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Frank McCluskey  
*American Public University System*

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## **The Professor as Craftsman in the Digital Age**

**Dr. Frank McCluskey**

*American Public University System*

**T**he architecture of the university classroom has remained very much the same from its beginnings at the University of Bologna in 1088 to the present day (Hunt 2008). If one were to walk into the classroom of a contemporary American college or university it would look very much the same as the classrooms of Salamanca, Paris, or Oxford a millennium ago. If we were to find ourselves in a classroom of a medieval university we would find a teacher standing in front of a room speaking. If we were to see the view from the lectern in the medieval university, we would see rows and rows of students in desks taking notes about what the professor said. It looks very much like the modern university. From the beginning, the professor did his or her work in isolation from other professors. The professor was alone in a classroom with their students as they were alone in their research and scholarship. From the beginning of the European university, there was little team teaching and there is little evidence that teams created syllabi together (Hunt 2008). While a few classes used the Socratic method, science labs, periods of disputation, and study groups, the main method of delivery in the university has been the lecture. The professor is an individual craftsman and one of the products that they produce is the lecture (Brown and Rice 2008). Like craftsman who make pots, paintings, or unique furniture pieces, the lecture as product of the professor is absolutely their own creation. They are solely responsible for its content and form and it is not verified or checked by anyone else. Just as other craftsman work in isolation, the professor does so because he or she is the expert in the field they lecture in. While Bologna has claimed to be the first university founded in 1088, the first modern university is often thought to be the University of Paris, founded around 1190. The University of Paris is regarded as the first modern university because Bologna was founded by a student guild and was student run. The first faculty guild was thought to be at the University of Paris, where the faculty governed the university. From that time to the present, faculty governance has been an essential hallmark of institutions of higher education. Why have faculty had the power in the university? The faculty had the power because they had the expertise and one product of that expertise was manifested in the spoken lecture. Students would come to universities to hear the lectures of famous professors. The lecture is a solitary activity and a good lecturer is often thought of as a “good teacher.” Teaching is the thing that was measured and valued in the early literature of the university.

The lecture is a one-time event that had to be scheduled at a particular time and place. Three hours a week of a college class are more often than not three hours of lecture. The lecture is a kind of performance that could not be captured in writing because it varied class by class. In this way the professor is like a traditional craftsman. A good cabinet-maker may be able to recognize the work of another craftsman in the same field. The great craftsmen leave their own mark and have their own distinctive style. In the long history of the university, there was no mass production of the lecture and there was no way to exactly to capture the style of the great lecturers. The lecture becomes a kind of performance art. The professor is a like craftsman whose work is distinguished from all others by the uniqueness of their personality and style. But just as woodworker is limited by the quality of the wood she works with or a sculptor the quality of the marble, so a teacher must adapt to the quality of the student body. This means that

English101 in the most elite Ivy League will probably be a very different course than English 101 in an urban community college weekend class for working adults.

A professor may teach the same course year after year or more commonly they will teach more than one section of the same course. Professors often talk of the number of preparations they have, meaning number of unique courses that they are teaching. In a typical American college or university, a teacher may teach four courses a semester, three sections of Introduction to Chemistry and one section of Organic Chemistry. Or they may teach three sections of Introduction to Art History and one section of The Impressionists. While teachers often use notes, they vary the lectures within those notes. Just as every chest of drawers a cabinet-maker would create would be unique and singular, so each lecture was different from the others even in other sections of the same course taught by the same professor. Because of this, the classroom was an ephemeral event and could not be captured except in the notes of the teacher and students. This ephemeral event in time is the work of a singular artist. The great teachers had a unique style that might be compared to a chair designed by Frank Lloyd Wright that shows his stamp. So the professor delivers his or her lecture in a unique way. For a millennium the professor has been a craftsman whose work cannot be tampered with by anyone.

What is less commonly known is that many college professors arrive at the university with no training in pedagogy. Professors are trained to be researchers and not teachers. So while there is training in how to do scholarship, footnote articles, solve problems, and decipher texts, there is no formal training in pedagogy. Professors learn on the job as they teach. In most graduate schools there is little discussion of grade books, classroom management, or learning theory unless you take your degree in education, where it is the primary subject matter.

If professors are not trained to teach, how do they learn the craft of teaching? Most learn to teach through their work as a graduate assistant or the informal apprenticeship of their first university or college position. But this is not quite the same as on-the-job training. It may be wrong to even use the word “apprenticeship” in this context. The difficulty in calling it an apprenticeship is that from day one each professor works alone. From the first day they arrive at the university the professor is alone in class and historically there have not been faculty training courses on how to teach. It was assumed, although they had not been formally trained, they know how to perform the function. Thus each professor develops their own style often in total isolation from other professors.

