technology and Applications by Revisiting the Thayer Method of Teaching and Learning' *Journal of Systemics, Cybernetics and Informatics*, **2011**, Vol. 9, No. 7, 46-50.
- Pennington, R.L et al, 'Adapting to Student Learning Styles: Using Cell Phone Technology in Undergraduate Biology, Chemistry, and Biochemistry Instruction' *Federation of American Societies for Experimental Biology Journal*, **2009**, 23, LB306.

Leadership is also an important characteristic of any successful faculty member. Below I present several positions of leadership I have held during my time at GGC:

- GGC Faculty Senate President-Elect (2012-2013). ***My term as Faculty Senate President starts on August 1, 2013.***
- School of Science and Technology Disciplinary Council Representative, Chemistry Discipline (2011-2013).
- Principles of Chemistry I/II Course Coordinator, for 24 class/laboratory sections (2010-2011).

- Organic Chemistry I/II Course Coordinator, for 8 class/laboratory sections (2009-2010).

I have also been the recipient of several regional and national awards and recognitions during my time in academia:

- **Winner, Outstanding Teacher Award,** Georgia Gwinnett College, 2012-2013
- **Winner, Blackboard Catalyst Award,** for innovative use of Mobile Technology, August 2012
- **Winner, Technology Association of Georgia (TAG) Excalibur Award,** for innovative use of Educational Technology, October 2011
- **Outstanding Faculty Member**, 2005-2006, College of Saint Mary

Ultimately, all of the above information serves to describe my effectiveness as a college professor. However, perhaps the best way tie all of it together is to present comments from the people affected the most by my teaching methods - my students. In the Fall 2010 semester, the GGC Center for Teaching Excellence began the ***'Thank a Teacher' program.*** This program provides a way for students to officially (and anonymously, if they so desire) thank their professors for their class experiences. Since the program's inception, I have been fortunate to receive **25** of these thank you notes, and to say that each one has made my day when I received it is a massive understatement. ***In my opinion, there is nothing better as an instructor than to receive the honest, heartfelt thanks from students who worked hard, enjoyed my class and teaching methods, and felt a sense of accomplishment for what they achieved***. Below are quotes from some of my Thank a Teacher notes:

> *"I want to thank you for working with me during the time you were my instructor. You never gave up on me even when I thought I couldn't make it through the course. You worked with me and encouraged me not to quit and pull through the class....I want to thank you so much for having faith in me when I didn't have faith in myself."*
>
> *"Your ability to know when your students are having a bad day but even more important to stop class or pull us to the side to ask if you can help says not only are you a great teacher but a caring person."*
>
> *"I wanted to thank you for taking the time to consider not just your class but how our other classes are going. That means so much to know that you care and realize what is going on in our lives".*
>
> *"Your enthusiasm and desire to teach made the class such a great place to be in and the relationship that you had towards everyone in the class made the class a fun room to be part of. Lab was by far the best lab I have had at GGC, fun, challenging, interesting, very real, and applicable."*
>
> *"I just wanted to take some time to express how much I enjoyed being in your class this semester. I can't think of a teacher who could have made this past semester any more special than you did. I will never forget all the personal adventures you included in your class...I especially loved how you always related the lessons to real-life examples that would allow the material to make more logical sense to students and always give us something to relate the lessons to... This was one of the class that I looked forward coming to every day. Thank you for a great semester and for always going the extra mile as a teacher. I appreciate it more than you will ever know."*
>
> *"You inspired me to stand out and do the best I can. Give everything, all that you have. Otherwise, what's the point? I'll never forget what you've taught me. I love being in your class!"*

IV. *"I couldn't have done this without what you taught me"*: Why I Love to Teach

I would like to end this reflective statement with a student story. During the Fall 2010 semester, I was teaching our first semester freshman chemistry course, and I had a student who was smart, but unfortunately, lazy - and his grade was suffering because of it. I knew he had it in him to succeed, and so through my teaching methods and encouragement, I was able to instill in him the work ethic he needed for success, and he ultimately achieved an "A" grade in my course. He took the second semester freshman course in Spring 2011 with another professor, and that semester I happened to bump into him one day; he was standing outside a classroom, and was crying. Thinking something was wrong, I asked him if he was okay. It turns out that his were tears of happiness, not sadness. He told me he had just received the results of his first exam in his second semester chemistry course, and that he had achieved the highest grade in his class. He then told me something that I will take with me forever - "***I couldn't have done this without what you taught me***".

