"But what are you doing to help them learn?" Reflections on a Career Teaching Human Anatomy and Physiology

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Abstract

This narrative study tells the teaching and learning story of the recently retired Dr. Peggy LePage, a longtime member of the Human Anatomy and Physiology Society with a career as a community college anatomy and biology professor spanning nearly three decades. Drawn from a lengthy narrative interview, this paper describes Dr. LePage's background as a nontraditional student and explores her resilience as a woman in science, technology, engineering, and mathematics (STEM). When Dr. LePage neared a breaking point early in her career, an encounter with a well-known advocate for active learning in science classrooms transformed her pedagogy. She also became involved with HAPS and never looked back. Narrative passages from her interview emphasize Dr. LePage's persistence in STEM, her shift toward a teacher as learner mentality, and the benefits of learning communities for anatomy and physiology instructors.
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Key words: Women in STEM, nontraditional students, teachers as learners, learning community, pedagogical change

Introduction

"My 28-year teaching career ended at 7:40 am today, which is the moment I submitted my final course grades. It has been a most remarkable run and I thank God for the blessings bestowed on me throughout my tenure. How can I possibly explain how much my life has been impacted by my students, honor society members, and coworkers/ friends over the years! I am so utterly grateful for it all; the ups, the downs and everything in between… I am the person I am today because of it."

On December 19, 2018, Dr. Peggy LePage wrote these words in an email with the subject line "Fond Farewell." She sent the email on the day she retired from a long career as a professor of biology and anatomy at North Hennepin Community College. About a month before that final day of her teaching career, the authors of this paper conducted a lengthy narrative interview with Dr. LePage, reflecting on her three decades of teaching and learning in the field of biology.

In the midst of the Covid-19 pandemic, a situation that has challenged the resolve of even the most dedicated teachers, Dr. LePage's teaching story resonates as a powerful example of the persistence of women in science, technology, engineering, and mathematics (STEM), teachers as learners, and the Human Anatomy and Physiology Society (HAPS) as a learning community. This paper explores Dr. LePage's perspectives on teaching in her own words to highlight the intertwined nature of the personal and professional in instructors' lives and to emphasize the role of the HAPS community in her processes of pedagogical change and development. In a shift that paralleled her journey from teacher-centered to student-centered classroom teaching, Dr. LePage's students began calling her Peggy later in her career. Henceforth in this paper, we refer to Dr. LePage as Peggy.

Peggy's experiences as a STEM student and later an instructor at the community college level highlight the importance of community colleges for strengthening the STEM workforce in the United States (Hagedorn and Purnamasari 2012). In spite of recent efforts to improve support for women in STEM at two- and four-year colleges (Jackson 2013), higher education institutions continue to struggle to attract women to the STEM workforce (Husbands Fealing and Myers 2012). Gender stereotypes labeling women as less interested and less capable in science and mathematics (Won 2014) continue to create "chilly climates" in higher education spaces which deter women from continuing in STEM careers (Jorstad et al. 2017). Though more women attend and graduate from community colleges (Foley et al. 2020), they are outnumbered three to one by their male peers in STEM associate's programs (Hardy and Katsinas 2010).

Despite the barriers to women's success in STEM fields, community colleges represent opportunities to level the playing field. A study of women's experiences using the community college transfer pathway to pursue four-year degrees in STEM found that supportive advising, resources, and flexible schedules were among the facilitators of women's persistence (Packard et al. 2011). This study

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highlighted the significance of supportive and inspirational professors and mentorship for women's success in STEM. Similarly, Wolf-Wendel, Ward, and Twombly (2007) explored the community college as a space that generally provides greater possibilities for balancing work and family among faculty members who are parents compared to a four-year institution. Female community college faculty experiencing parenthood felt they were better able to connect with, relate to, have patience with, and inspire their students as a result.

In addition to serving as a source of support and inspiration for her students pursuing STEM careers, Peggy came to understand herself as a learner in community with other human anatomy and physiology instructors. Reaching a point of burnout early in her career, Peggy was challenged to rethink her role as a faculty member. She eventually transformed from a lecturer into a facilitator, a role what would allow her to learn while helping her students learn. Mulnix (2016) argued that considering faculty members as learners is a useful model for advancing pedagogical reform in the STEM field. As learners, faculty members are able to more effectively transfer knowledge to their students and improve learning in their classrooms. This perspective was Peggy's entry point into the HAPS learning community.

