

## 2017 Hans O. Mauksch Address

Teaching Sociology  
2018, Vol. 46(1) 1–11  
© American Sociological Association 2017  
DOI: 10.1177/0092055X17742193  
ts.sagepub.com



# Using the Science of Learning to Improve Student Learning in Sociology Classes

Melinda Messineo<sup>1</sup>

### Abstract

The 2017 Mauksch Address invites readers to consider how the field of sociology might benefit from greater inclusion of the science of learning into its pedagogy. Results from a survey of 92 teaching and learning experts in sociology reveal the degree to which the discipline's understanding of teaching and learning is informed by the science of learning. The address suggests strategies for increased student success.

### Keywords

brain science, scholarly teachers, learning theories, survey

I had no idea what the field of sociology encompassed as I sat with 300 other nervous freshmen in that introduction to sociology course my first semester in college. Within a few weeks, however, I had no doubt that I had found my intellectual home. The questions that sociology asked, the lens it provided, and the solutions it put forward resonated with me in a way that no other discipline had yet accomplished. I felt eager (and even obligated) to share my sociological insights with anyone who would listen. Much to the delight of my instructors and the weariness of my family, I had found my voice. The utility and clarity of sociology as a discipline seemed to me to be without equal. I took this assuredness with me through graduate school into my professional pre-tenure career. It was because this comfort was so great that the shock of what came next was so disconcerting. I was engaged in a friendly Friday evening conversation with a colleague when he shared with me an opinion that I thought to be unspeakable. There was someone in the world, a geographer to be precise, who did not love sociology as much as I did. In fact, it would be fair to say that he held actual

disdain for the field. He shared that he felt the field was methodologically arrogant, theoretically misguided, and unapologetically narrow in focus. As you can imagine, I was shocked; beyond shocked. I was indignant. This framing of my beloved field struck me as completely unfounded and the characterization as arrogant, misguided, and patently unfair. I countered that “sociology was the most open, most accepting, most intellectually humble discipline I knew.” He felt our treatment of place was especially short-sighted and egregious. I quipped back that “I controlled for urban and rural in all of my studies.” Both of them. So take that. Okay... Maybe he had a point. The exchange pushed me to think about his critiques of sociology and the critiques I held in my head about other disciplines. Eventually my thought process went from

<sup>1</sup>Ball State University, Muncie, IN, USA

### Corresponding Author:

Melinda Messineo, Department of Sociology, Ball State University, 2000 W. University, NQ 222, Muncie, IN 47306, USA.

Email: mmessine@bsu.edu

defending sociology without question to thinking about the disciplinary biases I had learned by virtue of my being a sociologist. Was it a problem?

I knew the biases were there and in some ways saw (and still see) them as virtues. For example, as a sociologist, I was trained to see the world as socially constructed (Berger and Luckmann 1967). Race, gender, economy, community, all are a result of social interaction and agreement. I cannot understate the degree to which this perspective impacted my view of the world and more importantly, how I interacted with others by virtue of this perspective. I am reminded of a conversation I had with my sister who shared that her young daughter really liked the color pink. I had asked what I should purchase my niece for her birthday and ended up railing against the horror of this gender-role socialization happening in my own family. "Pink? Pink! That infantilizing, hyper-gendered, never-taken-seriously color? You have to stop her. Before you know it she is going to like princesses, glitter. She'll give up her autonomy and accept the wage gap as her fault!" My sister looked at me with that look she gives me when she realizes a PhD might in fact mean "piled higher and deeper" and said, "Actually, Melinda, I think she just might like the color pink." I shook my head and muttered that she should like something else, anything else, like a truck or something non-gendered like that. Of course liking pink, or any color for that matter, is culturally informed, and indeed trucks are definitely gendered toys as well, but the incident revealed how my disciplinary training was translated in the way I approached the world. In my defense, this lens was the point of having a sociological imagination (Mills 1959 [1976]). But it also set me up for potential biases: graduate school-created and disciplinarily enhanced biases that may make me less effective as a sociologist. Of course, all disciplines have biases and different ways of seeing the world. That is the whole purpose of selecting and specializing. The important skill of being in a discipline is recognizing potential points of pitfall among our great contributions. Not looking at issues from a variety of perspectives put me at risk of being less effective in my work. I needed to step back and critique my lens more intently.

