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The Teacher of Teachers Talks about Learning to Learn: An Interview with Wilbert (Bill) J. McKeachie

Héfer Bembenutty
Queens College of The City University of New York

Wilbert J. McKeachie has been the president of the American Psychological Association (APA), the American Association of Higher Education, the American Psychological Foundation, the Division of Educational and School Psychology of the International Association of Applied Psychology, and APA's Divisions 2 and 15. He received his PhD at the University of Michigan in 1949 and is former Director of the University of Michigan Center for Research on Learning and Teaching. He also served as Chair of the Psychology Department at the University of Michigan from 1961 to 1971. Professor McKeachie has received eight honorary degrees, the American Psychological Foundation Gold Medal for Lifetime Contributions to Psychology, and the American Psychological Association Presidential Citation for exemplary service to the academic and scientific community. His classic book, Teaching Tips, *is now in its 12th edition (McKeachie & Svinicki, 2006).*

Héfer Bembenutty is an Assistant Professor of Educational Psychology at Queens College of The City University of New York in the Department of Secondary and Youth Services. He received his BA in psychology from the University of Michigan, an MS in psychology from Eastern Michigan University, and an MA and PhD in educational psychology from The City University of New York. He maintains an active research agenda in students' and teachers' self-regulation of learning, the effects of test anxiety on learning, homework self-regulation, self-efficacy beliefs, multicultural education, and academic delay of gratification. He teaches undergraduate and graduate courses in educational psychology, cognition, instruction and technology, human development and learning, classroom management, and multicultural education.

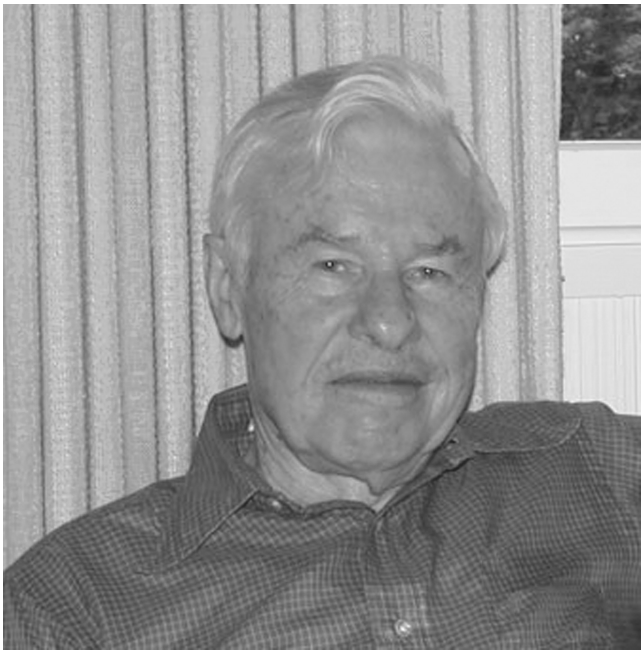
Bembenutty: What is a learning to learn course?

McKeachie: A learning to learn course covers the major concepts of motivation, cognition, and learning strategies that could help students become self-regulated learners. The course is designed primarily for students who have limitations in any area of learning.

Bembenutty: What did your learning to learn courses entail?

McKeachie: Typically, in my learning to learn courses, we had two large group meetings and 2 hours of small group meetings each week. The small group sections usually had more discussion. In a large group, students were sometimes afraid to ask questions for fear they would appear dumb. However, with the small groups, the students are among other students they know and don't feel so embarrassed to ask a question about something they do not understand. My learning to learn course was partly lecture but even in the lecture sections I tried to get a lot of student interaction through small group activities and pairing.

Bembenutty: The learning to learn course is different from typical undergraduate courses. Did you have any difficulty convincing your colleagues that such a course fit with the undergraduate curriculum in psychology?