Austin (2011) described learning communities as spaces which "provide opportunities for faculty members to interact with others as they explore new assumptions and try out new approaches to teaching and learning" (p. 13). Learning communities can exist within and across institutions and play an important role in efforts to reform STEM teaching and learning in higher education (Glaze-Crampes 2020). By sharing knowledge and resources, members of learning communities in STEM work together to solve common problems and create outcomes, including a shift in practice toward student-centered and evidence-based instructional practice (Glaze-Crampes 2020). For Peggy, the HAPS learning community became a catalyst for professional development and pedagogical change as the site of workshops and network opportunities otherwise limited to her in the community college environment.

Methods

A narrative inquiry methodology was used to collect, analyze, and understand Dr. Peggy's account of her teaching career. Narrative inquiry, or the study of stories as forms of knowledge and windows into lived experience has increasingly been taken up as a qualitative method of educational research (Clandinin and Connelly 2000; Kim 2016). This narrative inquiry project was approved by the Institutional Review Board of the University of Minnesota, and informed consent was obtained from all participants.

Following a semi-structured two-hour interview in which Peggy told the story of her career as a community college biology instructor, the researchers immediately and carefully transcribed the interview. A thematic narrative analysis was conducted by first organizing the data, carrying out qualitative coding of the data, categorizing codes by themes, and interpreting the data (Butina 2015). Findings are presented as summaries drawn from Peggy's teaching story and composed by the researchers, with italicized excerpts interwoven in Peggy's own words.

Narrative Data and Thematic Findings

The story of Peggy's life and career blurs the boundaries between the personal and professional. LePage described teaching as a lifelong vocation, saying "I appeared teaching" (meaning she was a teacher from birth). She remembers playing school as one of her favorite pastimes as a child. Teaching quickly transformed from a pastime into a "persona" as she became a teacher to her grandmother and her younger brother.

She and her brother lived with her grandmother, whose education in rural Kentucky had been cut short before she could learn to write. While learning cursive in school, Peggy would come home and give her grandmother writing lessons. She also became a fierce advocate for her younger brother who experienced learning differences and speech impediments. After exploring how her brother could best learn and communicate, Peggy was able to help him get the additional support he needed for school. Though Peggy learned from the poverty, learning challenges, and historically weak access to education experienced by her family, she faced her own struggles after completing high school.

Persistence in STEM

Years after her initial interest in teaching, Peggy began higher education as a young mother with three small children. She worked as a nursing assistant to put herself through school. Though she faced a number of setbacks beyond balancing the responsibilities of school and family, she ultimately went on to complete her bachelor's degree and enroll in graduate school in the anatomy department at the University of Minnesota. Her words on her initial experience of going back for her degree demonstrate LePage's persistence as a nontraditional female student pursuing a degree in a STEM field.

"So, I graduated from high school and I did not go to college. I went to college when my youngest of three boys was four. I'd taken a couple of part-time classes at the community college. And then when he was four, I went back full time. My goal was medical school, and I had a mentor that was very important in my life at that time and where other people were not encouraging, he was. I was fighting the issue where I wasn't stereotypic for medical school. I was female and I was 28. And I had a blue-collar husband and three kids and a dog in suburbia. So, I went to Anoka Ramsey (community college) and then I transferred

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to the U. and I finished my degree there. I was not accepted into medical school. At the time I had disappointment over that. But I thought, maybe I'll go to nursing school and in the middle of nursing school, I took an elective class on cell biology, and I said, I love this stuff. So, I left nursing and I went to graduate school in the anatomy department, which was just a coincidence that they had a cell biology program that was family-friendly at the time."

Despite not having the opportunity to go to medical school as she had hoped, Peggy continued to explore her career options in the field. When nursing school wasn't the right fit, she found herself pursuing a PhD in the anatomy department. A supportive mentor and a determination to find balance between her career and family life contributed to her persistence. Perhaps even more remarkable than her completion of a doctorate in the face of so many challenges is Peggy's story of coming back after failing. It's a story she continues to tell her community college students today.