I began to seek information on how it was that sociologists saw the world differently than other disciplines. The task was to not just make distinctions in the way that academic advisors distinguish between social science majors for prospective students or how authors make choices between disciplinary fields when narrowing literature reviews

for a study. I wanted to understand the ways that disciplines differ in how we approach the world. One study that caught my attention was "A Cross-disciplinary Survey of Beliefs about Human Nature, Culture, and Science" (Carroll et al. 2017). This study compares a number of fields on their views of environmental determinism, genetic determinism, environmental interactionism, and scientific explanations of the world. One comparison looks at how respondents from 22 different fields ranging from film studies to economics differ in their support for the ideas of environmental determinism. It is no surprise that sociology was near the top on this factor, listed in close proximity to anthropology. In contrast, the sociologists in the sample were less likely to express support for explanations of genetic determinism. Interestingly, the sociologists in the sample fell in the center of the grouping in their support of scientific explanations. This result suggests a bit of ambivalence about science's ability to explain human social behavior. With the field facing a second century without a grand theory to predict all human behavior, it strikes me as a consistent finding (Holmwood 2014). The results of Carroll et al. (2017) were unsurprising, and yet they provided a stark confirmation that sociologists see the world differently. We have different lenses, which is in some ways what we love about sociology and why we are sociologists. I knew the sociological lens impacted the questions I asked and perhaps more importantly, the answers that I saw as legitimate (Nickerson 1998). For the purposes of this address, I will focus on how it is that the sociological perspective might negatively impact my approach to teaching.

Fundamentally, to teach is to seek change in our students. We hope that our pedagogical efforts facilitate shifts in their content mastery, skill mastery, and affective/attitudinal/behavioral dispositions. The transitions may be significant or subtle, but the hope is that students leave the courses and the major having grown, reached clarification, and engaged in integration of knowledge. We hope that they are different from when they arrived, and we think of this change as learning. If we do not see these transitions in our students, our concern is that they have not learned. I had been sharing this conceptualization for some time with peers when one day I was challenged by the question: "What specifically are we trying to change about our students to reach those results?" I started by saying we want to change their minds, their hearts, their dreams, their trajectories, but that sentiment fell flat. My peer pressed further, stating that those were all

ideas and constructs that we had no real influence over no matter how much we wished for them to be true. I persisted that we can change them but conceded that I was not exactly sure what my efforts as a teacher were doing to facilitate that process. The exchange was ultimately useful because it led me to the literature on the science of learning. While maintaining my idealistic and social constructivist stance, I was compelled to acknowledge that fundamentally, it is the student brain that we seek to change (Zull 2002). I suspect that this is a topic of discomfort for sociologists. The role of cognitive science, specifically the science of learning and brain processes, is not one that we typically acknowledge in our sociological conversations. I imagine many sociologists are put off by the idea of a biological approach—and understandably so. We have faced concerns about sociobiology (Wilson 1978), the challenge of genomics (Williams 2013), the risk of essentialist arguments, eugenics (Gillham 2001), the misapplication or misinterpretation of findings, and of course our fear of evil people acting in cruel ways (Corradi 2016). There is also the fair criticism that the study of the brain is not our field; there are gaps, biases, and flaws in the science of learning just as in any discipline; biology is not relevant to the questions of sociology; and we simply do not have time to learn it all. These are all fair concerns, ones I too have grappled with as I have tried to come to terms with how best to facilitate student learning. What I had not fully appreciated until my friend indirectly pointed it out to me was that I was *disciplinarily predisposed* to reject the biological and cognitive aspects of my students' experience as learner. When I interrogated the criticism a bit more, I saw how we as sociologists reject the body in its corporal manifestation even as we study it. Melanin levels, facial features, and hair texture are arbitrary points of attention where racial inequality is embodied. Secondary sex characteristics, hormones, and linguistic differences are the places where gender inequality is embodied. Sizeism, ableism, classism, any-ism are places where the insecurities of our culture are embodied and expressed (see also Vannini 2016). We reject these embodiments and thus intentionally and unintentionally reject the body itself. As a sociologist, I find it difficult to return to the body, and there the dilemma lies. My main argument through the remainder of this paper is around this point of our neglect of the corporal. We as sociologists have disciplinary biases around this question of the value of brain science to

sociology's approach to teaching and learning. I offer the thought that there is benefit to applying the science of learning to sociology's approach to teaching and learning because it provides additional insights into knowing why some teaching strategies work. We can also argue that science of learning would benefit from our sociological insights as well. Interdisciplinarity increases our effectiveness as instructors because it moves us away from trial and error, and lastly, it is a place where we can address inequality. Adding the science of learning to our teaching can make us better teachers who are more just.