Every time I think of this student, his simple comment reminds me of ***why I love to teach***.

Teaching Philosophy

My teaching philosophy is simple - ***I believe that all students have the capability to become adept at learning on their own, given the appropriate tools***. Given that students have a wide variety of learning styles, these tools should be variable such as: a detailed and complete lesson plan for the entire semester, readable textbooks, preparatory videos to allow for effective class preparation, flash cards, and one-on-one face time with the instructor during class. A variety of tools will ensure that most, if not all, learning styles are accommodated.

I make all of these different tools available to my students from day one, and then let them know how I plan for them to become ***active class participants, rather than passive observers,*** in my classroom. I take the emphasis off myself as the instructor, and put it onto them, as students. I make sure that they understand that they are ultimately responsible for their success in my course. If I do this well, they WILL respond. But, just how can this goal be achieved? One way is by a method of instruction called the Thayer Method (also known as a 'flipped classroom' approach).

The method's main tenet is that ***students come to class prepared*** (usually by having worked sample problems and having read textbook pages to help them with said problems), ***and then once in class, they demonstrate their knowledge by working a set of more complex problems up at the whiteboards*** to illustrate their proficiency of the topics that they prepared for. The typical classroom sequence in which I employ this method is as follows:

- Students come to class prepared, ready with questions to ask about problems they could not solve (and they can use my preparatory videos, as well as the textbook, for help when they get stuck during their class preparation).
- A short, student-driven Q & A session, in which students ask the instructor about problems they encountered.
- On-the-fly lecture given by the instructor as needed (usually reserved for more complex material)
- Students work up at the whiteboards (in groups or individually), solving a set of problems previously assigned. I survey the room as students are working, periodically checking on student groups and answering questions.
- Lesson / chapter quizzes as needed.

Organic Chemistry II students working at the whiteboards, solving problems in groups (above).

Dr. Pennington (seated, left) assists students Working in groups during class time (above).

The typical undergraduate student has not seen a teaching method like this before and so, understandably, many are nervous and skeptical of the method at the start of the semester. However, as the course progresses, the majority of students come to embrace the method and see how effective it can be. Below are some excerpts from student comments when asked about their opinion of this flipped classroom method:

- *The whiteboards were the most important part of the learning experience for me in this class. Working alongside peers and having to think critically was vital for me to comprehend and retain the material. It basically made chemistry, a difficult topic, easy.*
- *The course objective sheet given at the beginning of the semester really helped in my studies.*
- *I liked the fact that you were supposed to teach yourself ahead of time and come to class to ask questions.*
- *The Thayer method of learning the material was one of the best I have ever been in. I did much better in this class than I did in a traditional system for Gen Chem.*

The Thayer method of instruction epitomizes effective student engagement - the students spend the majority of each class period working problems together at the whiteboards, bouncing ideas off each other, critically analyzing answers that their group partners are providing, and even asking other student groups for help when their group gets stuck.

The best part of the method for me as an instructor, is when we get to the point in the semester where the students don't want to listen to me talk for very long – instead, they are anxious to get up to the boards and start working problems. And once they are up there, it is a thing of beauty to look around the room and see all of these students working together as groups, with no extra impetus needed from me.

In my chemistry classes, gone are the days when students fall asleep or sit there for the entire 75 minutes, doing absolutely nothing. The Thayer method has completely changed the way I think about teaching. My students are engaged and enjoying their time in the classroom. The fact that they are enjoying it makes it so much more enjoyable for me. The Thayer method has done wonders for my teaching, and I don't plan on going back to my old methods any time soon.