Wilbert J. McKeachie

Héfer Bembenutty

McKeachie: When I first offered it, the curriculum committee in our department said, "That is advanced material." I was using a cognitive psychology textbook, and they said, "That is not for freshmen." I responded to them by saying, "I think I can teach it to freshmen." Then, when I went to the college curriculum committee, they said, "We cannot give credit for that; it is a class in study habits." I responded to them, "No, this course is different from learning just a certain set of recipes. In this course, students learn the theory so they can apply it to themselves in a variety of situations." In the end, I convinced my colleagues that the learning to learn course would be a valuable addition to our curriculum.

Bembenutty: Did you train the teaching assistants (TAs) in a particular way?

McKeachie: I met with TAs once a week and we talked about what they would be doing in their courses. They mainly trained one another because we talked about what their plans were for their classes, what sorts of questions they were going to ask, and what kinds of activities they would do. Usually, they had some kind of activities where the students did something. They traded ideas among themselves, so they did as much of the training as I did.

Bembenutty: What prompted you to develop the learning to learn course?

McKeachie: Prior to the learning to learn course, psychology had been pretty much, I think, based on behaviorism. During the 1960s, cognitive psychology came along, and a little later, we started to work on the learning to learn idea. At the University of Michigan, we had never been strongly behaviorist. We were much more followers of Donald Hebb, who was really a predecessor of what became cognitive psychology. Hebb's *Organization of Behavior* (Hebb, 1949) was a book that Don Marquis, our Department Chair, had all of us young assistant professors read and discuss with him at his house in the evenings, so we were not as strictly behaviorist as most places. When cognitive psychology came along in the 1960s and 1970s, I felt we needed to introduce students to basic principles of cognitive learning so that they could learn more effectively rather than just memorize and forget the subject matter after they took their tests.

Hebb's work, and then the new work in cognitive psychology, influenced me. Actually, Ference Marton at Göteborg University in Sweden and Noel Entwistle at the University of Edinburgh in Scotland and their students showed the advantage of what was called *deep processing* (Entwistle, 1984; Marton, 1975; Marton, Hounsell, & Entwistle, 1984; Marton & Säljö, 1976). Gus Craik in Toronto also developed level of processing theory suggesting that information was remembered more accurately if students processed it more deeply by relating new material to earlier learning (Craik, 1999; Craik & Lockhart, 1972). Those

theorists, I thought, were revolutionizing how we thought about learning and teaching.

I remember saying to Fred Skinner, the great behaviorist, "You talk about intending to do something. Why can't we theorize about intentions or expectations?" He said, "Well, that is fine for everyday conversation, but that is not science. If you can't observe it, then it is not science." Thus, for Skinner, one needed an observable stimulus and an observable response, followed by an observable consequence. Of course, that all changed for cognitively oriented theorists (see Bandura, 1997; Mischel, 1968; Neisser, 1982; Zimmerman & Schunk, 2003) when we began building in ideas of expectations, values, goals, and so forth.

Bembenutty: What is the state-of-the-art of learning to learn today?

McKeachie: There is still much going on, although I think the area has changed. Priti Shah, one of my colleagues, teaches the learning to learn course that I started. However, it is not as big as it was when I taught it. Now, more of the basic ideas of learning to learn have been incorporated into teaching in general. Courses in introductory psychology and educational psychology incorporate much of what I tried to do in my learning to learn course.

Bembenutty: Is that integration enhancing the student learning experience?

McKeachie: I hope so. I think before most teaching was lecture with a lot of student memorization for multiple-choice tests. Now more teachers realize that students need to think about the material more and organize and process it more deeply.

Bembenutty: What theories of motivation led you to develop learning to learn? McKeachie: The McClelland–Atkinson theory was very important (Atkinson, 1958; McClelland, 1961; McClelland, Atkinson, Clark, & Lowell, 1953). Jack Atkinson was one of my best friends here at Michigan and McClelland lectured here. They developed the whole notion that expectancies influence individuals' needs for achievement, affiliation, or power. The theory suggested that you had to account for both the reward and the expectancy in learning. Most motivation theories at that time only discussed consequences or rewards, and the big advance in the McClelland–Atkinson theory was showing that motivation was not only a function of the size of the reward, but also of one's expectation of getting that reward. People will not work so hard if they feel that they do not have to work hard to get the reward. One will not work very hard if there is little chance to get a reward, even a big one. Actually, the most motivating situation usually involved a moderate, say 50% or maybe 60%, expectation that one could achieve the goal by working for it. The expectancy-value theory is still being used today. Jacquelynne Eccles, a professor here at the University of Michigan, has expanded the theory by explaining that values are not only affected by one's expectancy of success, but also by many other factors such as culture, socialization, and gender differences (Eccles et al., 1983; Wigfield, Byrnes, & Eccles. 2006).