## METHODS

To guide us through this discussion, I offer a conversation conducted with fellow sociologists through an online survey. The population consisted of 580 sociologists who are publicly active in teaching and learning either through publications, conference presentations, or workshop participation. The study protocol was approved Ball State University's Institutional Review Board (IRB Protocol #1096966-1). I heard back from 145 participants to varying degrees, with 92 completing the entire survey. Their comments inform this discussion.

### Participants

The vast majority of the participants (85 percent) held PhDs, 67 percent were female, 35 percent were tenured or held tenure track jobs (33 percent), with 13 percent contingent, 8 percent graduate student, and about 8 percent retired (see Table 1).

The sample is experienced, with over 36 percent having more than 20 years of prior teaching employment (see Table 2). The sample is slightly weighted toward programs with graduate offerings at about 44 percent, with 35 percent at four-year institutions and about 18 percent at community colleges. The sample had a considerable amount of training, with only about 26 percent saying they had a little or no training. The topics covered in the training included teaching tips, course management strategies, course design, learning theories, cognitive science, the science of learning, active learning strategies, and effective lecturing strategies. Additional topics included training in diversity, Office of Equal Opportunity and Title IX, adaptive technologies, and portfolio building. In sum, these findings reflect the views of highly experienced, well-prepared, professionally engaged, scholarly teachers (McKinney 2004).

**Table 1.** Descriptive Statistics of Survey Sample (n = 92).

| Characteristic   | Percentage |
|--|------------|
| Highest degree   |            |
| PhD in sociology   | 84.6       |
| MA/MS in sociology   | 12.1       |
| BA/BS in sociology   | 2.2        |
| PhD in other field   | 1.1        |
| Current employment status  |            |
| Tenured faculty  | 34.4       |
| Tenure track faculty   | 32.2       |
| Contingent faculty (contract and adjunct)                                  | 13.3       |
| Graduate and/or teaching assistant   | 7.8        |
| Retired faculty  | 7.8        |
| Other  | 4.4        |
| Years teaching   |            |
| More than 20 years   | 36.3       |
| 16–20 years  | 8.8        |
| 11–15 years  | 13.2       |
| 6–10 years   | 19.8       |
| 1–5 years  | 16.5       |
| I have not yet had a chance to teach.                                      | 2.2        |
| I have taught less than a year.  | 3.3        |
| Institution respondent currently teaches for (or most recently taught for) |            |
| Institution with graduate offerings  | 44.0       |
| Four-year college  | 35.2       |
| Community college  | 17.6       |
| Other  | 3.3        |
| Respondent sex   |            |
| Male   | 31.9       |
| Female   | 67.0       |
| Neither of above (please specify, if you wish)                             | 1.1        |
| Prefer to not state  | 0.0        |

## RESULTS

### *How People Learn*

Respondents were first asked to describe briefly in their own words how people learn. The narrative statements were reviewed and then coded according to general themes that emerged during the analysis. In order of most frequently cited to least frequently (but not including isolated comments), the themes included: learning as a process (listening, reading, seeing), learning styles, learning as engagement, active learning, learning by doing, learning as a social act, a result of trial and error/failure, the result of a connection with previous knowledge, the result of scaffolding, passive/receiving, the result of practice, metacognition, a process in the brain, a result of the Kolb cycle, and a function of memory. All of the comments connected to the experience of learning in

important ways and are in no way wrong. Many of the comments noted that the learning was happening within the student and was in fact connected to their agency and control. Active students in the learning process was a common theme. What was noteworthy for this analysis, however, was the relatively infrequent mention of metacognition and the brain as part of the description of how learning happens. Awareness of learning of how learning happens on the part of the students was not frequently mentioned. Consider how respondents further conceptualized learning.

### *The Nature of Learning*

Participants were asked to make some claims regarding the nature of learning. The options reflected learning theory and included traditional

**Table 2.** Type and Amount of Formal Instruction on Teaching and Learning Received (n = 92).

| Percentage of formal instruction on teaching and learning received                  |      |
|---|------|
| A great deal  | 23.0 |
| A lot   | 19.8 |
| A moderate amount   | 30.8 |
| A little  | 24.2 |
| None at all   | 2.2  |
| Percentage of topics covered in training (respondents could check all that applied) |      |
| Teaching tips   | 17.4 |
| Active learning strategies  | 16.5 |
| Course design   | 16.3 |
| Course management strategies  | 14.4 |
| Learning theories   | 10.9 |
| Effective lecturing strategies  | 10.9 |
| The “science of learning”   | 6.3  |
| Cognitive science   | 4.4  |
| Other   | 3.0  |