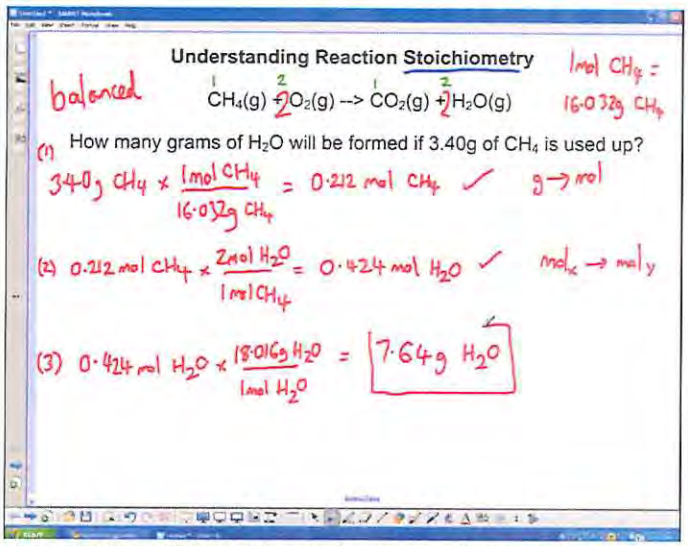
Richard Pennington, Ph.D.

Video Podcasts for Chemistry Courses at GGC

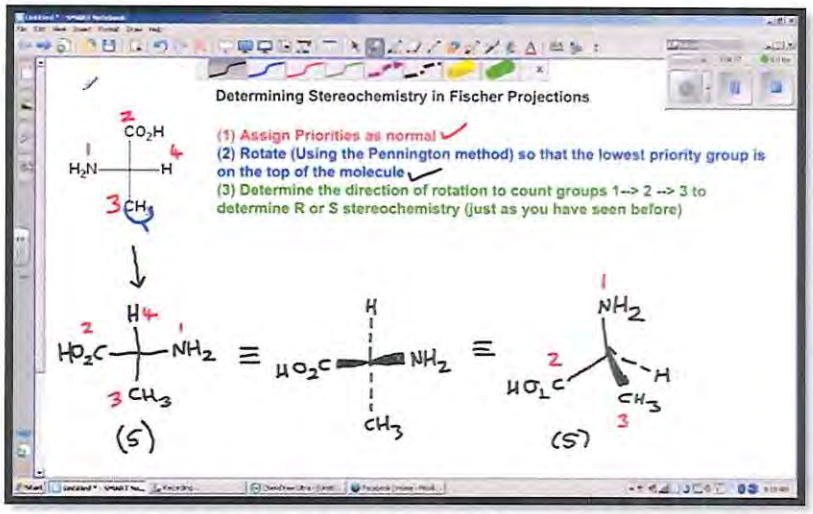
In this section, I will explain the impetus behind creating my videos, as well as the enormous impact that they have had throughout the chemistry curriculum at GGC. I have interlaced this with screenshots of my videos for illustration.

During the spring 2009 semester, I was noticing that my organic chemistry students were having a difficult time effectively preparing for their classes by working through pre-class problems. ***One of the reasons for this was that the textbook we were using was lacking in content. And, because effective class preparation is one of the mainstays of success in my classes, I began thinking of how I could help these students prepare more effectively.***

I was introduced to the concept of recording my own content with a tablet and appropriate capture software. After considerable practice with the hardware and software, I set to recording my first podcasts, after generating a list of topics and concepts in my organic chemistry class that would benefit from video explanation.



Screenshot of CHEM 1211K video podcast (reaction stoichiometry) (*above*)



Screenshots of CHEM 2211K video podcast (stereochemistry) (*above*)

Richard Pennington, Ph.D.