Bembenutty: What research evidence is available to support the value of learning to learn?

McKeachie: We conducted follow-up studies with our students. It was not possible to do a complete randomized design, but we matched students who took my course with comparable students who did not take it. We found that students who took the course did better in their later courses during the next 3 to 4 years through to graduation. I think that we taught them strategies for learning that some students just never use. Many students overemphasize memorization and, of course, some faculty members encourage rote learning by giving the kinds of tests that require only that. However, we tried to give our students the sense that they should not automatically start memorizing whatever is assigned, but choose from available strategies for learning in ways that are appropriate for what they expect to derive from their learning.

We also found that when students thought more about the material, they were likely to become more intrinsically motivated and interested in the material for its own sake rather than just to pass the test. That shift in focus makes a big difference. If teachers are interested in helping students learn for the rest of their lives, then they should want their students to develop intrinsic motivation for learning and not just learn when they are told to learn because they are going to be tested on it.

Bembenutty: How do you perceive the role that self-efficacy plays in a student's learning to learn and in teaching practice?

McKeachie: Students will not work very hard if they believe there is no use in doing so. It is important to build their confidence that it is possible for them to achieve the goals of the course. Thus, I think that giving them basic initial skills helps them understand that they may control their learning outcomes. Locus of control research has shown that it makes a difference in personal motivation if a learner has control rather than believing that the outcome is due to chance or is dependent on the teacher or an external force beyond oneself (Rotter, 1966). Albert Bandura (e.g., 1997) gathered much evidence supporting the idea that self-

efficacy affects all students. We found that students' self-efficacy correlates very highly with grades (Duncan & McKeachie, 2005; McKeachie, Pintrich, & Lin, 1985; Pintrich, Smith, Garcia, & McKeachie, 1993).

Teachers' self-efficacy is important, too. If teachers feel they do not really know how to handle classroom situations or do not feel very confident in their role as teacher, they will probably not do well, and that lack of confidence will be conveyed to the students. Logically, then, if the students perceive the teacher as lacking confidence, the teacher will find it more difficult to get students to learn as they should (Bembenutty, 2007; Tschannen-Moran & Woolfolk Hoy, 2001).

In learning to learn, I also emphasize teachers' self-efficacy beliefs among graduate teaching assistants. I try to build their beliefs that teaching consists of learnable skills, so even if they might not be the best teachers right now, as we work together over time, they can learn to handle problems that will no doubt crop up in their classrooms. In this way, TAs become more effective teachers.

I believe that teachers, including TAs, can be trained to enhance their self-efficacy. Training them to develop specific skills helps them feel more efficacious. Each teacher needs at least to have a sense that they have the potential to improve who they are as a teacher (Bembenutty, 2007).

Bembenutty: You also discuss the role of test anxiety in your learning to learn course. Why do you emphasize test anxiety so much?

McKeachie: I think test anxiety is the opposite of self-efficacy. If one feels efficacious, one is usually not very anxious. We did substantial research showing that anxious students did not do as well as they thought they would (Duncan & McKeachie, 2005; McKeachie, Lin, & Middleton, 2004; McKeachie et al., 1985; Pintrich et al., 1993). Some of those students probably deserved to be anxious—that is, they were not well prepared. Some of them actually studied hard, but only memorized their work instead of learning it effectively and so were understandably anxious. However, other students who were very good students became extremely anxious at exam time, and did not do as well as they were capable of doing. On a test that did not count for a grade, such as a review test, the students might do well. However, when the real test arrived, these high-anxiety students did not do as well as they had done when the test was not graded.