**Table 3.** Alignment of General Learning Theory Statements with Respondent’s Personal Perspective (n = 92; Percentages).

| Statement  | Most Closely Aligned | 2    | 3    | 4    | Least Closely Aligned |
|--|----------------------|------|------|------|-----------------------|
| Students are blank slates to be written on and empty vessels to be filled. | 3.2                  | 5.4  | 3.2  | 14.0 | 74.2                  |
| Students develop knowledge through a linear cumulative process.            | 4.3                  | 2.2  | 19.4 | 59.1 | 15.0                  |
| Students respond to positive and negative stimuli and learn accordingly.   | 6.5                  | 20.4 | 47.3 | 19.4 | 6.5                   |
| Students learn by doing and self-directed action.                          | 22.6                 | 47.3 | 19.4 | 6.5  | 4.3                   |
| Students construct what they learn through their experiences.              | 63.4                 | 24.7 | 10.8 | 1.0  | 0.0                   |

views of education, behaviorist theory, active learning theory, and constructivist theory.

The participants identified the traditional view, “Students are blank slates to be written on and empty vessels to be filled,” as the least aligned with their views and the constructivist position, “Students construct what they learn through their experiences,” as the most closely aligned (see Table 3).

Next, respondents were asked to further clarify their understanding of learning by indicating where they fell between two concepts provided (see Table 4). As I anticipated, the participants identified their pedagogy as student-centered, their courses as balanced between content mastery/skill development, and that learning was most influenced by the socializing process of “nurture.” Again, these

results strike me as consistent with the disciplinary lens of sociology.

Lastly, Table 5 lists participants’ responses when asked the degree to which they agreed or disagreed with the following statements: Effective teaching is more of an art than science, understanding learning theory is important for all disciplines, understanding the brain is not critical for effective teaching, learners would benefit from understanding how learning happens, and learning theories regularly fall in and out of favor. Respondents somewhat agreed that teaching is more of an art than science, felt that understanding learning theory is important for all disciplines, and also noted that learning theories fall in and out of favor. An interesting comparison from Table 5 shows that

**Table 4.** Percentages of Respondents Reporting Specific Locations between Two Oppositional Teaching and Learning Concepts (n = 92).

| Concept 1                                   |      |      |      |      |      | Concept 2                                   |
|---|------|------|------|------|------|---|
| My courses focus on content mastery         | 9.8  | 16.3 | 38.0 | 26.1 | 9.8  | My courses focus on skill mastery           |
| My approach to teaching is student centered | 41.3 | 32.6 | 17.4 | 5.4  | 3.3  | My approach to teaching is teacher centered |
| Learning is influenced most by nature       | 1.1  | 1.1  | 12.1 | 30.8 | 55.0 | Learning is influenced most by nurture      |

**Table 5.** Percentage of Respondents Agreeing and Disagreeing with Teaching and Learning Statements (n = 92).

|   | Strongly Agree | Somewhat Agree | Neither Agree nor Disagree | Somewhat Disagree | Strongly Disagree |
|---|----------------|----------------|----------------------------|-------------------|-------------------|
| Effective teaching is more of an art than a science.            | 18.5           | 48.9           | 13.0                       | 14.1              | 5.4               |
| Understanding learning theory is important for all disciplines. | 51.1           | 34.8           | 9.8                        | 4.4               | 0.0               |
| Understanding the brain is not critical for effective teaching. | 5.6            | 15.6           | 14.4                       | 45.6              | 18.9              |
| Learners would benefit from understanding how learning happens. | 56.5           | 29.4           | 10.9                       | 2.2               | 1.2               |
| Learning theories regularly fall in and out of favor.           | 19.6           | 48.9           | 22.8                       | 8.7               | 0.0               |

respondents did not think understanding the brain was critical for effective learning but that learners would benefit from understanding how learning happens. In other words, understanding learning is valued, but the science of learning is not seen as a critical part of that knowledge.

### *The Role of the Teacher*

Participants were then asked to share their view of the role that teachers play in the learning process. The respondents shared their understanding of what it means to teach as framed as an extension of the learning process. The most common response fell under the theme of guide, facilitator, and coach. Students are the ones doing the learning, and it is primarily teachers who facilitate that process. The next most common responses focused on the supporting, caring, valuing, and trusting aspects of the teacher role. Next came comments related to how teachers shape the structure, order, and plan of the educational experiences. Respondents also noted how teachers make connections, curate materials, and model for their students. Affective traits like

instructor enthusiasm, passion, and rapport building skills were also named as ways that teachers impact learning. Among less frequently identified themes were the roles of assessment and standard setting.