So the university began, evolved, and so it stayed for almost a thousand years. And for the first thousand years there was nothing to compare the classroom to except another classroom. A professor could only be compared to another professor. Until just a few decades ago this was the case. All discussions about teaching were and are subjective. What is good teaching for one student or in one school may not be viewed as so by another student or another school. So it was impossible to say with any certainty what was a good class, what was a bad class; what was good teaching, or what was bad teaching. It was all a matter of opinion as in the old Latin expression *De gustibus non disputandum est*: taste cannot be disputed.

Because there was nothing to compare the classroom to, it was hard to say what good teaching was. With the creation of the online classroom something very dramatic happened that could be argued to be the biggest revolution in the history of the university. With online learning came a new kind of classroom, a different kind of classroom, a classroom with a dashboard that everyone could read. Suddenly there was something with which to compare the traditional classroom. While there are similarities, there are differences between the traditional brick and mortar classroom and the digital classroom. It is not our place here to review the extensive

literature on the differences and the argument that one is superior to the other. We want to focus on one single facet of the digital classroom. The digital classroom leaves a fingerprint of every single transaction. A record of all these exchanges is recorded in the digital classroom. The digital classroom leaves a public document in a way that the physical classroom never did. This is a substantial difference from the traditional classroom.

But does not the brick and mortar classroom leave a record? It may be said that professor's notes, class syllabi, or student notes gave us a record of the physical classroom. Let us look at these artifacts in some detail. There is no standard for either college syllabi or professor notes. It might be argued that if there are best practices in these areas, they are not widely known or widely followed. Student notes are notoriously unreliable, as anyone knows who has tried to reconstruct a professor's lectures by comparing different student notes. Student notes are oftentimes more about those subjects of interest to the student than an objective interpretation of the teacher's lectures.

Online classes leave a record of every interaction by both professors and students. As soon as online learning appeared there was, for the first time, something to which the physical classroom could be compared. Once this happened we could begin to measure the difference between physical classrooms and online classrooms. For the first time in the history of the university, the class left a record that was an objective result of the interactions.

What is the difference between the old and new classrooms? If we were to take a database from an online classroom and look at the interactions in a discussion board we may find patterns very easily. Let us say for example that in week one of a course there are a hundred online posts between students and faculty. Let us say in week two we find a similar number of posts. Imagine now we found that in week three the number messages was below 25 messages. While the sheer quantitative data does not provide a final answer it provides an indication that something has changed. While it may be exam week or Spring break it may also be an indication that the lecture was not structured correctly, the students were having difficulty, or some other issue that can be analyzed and corrected in future classes. This kind of granularity has not historically been possible in the brick and mortar classroom.

But this is only the beginning of the difference between the two classrooms. With the growth in data collection and predictive analytics we are now able to take the data from the online classroom and do many things with it. Once we are able to map out the interactions of teacher and student and to apply complex data gathering to the patterns of interaction we can see where students are succeeding and where they are failing (Huba and Freed 2000). The data trail shows us where students are lacking responses to questions. The data trail will show us those elements of tests on which the vast majority of students have difficulty. The data trail will show where the instruction could be clearer for the benefit of the learning.

For a thousand years the professor worked alone as an individual because there was no way to capture or compare his style. Now in the age of digital classroom data gathering gives us tools we did not have before. Suddenly we find we can do analyses of data that were not possible just 30 years ago. Assessment in the digital classroom can be done with more rigor and data than can be done in the physical classroom. The current demand for assessment would not have been possible without the data collection brought about by the digital revolution.

All this leads to new questions. What does the birth of the online classroom mean for the future of the university? How will it impact the role of the professor? How will it change the definitions of teaching and learning?

For a millennium, the classroom was the sole domain of one professor. The digital classroom is by nature more communal. This means educational theorists; instructional designers, assessment professionals, and others can now look at an online classroom and clearly see where students are succeeding and where they are failing. For the first time in a thousand years, the classroom can be looked at by a number of people using data not opinion.

Before it was not clear how a professor's teaching could be measured. But with the digital classroom the focus has turned from teaching, which is ephemeral and subjective, to learning, which can be measured in a more rigorous way. The focus of the traditional classroom was on the success of a professor as teacher. The digital classroom now focuses us on how successful the learning environment is. As Robert Barr puts it; "A paradigm shift is taking hold in American higher education. In its briefest form, the paradigm that has governed our colleges is this: A college is an institution that exists to provide instruction. Subtly but profoundly we are shifting to a new paradigm: A college is an institution that exists to produce learning. This shift changes everything" (Barr and Tagg 1995).

When the industrial revolution took place there was the move from individual craftsman to factory worker. When this happened the whole concept of work changed. The craftsman no longer worked in his own shop and now he now had to commute to work. The concept of time changed as now a team had to begin and end at the same time. There was the change from lone craftsman to worker who was part of a larger team. The craftsman was totally in control of the artistic process from beginning to end. The craftsman could stop and start work when they felt like it because they depended on no one else. In the "dark satanic mills" of Blake's verse we find people running to keep up with the speed of the loom and powered shuttlecocks. What does this analogy mean for the future of the professorate?