"When I was hired to teach anatomy and physiology, I was in the same classroom in the same community college that I had failed in. So, I'm writing my name on the board with PhD behind it. I got literally an endorphin head rush from it... I said who would have ever thought? I literally was in the same classroom that I failed in, when I was 19. And I was now 40. When I went to school after high school, I had a child and I was getting divorced. I was already a single parent. Oh, and I failed miserably the first semester I was in the two-year nursing program at Anoka Ramsey. I had no study skills, I had responsibilities. I didn't know how to prioritize anything. I was just so in over my head. So, I stepped out and said, I'll go back, which I did. I went back."

"I said I'll never forget what it was like not to know. I'll never forget that because I would get in my first graduate school seminars and I understood only words like 'an' and 'the' and 'it.' I wouldn't understand all the rest of the words in an hour-long seminar. I had no idea what they said. And I almost got up and left graduate school twice over their speaking a language I don't understand. So, I was in a position that I knew so little that it was absolutely appalling, but I stuck it out."

"That's why I tell my students my story, although at first I was ashamed of it. But I said what the heck. They need to know that you can succeed. I wanted to be educated and I think it's from my roots. That was important. Nobody in my family had a doctorate MD or PhD at the time. I really felt that I was doing it for all the people that didn't have the same opportunities I did. I think that education to me was empowering. I think that I felt empowered when I was becoming educated."

Peggy's remarkable story of failing and coming back, not only to complete her undergraduate education but to become a PhD, puts her in a unique position to empathize with the difficulties community college students and women in STEM encounter. Though she struggled to find her way with learning, she kept going. Her story demonstrates the tenacity of women and nontraditional students who succeed in STEM fields as well as the roadblocks that continue to create challenges for the many students of anatomy, physiology, and biology at two-year colleges.

The Breaking Point: Teacher as Learner

Though Peggy's experience gave her a deep understanding of some of her students' struggles, like many instructors she experienced confusion over how to teach and faced burnout early in her career. Coming out of a difficult graduate school experience, Peggy's initial attitude toward students was that content should never be "dumbed down" and that students needed to pull themselves up by the bootstraps without outside help. By 1993, Peggy had moved to a part-time position at another community college, where a colleague encouraged her to rethink her negativity and become a team player with other instructors in the department. Over time, her frustration with poor student outcomes in her classroom led to a growing feeling that she was approaching burnout.

"As time progressed, I wanted to become the best teacher and turn out the best students. I was getting more and more frustrated because no matter what I was doing, it didn't seem to help. And I was, I'm notorious for shotgunning. I would try one thing. And then I was smart enough to do it a couple times. And then "Ah, that didn't work" and I'd try something else. So, I was sort of, you know, not content where I was at, not happy. And meanwhile, the students that I could reach really had positive feedback. But the students I couldn't reach had really scathing feedback, really scathing. I historically have not done well with young women. They see me as somebody that's inflexible. They want to be a nurse and they want to be a nurse yesterday and I'm their roadblock because my class used to be a gatekeeper class. It isn't any longer, but it was horrific for that group. I was hired full time in '97, I think it was, finally. And by that time, I was burning out. I was truly burning out."

During this "shotgunning" phase of her career, Peggy was throwing every teaching method in the book at her students but not making progress in her pedagogical development. She had begun to see that her teaching wasn't getting through to students or helping them learn as she hoped. She had come to the realization that something needed to change for her to avoid complete burnout. So, she took a sabbatical in 1999 that would lead to a "paradigm shift" in her instructional practice and teaching philosophy.

On her sabbatical, Peggy attended conferences on active learning strategies in the STEM classroom, where she met Drs. Joel Michael, Harold Modell, and Dee Silverthorn,

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expert scholars in the field of physiology teaching and learning and advocates for active learning in the physiology classroom. Petress (2008) explained that active learning: "as the term implies, is a dynamic process where the learner takes a dynamic and energetic role in one's own education" (p. 566). Through such conference sessions, Peggy began to understand how active learning strategies more effectively engage students, improve motivation, and boost retention (Petress, 2008). In one of Dr. Harold Modell's sessions, Peggy connected with Harold and with other science instructors who were experimenting with approaches to teaching practices beyond traditional teacher-centered lectures. At first Peggy struggled to make sense of active learning, pointing out to Harold that there was so much content to cover in human anatomy and physiology. How could she make sure that students learned and retained all of the information in a course without relying on lectures?