### *The Role of Peers*

Participants were next asked about their perception of the impact of peers on the learning process. Again, students are viewed as the ones doing the learning and it is primarily teachers who facilitate that process, but peers are seen as playing an important role as well. The themes that emerged included: reinforcing, clarifying; provide feedback, support; sounding board, critique; more accessible, less jargon laden; questioning, pushing, challenging; and in a somewhat more negative vein, competition; distraction, demotivation. Peers are viewed as playing both a positive and negative role in the learning process.

### *Biggest Challenges*

Respondents were then asked to name the biggest challenge they faced as a teacher in terms of

helping their students learn. Responses included concerns like: student engagement, motivation, assumptions, perceptions; the need to encourage students to connect to content, do the reading, discuss, prepare; and some named institutional structural barriers, volume of work, marginalized positions. Other responses included mention of variation in student ability or preparedness across the enrollment in one class. Technological distractions and barriers were also named with a small group citing the larger societal devaluation of higher education. Respondents were also invited to list other barriers to student learning. Responses included: low motivation, desire, initiative, confidence; the pressure of competing obligations, financial needs, family/relationship/pet needs; and low familial support. Some comments addressed the lack of preparation, societal inequality, and the impact of socioeconomic status, and then a small group mentioned limitations related to physiology, nutrition, ability to focus, and psychological mindset.

These open responses are the point where the sociological lens is most clearly revealed. The biological and physiological barriers were the least mentioned barriers. I have asked these questions at interdisciplinary workshops, and the responses are typically similar; however, sociologists are more likely to emphasize the points of structural inequality. That insight, however, does not extend into some of the areas of inequality that we can impact by knowing more about brain science, and that may be in part because we tend to ignore the brain. It is one thing to see inequality. It is another to give concrete mechanisms to minimize the impact.

### *Familiarity with Brain Processes*

Respondents were asked to rate their familiarity with how the brain learns.

Comments were split with roughly one-third (34.8 percent) indicating greater familiarity, one-third (32.6 percent) with little to no familiarity, and the remaining third (32.6 percent) indicating moderate familiarity. This ranking question was followed by an open-ended request to briefly describe in their own words how it is that the brain records and retrieves information. Perhaps survey fatigue led a portion of respondents to skip this question. Over a third of those who did respond expressed some gap in their ability to explain the process. These quotes highlighted the lack of disciplinary expertise along the lines of: I'm a sociologist not a psychologist; I'm not a neurologist; I am not an

expert. Others stated simply that they were not aware of or could not describe the process, with comments such as: I really have no idea; Not sure; ugh . . . got nothing for you; I'm at a loss for words; I guess I don't really know; magic? The remaining comments provided varying degrees of detail that included brain science explanations, including the broader themes of: schemas, mental maps, connections between ideas; connections between memories; senses provide input that is processed, cognitive processes; synaptic connections, short-term/long-term transfer, parts of the brain; and Kolb's cycle. It is worth noting that while many respondents did not provide responses to the brain question, many did offer some description. The general cognitive processes and the science of learning were known by a large portion of the expert participants. The brain was not entirely absent from their repertoire. This result leads to the next question, how this knowledge about how the brain learns informs their pedagogy.

Having identified how they thought learning happened, their role in the learning process, and the barriers to learning, participants were asked what they actually do in their courses. Specifically, the survey asked, "What are two strategies that you use to help students learn?" The responses were rich with active learning approaches and the products of considerable Scholarship of Teaching and Learning (SoTL) research. Most frequently mentioned were: assignments that include application, case studies, reflection; these were followed by mentions of writing, debating, presenting; active learning, talking, discussing, doing; experiences that involve relevant media, artifacts; and examples that connect students to where they are, what they care about. Lastly, a small portion of responses included explicit instruction on learning, metacognition, and practice.