My first podcasts were made in the Fall semester of 2009, and since then I have been making more each semester, up to this current Spring 2013 semester. I have made videos for our freshman chemistry courses, CHEM 1211K (31 videos) and 1212K (45 videos), as well as our sophomore organic chemistry courses, CHEM 2211K (18 videos) and CHEM 2212K (38 videos); this semester I am making videos for our non-majors survey chemistry courses, CHEM 1151K (35 videos) and CHEM 1152K (23 videos).

Thus, by the end of this semester I will have made a total of 190 different video podcasts across the above six chemistry courses, representing a time investment of literally hundreds of hours* on my part**; this may seem like a lot, but when you factor in (a) scripting, (b) recording, (c) processing and (d) posting online, the time builds up. ***All the time I spent on these videos was in addition to all of my regular teaching / scholarship / service duties.

Making these videos available to my students has allowed for my 'flipped classroom' teaching method to flourish. ***The fact that I can ask (some of) my students at the start of any class during the semester 'what are we doing today?', and have them be able to tell me what we are covering is, to me, completely awesome.*** The notion that (some of) my students are coming come to class ready with specific, targeted questions, gives me an enormous sense of pride and accomplishment. Many of my students have told me if it were not for my videos, they would not have been able to prepare as extensively as they did. In fact, I have received many comments from students telling me just how useful these videos have been to them during their class preparation and studying.

Impact of my video podcasts at GGC

After I saw the benefit that my first class of students obtained from access to my videos, ***I realized that making them available to all the students taking these classes at GGC was the logical progression.*** Thus, for the last couple of years I have made my videos available on separate pages through my teacherweb.ggc.edu page (http://teacherweb.ggc.edu/rpenning/home).

Most Viewed Channels / Courses	Number of times videos accessed via streaming or download
Digital Media Rowan	16,100
Chemistry Pennington	**14,786**
History	11,615
FIDL-CTE	4,666
Biology	3,911
Psychology – Hutcheson	3,104
ITEC	2,889
Political Science	2,849
Business Management	1,898
Financial Accounting and Reporting II	1,855

The above table shows the Echo 360 channels / courses for which videos have been accessed the most at GGC; it shows that my podcasts have been accessed an enormous **14,786** times. Second only to courses on a digital media channel (and I would assume that viewing these videos would be much more of an expectation in digital media courses), ***I see this as a huge success in terms of student access, as these numbers tell me for sure that it is not simply students in my chemistry classes who are benefitting from these podcasts, but students in all of the above chemistry classes at GGC. I believe this to be a great accomplishment, and one of which I am immensely proud.***

Evidence of Quality Teaching

I. Course Assessment

In the chemistry program at GGC, student performance is assessed via the administration of common assessment questions on midterm and final exams in each section of each course. Below is a table of assessment data from the Spring 2012 CHEM 2211K midterm and final exams across all 8 sections. The course outcome goals (listed under the 'descriptions' column) are assessed via these assessment questions (the results of which are also shown in the table below), and these lead in to the chemistry program goals and then to the college-wide IEE (Institutional Educational Experience) goals. ***Organic chemistry is typically a challenging course, and success rates per course outcome goal of at least 70% are what we strive for.*** The data below shows that the students are, for each of the assessed course outcome goals, performing at or above this level.

Outcome Goals			CHEM 2211K Outcome Goals and Student Performance			
IEE	Program	Course	Description	Possible	Earned	%
2,3	4	3	Understand and apply spectroscopy to provide evidence for the structure and reactions of molecules.	40	28.4	**71.0**
2,3	4	4	Understand and apply the four general kinds of organic reactions (addition, elimination, substitution, rearrangement) and two general mechanisms (polar, radical) of how organic reactions occur.	40	33.8	**84.4**
2,3	4	5	Understand and apply techniques to synthesize organic molecules.	112	87.1	**77.8**
2,3	4	6	Understand, describe, and apply the fundamental chemistry; to include nomenclature, reactions, preparative synthesis, and reaction mechanisms, of key organic functional groups.	266	200	**75.2**
2,3	6	7	Understand and apply concepts of organic chemistry to the structures, functions, reactions, mechanisms, and synthesis of biomolecules.	28	19.8	**70.7**