"He said, you have to help the learner to learn. And then you pick what they need to learn. And they can't learn everything. Just that's humanly impossible. So, and then if you're expecting them to learn, you would have to have criteria to measure their learning. So, he really helped me sort out exactly where my blocks were. There was that missing element of what's wrong with the whole thing? What can I do differently? Because all I do is want to help them learn. And I would go to Harold and I'd say, 'Now they're doing this.' And he said, 'Well, what are you doing to help the learner to learn?' I said, 'Well, that's not my job. That's the English department's job.' And he said... 'Is it?' And then I would say, 'they can't do some basic algebra'. 'Well, what are you doing to help them learn?'"

"When I came off the plane from that trip, I thought he's right. I have to let go of the dichotomy. Me versus them or teachers versus the students. And that was a paradigm shift completely. I do not think I would have made it much longer if I had not met Harold. Then right at the same time, coincidentally, I went to HAPS for the first time, and I walked in there and all the people that were there were just like me. I would come out of there and say well that's working for philosophy and English. But science is just kind of a different animal. And I went in there and I said, 'Oh, you've got the same issues I've got' and they'd say, 'Yes we do.' And then there's people to talk to. I met Dee Silverthorn at that time, and she was also paralleling with active learning. And between Harold and Dee, it changed my whole career. Honest to gosh, in 2000, having started in 91, I don't know how much longer I would have made it.... because I just could not find any peace."

Nearing her breaking point, Peggy finally found her way to a learning community that understood her struggles as an instructor. She had internalized the idea that teaching science was about transferring content to students, to the detriment of her teaching effectiveness and the dismay of her students. Being introduced to ideas that turned her concept of teaching on its head at professional development and HAPS conferences altered how she thought and operated as a teacher. Peggy was able to connect with other instructors coming to the same realization. She began to take on a "teacher as learner" mindset toward pedagogical change. Peggy's process of teacher change wouldn't be smooth or linear and it would involve reckoning with the way she had been interacting with her students. Around the same time, Peggy took important steps to make changes in her approach to student support.

"The funny thing that happened at about the same time was that some student came into my office and asked a question. And I'm ashamed to say that I answered, 'That's not my job.' And I don't know what it was, but I walked away from that conversation saying, 'Then what is your job?' And I heard Harold say, 'Helping students to learn.' Whatever the student had asked me, it was still in the realm of they needed to know something like how to go to a different building or you know, how to find security or a teacher... and I blew it off. I told myself then that I'm a mean S-O-B. What made me think that I could put myself apart from her?"

"But I had begun to think about what I could do for students, and I was getting more and more frustrated. It was just not a happy picture. So, I went and found the student. And I said 'I have to apologize. I didn't mean to cut you short. You caught me at an odd time.' And from that point, I don't care what people ask me or say to me, I have to help them. I have to help... help learn or figure something out. So, I stayed in HAPS. And I did make a change in my career."

This striking moment in Peggy's office exemplified a marked shift in her approach to teaching and to students. Harold Modell's message, that her job as instructor was to help students learn, made Peggy see that the strategies and teaching habits she had learned from her graduate school instructors weren't working for community college STEM students. Her sabbatical had planted a seed, and she continued to invest in her professional growth through the HAPS community.

The HAPS Learning Community

Over time, while Peggy didn't adopt every teaching strategy she learned about at HAPS conferences, she continued to participate and reap the benefits of being part of the learning community. Her participation in the group served as a catalyst for Peggy's shifting pedagogical thinking while laying the foundation for professional relationships that would continue to provide meaningful support throughout her career.

"So after that I went on to HAPS... I went every time I had an opportunity to go. I think I joined in 2000 and I went to most meetings until my mom passed away in 2015. I went

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back again last year, this last meeting and met Murray again. I rekindled things with people and it was really nice because they did make a big difference. And there's more to the story, because Dee had somebody that was working on her thesis. And they couldn't quite figure out why I wouldn't change. Because I'm not the sage on the stage person, but I do like to tell stories so much that I have trouble flipping the classroom. So I compromised. I was one of the holdouts, though, for Dee and the person doing the study, they thought I was kind of interesting because I wouldn't throw all my eggs in that basket. I said, 'No, that's not me either.' So if I meet people today and there's some new teachers coming in, I say, 'Be true to yourself. Ask for feedback from students, don't rely on reviews, but do focus groups. They'll tell you.' And then it's, 'What can you do to help them to learn and what do you want them to learn? What are your objectives?' I worked initially with no learning objectives. I didn't even know what that was. So, pedagogy changes."