What is most poignant for the purposes of this piece is how little was mentioned in terms of strategies employed to help students master the metacognitive aspects of learning. Even with some awareness of brain science and the science of learning, it was infrequently tapped as the solution to a learning challenge. The comments also did not spend much time talking about the ways in which their pedagogy works to mediate the inequality; however, in fairness to the respondents, that specific emphasis was not asked. How often do we identify differences in preparedness as a challenge in our classroom but when asked how we respond we say nothing about teaching students the metacognitive skills that the more advanced students

arrived at class having? We complain that students don't focus and they are distracted by technology; yet, how frequently do we show students how their ability to focus and learn is compromised by multitasking? We treat classes and knowledge as linear while we know that study strategies that involve interleaving are more effective for comprehension and retention. We know the importance of attention, nutrition, and engagement, and yet we create structures that impede students' ability to pursue these objectives. There appears to be a disconnect between our perceptions of the problem and our choice of solution. I would argue it is to some degree a disciplinary issue that actually prevents us from being the more effective and just teachers we strive to be. In many ways, our efforts in the classroom are trial and error, and while much of what we do works, we are not aware of why it works, so the results are difficult to replicate. If we understand more about why the strategies we use work, we can potentially increase learning. I argue that instead of ignoring the brain, we should instead become champions of helping students understand how learning happens. We can support our students and work against the inequality that disproportionately impacts those we profess to defend. Here are a few ways that these objectives can be achieved.

## APPLICATION

My hope is that I have made the case that sociologists are not especially inclined to turn to the science of learning and brain science to help address challenges we face in helping our students learn. Now I briefly present five ideas from the science of learning that sociologists can utilize to positively impact their students' experience. These concepts are: metacognition, attention, guided practice, the myth of multitasking, and the power of empathy.

### *Metacognition*

One of the first distinctions that we can add to our understanding of learning is that experienced or expert learners approach learning differently than our more novice students. As a consequence, instructors commonly use different approaches to thinking and employ metacognitive strategies more fluently than our students. Translated roughly as "thinking about thinking," metacognition is a skill that can be developed in learners. By evaluating our thinking processes and outcomes, we identify effective and ineffective strategies. Expert learners know when it's not working. If they read a paragraph and it does not make

sense, they know they need to re-read the section. If that intervention does not work, expert learners can break things down until they get to the parts that they do understand, which helps to clarify where the confusion lies. These learners then seek out other resources for clarification. Importantly, expert learners can usually distinguish between confusion resulting from the introduction of new information in comparison to confusion based on contradictory information (Masson et al. 2014). Experts are prepared to examine their own understanding and seek supports and make revisions when needed. In what ways do our classes help students become more expert in their learning?

Try this: To help students develop their metacognitive skills, they need to see where their own gaps in understanding exist. Early in an academic term, have students read a paragraph from a challenging reading they will encounter later in the course. Have the students outline in the right-hand margins the main points of what they are reading and in the left-hand margins have them document their thoughts about what they are reading. Encourage them to identify where they feel lost, feel confused, feel tension, disagree with the author, and so on. Have students then talk with a peer about their experience with the piece and collectively identify a place where they would like to receive clarification. They can do this same activity with a mini-lecture and class discussion. The main point is to have students step back and think about how their thinking is progressing. Incorporate a few point-bearing metacognitive checks into the course early on to help students develop this skill.

### *Attention*

Another example of how experts and novices differ is in how both groups pay attention. Part of effective metacognition is knowing when you are focused and intervening when you see that your mind is wandering. The literature on mind wandering indicates that this brain state is an important mechanism for sorting information and making connections. Some research suggests that this default state is how the hypothalamus transitions information from short- to long-term memory. Focus is necessary for learning to occur, and the brain can only focus on one thing at a time (Ophir, Nass, and Wagner 2009). Controlling your focus is a critical element in self-directed learning, and in a fast-paced cultural context, the expectation to do lots very quickly conflicts directly with effective learning. When we think about active learning, this is a place where students can

demonstrate considerable agency. Attention is also greatly impacted by hunger, fatigue, and stress. What classroom policies might we modify to lessen the impact of these factors?

Try this: As you have students conduct metacognitive checks in class, also incorporate attention resetting experiences. Have students mark on their notes when they lose focus, think of checking their phone, or pull themselves out of a moment of concentration at any point. They can use this approach while studying as well to help sensitize themselves to loss of attention. In class, you can create breaks where you have students stand up, stretch, and chat with one another for 90 seconds before heading into a new topic or activity. Also stop periodically to ask students what they think the main point of the current conversation, activity, or mini-lecture is at that moment and where they think the discussion is going. This helps the instructor gauge where students are and reveals to students if they are paying attention to the main ideas or are being distracted by examples.

### *The Myth of Multitasking*

Many of us overestimate our students' ability to multitask. Brain research shows that multitasking reduces accuracy and efficiency and dramatically reduces learning and retention (Rubinstein, Meyer, and Evans 2001). The problem is that most students do not know this fact about their brains. A brain cannot focus on two things at the same time. What we typically think of as multitasking is actually rapid serial tasking (Rubinstein et al. 2001). We move back and forth quickly between two foci, and at each switch, there is a tiny gap where information is lost. What we do manage to retain is a fragile connection at best. The result is continuous partial attention. There are many videos online that instructors can use to help reveal to students their inability to effectively multitask.