Marian Winterbottom (1958), one of my TAs, conducted studies of how test anxiety develops—what we called in terms of the McClelland–Atkinson theory, a fear of failure. No matter how well their kid does in school, some parents will say, "Well, you should have done better than that." Therefore, some students always have a sense that their parents are going to be disappointed in them if they do not do well. Gradually, an underlying test anxiety builds up when taking a test, and continues straight through to college.

Bembenutty: What recent research have you done in relation to test anxiety?

McKeachie: Yi-Guang Lin, Michael Middleton, and I did some research showing that actually a moderate degree of test anxiety is not bad (McKeachie et al., 2004). We found that if test anxiety is split into thirds (low anxious, midanxious, and high anxious) and students' level of intrinsic motivation is split into thirds (low, mid, and high), those students who do the best are highly intrinsically motivated and moderately anxious.

I think anxiety is a normal human characteristic. Not to be anxious at all may lead one to not work so hard or to lose focus in one's studies. The greatest interference with learning is worry, not one's physiological reactions or feelings of anxiety. Worrying about something consumes cognitive capacity, and so if students are thinking about the material and not worrying about getting high grades, they will do better on their tests. We found in some studies that college students who score high on measures of the "worry" component of test anxiety typically do not perform as well on tests that count for their final course grade as on similar measures that do not count toward a final course grade. There are two types of low-anxious student. Some low-anxious students are truly not anxious and perform well on tests. The second group of low test anxious report low anxiety, but are actually high anxious—they come across as defensive low-anxious students (McKeachie et al., 2004).

Bembenutty: What research on cognition led you to develop learning to learn?

McKeachie: Ference Marton (Marton, 1975) and Gus Craik (Craik, 1999) were among the first to emphasize cognition. Only two or three major theorists in the 1960s were developing cognitive psychology to the point where it is today. However, I think Don Hebb (1949) in many ways preceded the cognitive theorists at a time when the field was not called cognitive theory.

In learning to learn, the cognitive aspect that I emphasized involved thinking about the material, trying to relate ideas to one another, and looking for organization. If a student is assigned a chapter in a book, he or she should look over the headings. Usually, a textbook features headings that give readers some idea of the content of the entire chapter. Then, the student should read the summaries at the end of each chapter

before studying the chapter to gain some idea of what is important. These points are probably the main strategies that I tried to teach my students in both my writing and lecture classes.

Students need to know how to take notes, but they should not make them too detailed because taking notes uses cognitive capacity (Pressley & Levin, 1987). Students could miss some of the teacher's points if they try to take a lot of notes. Rather, their notes need to have a kind of structure through a series of major headings. Then, under each heading, the student can fill in or elaborate the information after class rather than trying to take word-by-word notes during a lecture.

Bembenutty: In learning to learn, you included student evaluations of the instructor's effectiveness. Why?

McKeachie: I have always thought that it was important for teachers to receive feedback on their work (Kulik & McKeachie, 1975; McKeachie, 1997). I guess that was one of the basic principles of learning, even back in the behaviorist days. A teacher who receives some feedback on how he or she is doing is more likely to improve than one not finding out what has worked or not worked in the classroom. Like John Dewey (1916/1966), I feel that teaching is like selling: You have not sold anything unless people have bought it. Similarly, a teacher has not taught anything unless the students have learned it. What teachers do in the front of their classrooms is not the most important thing. Maybe a teacher gives a really great performance, but the most important consideration is: "Are students learning?" This evidence of learning can come from students' performance on tests and projects. However, given that it is the students who are learning, they probably have some idea about whether they are, in fact, learning. Collecting evidence on how they feel about what they have learned and what aspects of the teaching have affected their learning can be helpful information for teachers.