The change from professor as craftsman to professor as team member is in part a direct result of the digital revolution. Once there is a digital record of the class this record can show us where learning is taking place and where the experience can be improved. When the classroom leaves a physical artifact, this is no longer something that can only be understood by the professor. The physical artifact or digital record can we worked on by team of experts and learning theorist who can use the data to learn. This fundamentally changes the image of the professor as craftsman and changes his status to the member of a team who works to improve student learning. This shift from lone professor to learning team is a fundamental change in the nature of University.

If we were to take a look at how one online for-profit university uses data to improve the educational experience of students we can see what is possible. At the American Public University System there are more than 100,000 students and 2000 professors 100% online. This gives the university a large chunk of data to see how learning is progressing. The university uses analytics to analyze the number of drops, number of withdrawals, and number of failures class-by-class, program-by-program, and school-by-school. They then compare these numbers to university averages, school averages, and program averages. For example, the failure rate in Arabic I may be much higher than in the course History of Popular Culture but that does not indicate the second class is successful and the first one is not. However if we were to look at say History 101 and found that in one section taught by one professor the number of drops, withdrawals, and failing grades was triple the rest of the program this would be a starting point for a discussion about the class. A rigorous teacher is not necessary a bad teacher but we must keep in mind the goal of the class is student learning. If that is not taking place it is the responsibility of the university to ask "Why?" In addition, the American Public University

System uses national benchmarked tests by Princeton's Educational Testing Service (ETS) such as the Proficiency Profile and Major Field Tests in various majors. This shows them where they stack up against other colleges and other programs.

At the end of each class the University uses the Community of Inquiry (COI) end of class survey to measure the indirect experience of the student. The COI is a scientifically validated instrument that has been taken by more than 500,000 online students and was designed to measure the efficacy of the online classroom (Boston and Boston 2010). This instrument looks at three kinds of presences. Social presence measures how much social engagement there is in the classroom as a learning environment. Teaching presence measures the student's perception of the effectiveness of the teacher as leader of the class. Cognitive presence measures the student's opinion of how successful the class has been designed and set up as a learning environment. By combining drops, withdrawals and failing grades with the ETS data and the COI data we are beginning to get a more complete picture of the online classroom. This combination of direct and indirect measures helps us understand what is going on in the classroom.

But this university is not done yet. Using IBM's SPSS Modeler and predictive analytics they have analyzed more than 80 variables of student data such as gender, age, GPA, number of credits transferred in and so on. They can use this data to predict which students are likely to succeed and which need interventions. Other universities have used similar measures to manage student success with varying degrees of accuracy

One of the hallmarks of the university has been the role of the faculty in governance. Faculty has the responsibility of governance because of their expertise as scholars (Birnbaum 1988). With the introduction of online learning to the university this can be seen to challenge the professor's role as expert. While professors are experts in their subject matter, many are not experts in pedagogy and learning theory. There are now instructional designers, faculty development specialists, and learning theorists who can contribute to the student success in new ways.

For example, I took my Ph.D. in philosophy and never took a single class in teaching, pedagogy, classroom management, or student management. I knew nothing about learning theory. I started my first job teaching Introduction to Philosophy in a local college. I walked into the first class and began to teach much like "Athena was born full grown sprung from the head of Zeus." Athena was not a baby—she was born full grown. The idea of the professor is also that there is no gestation period. They come to their profession full grown and mature in their craft.

If we challenge the idea that experts in biology and psychology and philosophy may not be experts in teaching we challenge the fundamental idea of the University.

With the digital classroom there are new tools and new roles for the professor (Christensen and Eyring 2011). The classroom as communal means the professor is being decentralized. As this happens the very concept of the power of faculty is challenged. Since the birth of online learning there has been a significant hostility to digital classrooms by members the professorship. Suddenly cheating online became an issue of focus in online courses when in fact it has been an issue for the whole history of the university. Suddenly there were questions about the quality of online learning when in fact these questions apply just as well to the traditional classroom. We will argue that there is a good reason for this. For the first time in the history of the university, there is public record of the class that can be accessed by those who are not experts in the field. This changes the balance of power and the structure of teaching. It changes how we think about grading. It challenges some long held beliefs about academic freedom.

The university was the domain of faculty. One of the central roles of faculty was to teach and teaching is something they do alone. The digital classroom has made the university a place where learning can be rigorously assessed. This change decentralizes teaching (along with the teacher) and makes learning the heart of the enterprise.

The digital universities redefined the role of the traditional professor (Donoghue 1988). The digital revolution has redefined the role of faculty in assessing learning.

We have looked at the metaphor of the professor as craftsman and his craft was teaching. There was no objective measure to compare one craftsman to another. The online professor does something wholly different. He or she can be viewed as a digital collaborator who is a partner in an enterprise of learning whose results can be measured and compared with other classes. This is seismic revolution that has only begun to be felt in the academy and whose impact has only begun to be understood.

### About the Author

**Dr. Frank McCluskey** serves as Vice President and Scholar in Residence at the American Public University System.

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