Try this: One activity is to have students write down the alphabet while they count out loud from 1 to 26. Some students can go further than others, but the point is that it is a challenge for brains to switch back and forth quickly in any meaningful way. Once students know that they are actually wasting time multitasking instead of being more efficient, they can change. I would argue that it is our responsibility to tell them.

### *Guided Practice*

Increased understanding of the science of learning helps explain why some common instructional

strategies are effective. Take for example rote memorization and practice. Given the way that neural pathways fire and strengthen through use, incorporating practice in our courses will help students learn. However, the practice activity cannot be just mindless action or "busy work." It needs to be intentional activity focused on a contextualized problem that is guided by an expert. Practice fell out of use because it was aligned with rote learning. The problem with rote learning (i.e., the process of reviewing discrete facts over and over until they are memorized) is that it is too narrow and often without context. The critique is justified since decontextualized memorization is not an effective way to learn material if you hope to apply it to other contexts. In contrast, practice in general, and guided deliberate practice in particular, is important to the learning process (Ericsson and Lehmann 1996).

Try this: Look at your course and identify all of the places inside and outside of class where you give students a chance to practice. Then identify where students receive formative feedback to adjust their performance. Early in my career I would use exams as the place where students would be asked to integrate and analyze material only to be disappointed by the results of their efforts. I realized that I never gave the students any instruction on how to integrate and analyze, and they never had a chance to practice and develop those skills with feedback. More experienced students did fine on the task, but I was doing little to make the assignment accessible to all of my students. I have applied this approach of practice to everything from writing essay responses to watching films like a sociologist. Consider how an emphasis on practice may help your students learn as well. When students struggle on a concept or assignment, think about how insights from the science of learning might help find a solution.

### *The Power of Empathy*

As sociologists, we often strive to increase our students' empathy toward others. Learning facts or statistics about poverty and inequality is rarely the entire goal of a course. We often want our students to experience empathy for those experiencing social injustice and would even like students to consider taking action. What we may not appreciate is that the experience of empathy also helps students learn. Brain scans show that seeing individuals experience joy as well as suffering activates those centers in the brain of the participants as well, often as if they were experiencing

the emotion themselves. Feeling someone's pain is possible to the degree that empathy is experienced neurologically and is not entirely egocentric (Bergland 2013). Emotions and thoughts about how a person feels in a situation are powerful teaching tools. In fact, empathy can be taught through role playing and the integration of first-person narratives into our coursework (Weng et al. 2013). Social science instructors can use role playing and brain science to more effectively reach the behavioral affective goals of their curricula.

Try this: Have students gather into groups of three and have them participate in a listening activity. Each student speaks for two minutes about their personal experience with a topic of interest while the other students actively listen without interrupting. Once the student is done speaking, one student shares back with the student the main ideas of what they think the student was trying to communicate. The student who spoke can offer clarification at the end of the sharing. The third student in the group then describes how they think the speaking student felt during the event that was recounted and now in the recounting. The speaking students can offer clarification at that point as well. This activity can also be done with videos or audio recordings of people sharing stories (e.g., StoryCorps at <https://storycorps.org/>) as a way to build empathy among students and learn specific concepts.

## CONCLUSION

There is benefit to applying brain science to sociology's approach to teaching and learning. I encourage readers to seek out additional resources to develop a deeper understanding of how the science of learning can inform sociology. From my own practice, I can point to the experience of having greater understanding about why the strategies I used in the past actually worked. Having this background also makes us more efficient when we face learning challenges because we have more resources to tap into, and it moves us away from efforts that amount to simple trial and error. Most importantly, however, the insights gained from the science of learning empower us to counter inequality our students encounter in learning. We need to be mindful of how our disciplinary training may create barriers to what we see as legitimate solutions. This approach along with other interdisciplinary strategies may expand our ability to help facilitate student learning.

## ACKNOWLEDGMENTS

The author would like to thank her nominators and the selection committee for this opportunity and the reviewers for

their invaluable feedback. She would also like to recognize the contributions of all previous Mauksch award recipients for their outstanding leadership in the field and Hans Mauksch for his legacy. She would like to thank everyone who completed the survey and for all their efforts on behalf of students. This address is dedicated to the memory of her father, Joseph.