Consider my own teaching as an example. Most students give me good evaluations, but usually, some do not like what I do (the only time I got perfect ratings was when I was a graduate student). That is an important point in teacher training. Whenever I look over the evaluations, the ones that stand out in my mind are the negative ones. Therefore, when I train teaching assistants and review ratings with them, I see that they feel kind of shaken up by knowing that some students did not like what they did. I tell them, "Let's look at your distribution of ratings. Ninety percent of your students say you are doing very well. Don't get too worried about these few poor ratings. Let us look at what they say and if there are things we can do about what turned these students off, we will try those next time. Don't go to pieces just because a few students are unhappy. You know that you usually don't make friends with every person you meet, so don't expect that you will hit it off well with every student."

Bembenutty: How should educators proceed or react when reading teaching evaluations?

McKeachie: It's important to talk about your teaching evaluations with someone else. I conducted research in which my TAs collected midterm evaluations when they were running the course completely by themselves and we did not have any lectures (McKeachie et al., 1980; McKeachie, & Svinicki, 2006). I split the TAs into two groups. With half of the TAs, I consulted with them about their evaluations; with the other half, I did not. Those TAs with whom I spoke about their evaluations did better at the end of the term than those with whom I did not speak. However, some people said, "You are an expert on teaching, that wouldn't work for other people." I replied, "I don't think that is important. What is more important is that they talk about it."

The next semester, I did not meet with them at all about their teaching evaluations. Instead, half the TAs talked about their ratings with another TA and the other half did not. It turned out that talking to another TA was just as effective as talking to me. I think what another person can do is reassure someone who gets shaken up about negative evaluations. That person can encourage you motivationally, as well as suggest, "How about trying this or that? Maybe it will help with such-and-such kind of student."

Bembenutty: How can teachers and professors include learning to learn in their daily classroom instruction?

McKeachie: I think many already do. There is now greater emphasis on getting students to be active during class by, for example, using minute papers or pairing or in-class activities that encourage students to reflect on the material rather than just read and memorize it.

Bembenutty: How can professors, teachers, and preservice teachers be best trained to teach learning to learn?

McKeachie: I think by teaching about cognitive and motivation theory and probably by convincing them that our job as teachers is not just to cover the unit's content, but to teach students more effective ways of learning that content.

Bembenutty: How does education today differ from the education of the time before learning to learn?

McKeachie: I think the big difference now is the greater emphasis on student activity and less on teacher lecturing. There are probably still many straight lecture courses, at least in psychology, but these days, teachers are more likely to break up lectures with small group activities or pairing or papers or other student activities.

Bembenutty: How is learning to learn reflected in your textbook (McKeachie, & Svinicki, 2006)?

McKeachie: I put a lot of emphasis in *Teaching Tips* on having a variety of strategies available for coping with different kinds of teaching situations, and I give some theory about why these tips will work.

Bembenutty: Some current teaching programs use learning to learn with preservice teachers. Why is learning to learn especially important for this group?

McKeachie: I think it is important for any group of teachers. It is not just learning to learn; it is understanding the theory behind how students learn so that the teachers learn to teach more effectively. Teachers as well as preservice teachers need to learn self-regulation for the sake of their own learning and practice (Bembenutty & Chen, 2005; Dembo, 2001; Dembo & Jakubowski, 1999).

I think everyone needs to be a self-regulated learner. Essentially, everyone has some ability to set goals and figure out ways to achieve those goals and carry out appropriate actions, which is a form of self-regulation. Teachers and preservice teachers will always encounter problems in their classrooms and will need to think about these problems and establish strategies for coping with them. Teachers need to teach their students how to become self-regulated learners. This process is what we talked about in learning to learn. Our goal is to develop learners who will continue to learn once they leave the classroom. Thus, students need to learn to set realistic goals, understand how to achieve them, and develop a sense of self-regulation for their learning. In this way, they will most likely continue learning for the rest of their lives.

In relation to self-regulation, I added the component of delay of gratification to our Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich et al., 1993) to assess students' preferences for immediately available rewards with low value, as opposed to postponing immediate gratification for the sake of waiting for temporally distant rewards (Bembenutty & Karabenick, 2004). Walter Mischel conducted some of the first research with children showing that the ability to delay gratification was related to learning and achievement (e.g., Mischel, 1996). Students with a high tendency for immediate gratification did not do as well as those who set long-term goals. Of course, Héfer, your own work on delay of gratification has shown that when students want immediate gratification (like going out with friends instead of studying for assignments), they do not do as well (Bembenutty, 2005, 2008; Bembenutty & Karabenick, 2004). You have found significant and positive relations between delay of gratification and self-efficacy, intrinsic motivation, and use of cognitive and resource management strategies among college students, teachers, and teacher candidates.