II. Other Evidence of Quality Teaching: Student Comments

4,5) What I found **most valuable** about this course was:

- Dr P loves what he does which makes his classes very fun.
- Dr. Pennington's willingness to go above and beyond to help me understand the material whether by e-mail, video instruction, or in person. Also, his teaching methods are effective and make a lot of sense. I feel challenged everyday, and that's a good thing, because it's all the more satisfying when I learn the material on my own merit.
- Expanding our minds and giving us a foundation of how to name, classify, and understand the processes/concepts dealing with the many molecules shown in this class.
- I love the online videos!! the videos put everything together as far as book material but they're a lot easier to understand than the book.
- Organized
- That each thing I learned was part of a real life approach an had a deep connotation.
- The online videos that he himself composed for the class to utilize were very valuable to the course. He is very passionate and extremely knowledgeable about the subject (orgo chem).
- The professor. Dr. Pennington is a great teacher and very willing to help. He wants his students to succeed and it shows.
- The technique Dr. Pennington uses is very useful and helps students learn the material much more easier than listening to a lecture or having to read the textbook. I like that he makes us do some homework so we try to learn the subject on our own and then helps us through the problems that we did not understand the next day. He is an amazing professor so coming to class is actually fun!
- This course utilized my imagination as well as further developed my creativity in the chemistry area of science.

CHEM 2211K Student Evaluation Comments, Spring 2012 (*above*)

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Education:

- **PhD. Organic Chemistry**, University of Wyoming, Laramie, WY, 2001
- **B.S. Chemistry (Spanish minor)**, University of East Anglia, United Kingdom, 1996

Employment:

- **Associate Professor, Chemistry, Georgia Gwinnett College (2011 - present)**
- **Assistant Professor, Chemistry, Georgia Gwinnett College (2007 - 2011)**
- **Assistant Professor, Chemistry, College of Saint Mary (2003 - 2007)**
- **Postdoctoral Research Fellow, Wake Forest University (2001 - 2003)**

Professional Experience:

- **Faculty Senate President**, Georgia Gwinnett College (2013 - 2014)
- **Principles of Chemistry I / II Course Coordinator** (42 sections of CHEM 1211K / 1212K), Georgia Gwinnett College (2010 - 2011)
- **Organic Chemistry I / II Course Coordinator** (18 sections of CHEM 2211K / 2212K), Georgia Gwinnett College (2009 - 2010)
- **Chair, Chemistry Search Committee**, Georgia Gwinnett College (2008 - 2009)
- **Chair, Faculty Assembly Council**, College of Saint Mary (2006 - 2007)

Awards / Honors:

- **Winner, Outstanding Teacher Award,** Georgia Gwinnett College, 2012 - 2013
- **Nominee, 2013 Technology Innovator Award,** Chronicle of Higher Education, April 2013
- **Winner, Blackboard Catalyst Award,** for innovative use of Mobile Technology, August 2012
- **Winner, Technology Association of Georgia (TAG) Excalibur Award,** for innovative use of Educational Technology, October 2011
- **Outstanding Faculty Member**, College of Saint Mary, 2005 - 2006

Grant Proposals:

- PI on USG-STEM proposal - 'Enhancing Research Skills and Attitudes in Undergraduate Organic Chemistry via Organic Synthesis', **$14,000 (funded)**
- Co-PI on proposal for National Science Foundation Academic Research Infrastructure Program: Recovery and Reinvestment, **$205,653 (funded)**. 'Renovate A1190 Chemistry Research Lab'
- Co-PI on proposal for VAPSA Seed Grant, **$4,944 (funded)**. 'Engaging Organic Chemistry students with handheld technology and applications by re-visiting the Thayer Method of teaching and learning'
- Co-PI on proposal for the 'Marie Curie Scholar Program' at the College of Saint Mary. National Science Foundation (NSF) Grant - **$444,960 (funded)**

Richard Pennington, Ph.D.