## EDITOR'S NOTE

Reviewers for this manuscript were, in alphabetical order, Kathleen S. Lowney and Stephen Sweet. This Mauksch address was presented at the 2017 ASA Annual Meeting in Montreal, Canada. Winners of the Mauksch award are invited to present at the business meeting of the Section of Teaching and Learning the year following receipt of the recognition.

## REFERENCES

- Berger, Peter, and Thomas Luckmann. 1967. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Norwell, MA: Anchor.
- Bergland, Christopher. 2013. "The Neuroscience of Empathy Neuroscientists Identify Specific Brain Areas Linked to Compassion." *Psychology Today*. Retrieved January 18, 2016 (<https://www.psychologytoday.com/blog/the-athletes-way/201310/the-neuroscience-empathy>).
- Carroll, Joseph, John A. Johnson, Catherine Salmon, Jens Kjeldgaard-Christiansen, Mathias Clasen, and Emelie Jonsson. 2017. "A Cross-disciplinary Survey of Beliefs about Human Nature, Culture, and Science." *Evolutionary Studies in Imaginative Culture* 1(1):1–32.
- Corradi, C. Consuelo. 2016. "Modernity and Evil: Kurt H. Wolff's Sociology and the Diagnosis of Our Time." *Human Studies* 39(3):465–80.
- Ericsson, K. Anders, and Andreas Lehmann. 1996. "Expert and Exceptional Performance: Evidence on Maximal Adaptations on Task Constraints." *Annual Review of Psychology* 47(1):273–305.
- Gillham, Nicholas W. 2001. "Sir Francis Galton and the Birth of Eugenics." *Annual Review of Genetics* 35(1):83–101.
- Holmwood, John. 2014. *Founding Sociology? Talcott Parsons and the Idea of General Theory*. New York: Routledge.
- Masson, Steve, Patrice Potvin, Martin Riopel, and Lorie-Marlene Brault Foisy. 2014. "Differences in Brain Activation between Novices and Experts in Science during a Task Involving a Common Misconception in Electricity." *Mind, Brain, and Education* 8(1):44–55.
- McKinney, Kathleen. 2004. "The Scholarship of Teaching and Learning: Past lessons, Current Challenges, and Future Visions." *To Improve the Academy* 22(1):3–19.
- Mills, Charles Wright. [1959] 1976. *The Sociological Imagination*. Oxford, UK: Oxford University Press.
- Nickerson, Raymond S. 1998. "Confirmation Bias: A Ubiquitous Phenomenon in Many Guises." *Review of General Psychology* 2(2):175–220.

- Ophir, Eyal, Clifford Nass, and Anthony Wagner. 2009. "Cognitive Control in Media Multitaskers." *Proceedings of the National Academy of Sciences for the United States of America* 106(37):15583–87.
- Rubinstein, Joshua, David Meyer, and Jeffrey Evans. 2001. "Executive Control of Cognitive Processes in Task Switching." *Journal of Experimental Psychology: Human Perception and Performance* 27(4):763–97.
- Vannini, Phillip. 2016. *Body/Embodiment: Symbolic Interaction and the Sociology of the Body*. New York: Routledge.
- Weng, Helen Y., Andrew S. Fox, Alexander J. Shackman, Diane E. Stodola, Jessica Z. K. Caldwell, Matthew C. Olson, Gregory M. Rogers, and Richard J. Davidson. 2013. "Compassion Training Alters Altruism and Neural Responses to Suffering." *Psychological Science* 24(7):1171–80.
- Williams, Johnny E. 2013. "Biological Pre-emption 'Race,' Class and Genomics." *Sociology Compass* 7(9):711–25.
- Wilson, Edward O. 1978. "What Is Sociobiology?" *Society* 15(6):10–14.
- Zull, James. 2002. *The Art of Changing the Brain: Enriching the Practice of Teaching by Exploring the Biology of Learning*. Sterling, VA: Stylus Publishing.

## AUTHOR BIOGRAPHY

**Melinda Messineo** is an associate professor of sociology in the Department of Sociology at Ball State University, Indiana where she is serving as interim associate provost for diversity and director of the Office of Institutional Diversity. She is an award-winning teacher and has been an active member of the ASA since 1998. She served as a member of the ASA LL3 Task Force and as Secretary Treasurer of the Section on Teaching and Learning and is currently the section's chair elect. Melinda has been the lead coordinator of numerous national and regional Teaching and Learning Pre-conference workshops on behalf of ASA and AKD. She is an active Scholarship of Teaching and Learning scholar and serves on the editorial boards of numerous teaching and learning outlets.