Bembenutty: What are the major theories now currently influencing our understanding of learning?

McKeachie: Brain imaging research is helping our understanding of learning. I once asked Ed Smith, certainly one of today's outstanding cognitive theorists, who is using brain imaging, "It's nice to know our brain works the way our theories say it should, but is all this brain imaging contributing to developing better theory?" He said, "Well not so far, but we think it will eventually."

Basic theories have changed very little over the years. Theories are being applied now to teaching of reading, teaching of math, and early childhood development (e.g., Boekaerts, Pintrich, & Zeidner, 2000; Pajares, 1996; Paris & Newman, 1990; Schunk & Zimmerman, 1998; Zimmerman & Schunk, 2001). Hullian theory was dominant when I was a student (Hull, 1943). I do not know how much impact it had on practice, but Skinner's behaviorism certainly had a big impact on practice. I think behavior modification techniques are still valuable for teachers and others to use, although I think they have been largely superseded by cognitive principles. Essentially, there is greater emphasis now on thinking about what occurs in students' heads and not so much what their responses mean or the value of rote memory activities. Humanistic theories have also helped. Abraham Maslow was one of my best friends—we used to go on long walks together. I think his theory of hierarchical needs is interesting (Maslow, 1968), as is Carl Rogers's (1961) theory. However, I do not know that Rogers and Maslow have had a lot of impact. Bandura's (1997) social cognitive theory has been helpful. I think his theory has become a nice integration of behaviorism, motivation, and cognitive theories. The constructivist theories have also had some impact. Vygotsky's theory (Vygotsky, 1978) and Piaget's theory (Piaget, 1952) certainly have influenced thinking about children and early childhood education, even though we have since learned that everything is not quite as hierarchical as Piaget thought. Nonetheless, it certainly had a major impact.

Bembenutty: Are these theories going to continue influencing education and psychology?

McKeachie: I think these theories are built one on the other and will become the foundation for new theories. I remember Marquis once told me, "You do not need to study the history of psychology. Anything that is worthwhile will be incorporated into our current theories." I think in a way that is what happened to these earlier theories. They have been built into the newer theories.

Bembenutty: Which current theoretical approaches will inform the future development of learning to learn?

McKeachie: The theory of multiple intelligences will in some ways (Gardner, 1993). It adds on to our current understanding of learning because it encourages people to think of the existence of more than one type of intelligence, (what we used to call "talents"). Thus, the idea of multiple intelligences is not so revolutionary. I think that self-regulation is obviously a major topic now. Neuropsychology is discovering many aspects of the brain's functioning that should affect our theories, but so far I do not think that interrelationship has quite happened (e.g., Lezak, Howieson, & Loring, 2004; Rains, 2002). Computer-based instruction and technology have certainly proven to be very useful, although I do not think they have yet advanced theory (Azevedo, 2005; Winne, 2005; Zimmerman, 2008).

Bembenutty: With regard to understanding learning, what new research is needed?

McKeachie: I have always been interested in interactions. I think we still do not really know much about how a particular kind of teacher, a particular kind of student, a particular kind of class, and a particular culture and environment all affect learning while interacting with each other. These interactions are very complex and need further exploration.

Bembenutty: In learning to learn, students represent a range of learners from diverse ethnic groups. Why is learning to learn particularly successful for students from different ethnic groups?

McKeachie: All students' minds are basically the same, even though the students themselves come from diverse backgrounds. Obviously, those with more prior knowledge are in a better position than those who have no knowledge or the wrong kind of prior knowledge. However, I do not know of any special differences that would not be helped by developing new learning strategies and understanding.