Book Chapter:

- "Engaging 21st Century Students in Undergraduate Organic Chemistry," David P. Pursell, Joseph C. Sloop, Richard Pennington, Julia Paredes, Mai Yin Tsoi, Sonal Dekhane. **Advances in Teaching Organic Chemistry, 2012**, American Chemical Society (ACS) Books: Washington, DC. In press.

Publications:

- Pennington, R., Pursell, D., Sloop, J., Tsoi, M., Paredes, J. 'Engaging Science Students with Handheld Technology and Applications by Revisiting the Thayer Method of Teaching and Learning' *Journal of Systemics, Cybernetics and Informatics*, **2011**, Vol. 9, No. 7, 46-50.
- Pennington, R., 'The Thayer Method: An Alternative Approach to Teaching' *The Teacher's Edge*, Georgia Gwinnett College Center for Teaching Excellence, **2011**.
- Pennington, R., Pursell, D., Sloop, J., Tsoi, M., Paredes, J. 'Engaging Science Students with Handheld Technology and Applications by Revisiting the Thayer Method of Teaching and Learning' *Georgia Journal of Science*, **2010**, Vol. 68, No. 4, 186-195.
- Pennington, R. Pursell, D. Sloop J. 'Engaging Science Students with Wireless Technology and Applications by Revisiting the Thayer Method of Teaching and Learning' *Proceedings of the 8th International Conference on Computing, Communications and Control Technologies (CCCT),* **2010**, II, 303-308.
- Pennington, R.L et al, 'Adapting to Student Learning Styles: Using Cell Phone Technology in Undergraduate Biology, Chemistry, and Biochemistry Instruction' *Federation of American Societies for Experimental Biology Journal*, **2009**, 23, LB306.
- Pennington, R. et al 'Adapting to Student Learning Styles: Using Cell Phone Technology in Undergraduate Science Instruction' *Proceedings of International Multi-Conference on Engineering and Technological Innovation, Engineering Concepts, Relations, and Methodologies (IMETI)*, **2009**, 3, 1-5.
- Pennington, R.L; Sha, X.; King, S. B.; 'N-Hydroxy sulfonimidamides as new nitroxyl (HNO) donors' *Bioorg. Med. Chem. Lett.*, **2005**, *15*, 2331.
- Jaeger, A.; Wang, Y.; Pennington, R.L. 'Pyrophosphate-based gemini surfactants' *Langmuir*, **2002**, *18*, 9259.

Selected Presentations: (* student)

- *Jonathan DeMart, *Thuha Nguyen, Richard Pennington, Julia Paredes; 'Synthesis and Characterization of a Library of DAMN-based Ligands as Potential Metal Chelates', *GGC Science, Technology and Research Symposium*, April **2013**.
- Richard Pennington, Patrick Coppock, Julia Paredes, David Pursell, Joseph Sloop, Mai Yin Tsoi, 'Enhancing Research Skills and Attitudes in Undergraduate Organic Chemistry via Organic Synthesis' *Presentation at the Regional STEM Institute of Teaching and Learning*, Athens, GA, April **2012**.
- *Kaelin Priger, *Anum Qureshi, *Anthony Rojas, Richard Pennington, Julia Paredes; 'Synthesis of Novel DAMN-based Ligands as Potential Metal Chelates for Oxygenation Catalysts' *Herty Medalist Undergraduate Research Symposium*; Atlanta, GA, Sept **2012**.
- Pennington, R.; Pursell, D.; Sloop, J. 'Engaging Science Students with Wireless Technology and Applications by Revisiting the Thayer Method of Teaching and Learning' *ACS National Conference,* Boston, MA, **2010**.
- Pennington, R. 'Using Video Podcasts to Aid in Student Preparation and Engagement' *Georgia Conference on College and University Teaching*, Kennesaw State University, Kennesaw, GA, **2010**.