"I stayed in touch with Harold and with Dee for quite a while. And now things have shifted in our courses now that they are more general prerequisites for so many students. Today a lot of our students come in underprepared. A lot come in with four-year degrees. It's not unusual to have anatomy and physiology class students that are taking their electives because they're in a different career or they're changing. So, I've had lawyers, I've had people with master's degrees, and then I have 16-year-old high school option students. And then I have everything in between. Some people who are the sole provider for their family because they've immigrated to our area. So that's how my pedagogies evolved over time, my tests have become harder. Because there is so much more thought process involved in it. The feedback from the students that go on to medical school or nursing, some of them come back and say we felt like we were well prepared by our approach in my department, no matter who's teaching here. We have different styles, but we managed to prepare them for where they're going to go."

Over time, Peggy incorporated more active learning and student-centered techniques into her teaching. She became more collaborative with her colleagues at the community college and became passionate about making time to help students. In the meantime, she participated actively in HAPS email list conversations and professional development opportunities. The most important takeaway for her teaching became the importance of investing time and energy into her students.

"If I look through all the material that I'm actually recycling, I've tried a lot of different things. I think the number one thing from the self-reflection and looking back and periodically not waiting too long to look back, was that it didn't matter what I was doing. As long as I was paying attention to students, they got my time and energy. I began to hear students say you don't have time to help me, and I said, then I have to be so careful about what I'm saying and how I'm saying it, that they never get the impression that I can't meet with them or can't figure something out."

"Sometimes they highlight everything in their book and I say, 'See, you're having trouble knowing what's important.' It's just about giving feedback as long as they know I care about them. I tell them I care and that I love them. That didn't come til two years ago. Because I said that I want you to succeed and I want you to be all you want to be, all you can be."

As Peggy connected with her students and focused on helping them learn with guidance and support from her colleagues and the HAPS community, she continued to share her story of failing, returning to school, and writing her name with the letters PhD behind it on the classroom whiteboard. She came to see that what students most wanted and needed was her time and guidance. This became the central theme of her pedagogy after she shifted her perspective. Peggy found that when she facilitated student learning more effectively in the classroom, she could continue her efforts through support programs and advising outside of class.

Conclusion

Peggy's narrative of her career as a student and educator is an inspiring example of women's persistence in STEM and the power of the HAPS learning community to transform teacher pedagogy. Though she faced many challenges to completing higher education, most notably balancing her responsibilities as a mother, Peggy's determination helped her to achieve a doctorate and solidified her path as a lifelong teacher. Mentorship, family-friendly programming, and personal persistence were all key factors enabling her to complete her education and avoid burnout in the teaching profession.

Peggy's teaching and learning story is just one HAPS member's experience, but it speaks to the history and broader impact of the organization. The HAPS learning community arrived in Peggy's life at a pivotal moment and had an ongoing influence on her professional development and teaching. Community college faculty, who are offered varying but often limited levels of teacher training (Seithers et al 2020), may feel isolated and uncertain when taking steps to transform their science teaching. Drawing community college faculty into HAPS is thus important for the growth and improvement of human anatomy and physiology teaching today.

Dr. Peggy LePage's educational experiences and reflections on a career serve as a source of inspiration and advice for human anatomy and physiology instructors. Her legacy is a shining example of what can happen when teachers open themselves up to pedagogical revolutions and put student success at the core of their personal mission.

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Peggy is known for reminding instructors that the "us versus them" thinking she adopted early in her career does not serve teachers or students. When teachers understand themselves as learners in community with students and other professionals, meaningful change is possible. As Peggy explains it, transformation is only possible when you remain open to what life presents:

"And then I think the other thing is I reflect on because it's interesting as I'm leaving is... I don't think it can be different than the way it is. I think you have to, just like anything in life, you have to have your experiences to make you the person that you are."

About the Authors

Laura C. Seithers earned a Ph.D. in Comparative and International Education from the University of Minnesota in 2020. Her research interests include teacher change, narrative methods, and international student experiences.

Peggy LePage's teaching career as a community college professor of biology in Minnesota spans three decades. She has long been a dedicated member of HAPS. She retired in 2018 and resides in a suburb of Minneapolis with her husband of 52 years.

Murray S. Jensen's is a Professor of Biology at the University of Minnesota and his research focuses on implementing POGIL, SCALE-UP, and active learning in entry-level science courses. He also develops continuing education opportunities for educators interested in these strategies.

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