I think we are not only teaching abstract theories, but we are teaching people to learn in a variety of contexts, and one particularly helpful aspect that helps learning is to have diverse viewpoints and experiences that enrich students' sense of contextual and cultural influences on learning, teaching, and daily life. Thus, being able to have cultural diversity in a classroom adds to that class's ability to obtain a broader perspective on so many important topics.

Bembenutty: In learning to learn, you frequently assess student learning. Why is frequent formative assessment so important?

McKeachie: I do not think it has to be so constant that an assessment is made on every unit, but I do think we need frequent assessment early on in the semester to help students learn what the teacher or the field considers to be the key concepts or information to know. Conversely, you do not want frequent assessment later on because you want to teach students to assess their own learning. Thus, the emphasis would be on giving early quizzes and the like so that the student can ask, "Okay, now what did I do wrong? How can I do better?" In addition, it is important to be able to know when students understand material versus when they do not, so I favor early frequent assessment, which becomes less frequent as the learner proceeds through the course.

Bembenutty: What are your current views of the impact of standardized tests such as the Regents?

McKeachie: I do not think standardized tests are a good idea. The whole emphasis on assessment now is somewhat punitive. The notion is that the school or student has to shape up or be punished. The schools in the United States show tremendous differences in their financial bases, for instance, between inner-city schools and suburban schools, so that classes in the former are larger and teachers are generally not as well paid or well supported. The tests end up punishing the students who need help instead of just helping them. I think more emphasis should be placed on what we can do to help teachers do a better job instead of stressing assessment so much. I think assessment plays a key role in that, but not in the sense of how it is being used now. It is not being used as formatively to help students and teacher or to distribute money and resources to those who could use them to do a better job.

Bembenutty: The recent call of the No Child Left Behind Act (NCLB) has influenced the view of learning and educational practices. What are your views of NCLB?

McKeachie: I think it is important to believe that everybody can learn, and the government should make sure that every child does learn. In some ways, again, I think NCLB has been used punitively rather than

encouraging or allocating more resources where they are most needed. NCLB could be helpful, but I am just not sure it has been implemented well. In Texas, NCLB actually increased the number of dropouts because teachers wanted to look better—they had poorly performing students drop out rather than try to teach them. I would not call that a good effect.

Bembenutty: Learning to learn focuses primarily on students who have learning gaps. Current trends are also focusing on gifted learners. How can gifted learners benefit from learning to learn?

McKeachie: In the same way as anybody else can. Gifted students do not necessarily know how to learn. One of my problems I found here at Michigan was with students who had done very well in high school. They thought they never really had to study hard or learn effectively because they were bright enough to get through high school with good grades but with ineffective work and study habits. Thus, they—or at least many of them—need learning to learn just like everybody else.

Bembenutty: What would you do differently if you had to start learning to learn again?

McKeachie: I probably would put more emphasis on the general concept of self-regulation (Zimmerman, 2008). We did not have that concept when I was teaching it. In addition, even though it was in the course back then, I would stress motivation more.

Bembenutty: What do you view as your contribution to the field of psychology and educational psychology?

McKeachie: I do not know. I think we contributed in showing the importance of anxiety and self-efficacy as contributing factors in student learning. I think we offered some practical help in the area of students' ratings of instruction and how those can be used constructively rather than destructively, which I think is sometimes the case when ratings are emphasized for promotion and salary decisions. I think maybe another contribution is the importance of looking at learning through a strategic lens rather than a traditional or what used to be a strictly behaviorist way of seeing.

Bembenutty: Thank you for accepting my invitation to do this interview. It has been a pleasure talking to you and learning about your experiences as a world leader in learning to learn.

McKeachie: Thank you, Héfer. I always enjoy talking to you. As an educator of teachers yourself and teaching educational psychology to them, continue helping your students to learn how to learn while they are learning how to teach.

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Note

Send correspondence to Héfer Bembenutty, Queens College, Department of Secondary Education and Youth Services, Powdermaker Hall, 150-P, 65–30 Kissena Boulevard, Flushing, NY 11367; e-mail: hefer.bembenutty@qc.cuny.edu.