COMMENTARY

Barry J. Zimmerman's Enduring Legacy: The Inspiring Fusion of Self-Regulated Learning Theory, Practice, and Mentorship

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Abstract

In this tribute, Barry J. Zimmerman, a distinguished academic and influential scholar, is commemorated for his remarkable contributions to education and research following his passing on February 17th, 2025, in Tucson, Arizona. Renowned for his visionary approach to teaching and human learning, Zimmerman challenged traditional paradigms and fostered innovative perspectives on the conceptualization, assessment, and application of educational practices. His distinguished contributions, including foundational books, influential peer-reviewed articles, and a range of prestigious honors, reflect his intellectual depth and unwavering dedication to advancing the fields of educational psychology, self-regulated learning (SRL), and motivation. Throughout his career, Zimmerman explored the dynamic interplay between learners' beliefs, behaviors, and emotions across diverse contexts such as academics, sports, music, and health. The reflections in this tribute highlight how his groundbreaking theoretical frameworks and experimental research have profoundly shaped educational scholarship and practice, while also underscoring the lasting impact of mentoring and teaching on colleagues and students alike. Zimmerman's humility, generosity, and compassion have solidified his legacy as a cornerstone of academic excellence, inspiring future generations to build upon his foundational contributions to education and SRL.

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Published online: 02 August 2025

🖄 Springer

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Barry J. Zimmerman, Distinguished Professor of Educational Psychology at the Graduate School and University Center of the City University of New York, was a towering figure in the field of self-regulated learning (SRL). For over four decades, he shaped our understanding of how learners direct their cognition, motivation, and behavior, anchoring his work in the framework of social cognitive theory. His scholarship stood out for its innovative integration of theoretical innovation, methodological rigor, and enduring practical relevance.

Barry's intellectual exploration into self-regulation began long before his first publication. As a young boy, he observed self-regulation in action at home. His father, an extraordinary teacher, instilled in him the belief that success, whether in academics, music, or sports, was not simply a product of talent, but of sustained effort. He taught Barry the value of goal setting, practice, and daily progress tracking, principles that quietly took root and would later become the foundation of Barry's lifelong inquiry into learning. He shared this journey with his wife of 58 years, Diana Zimmerman, and instilled those values in his two daughters, Shana Zimmerman and Kristin Scott, as well as in his grandchildren.

Years later, as a leading scholar in educational psychology, Barry would reflect on those formative childhood experiences with striking clarity: "I initially became interested in the self-enhancement of learning processes as a youth … As an adult researcher, I drew on these formative experiences to define and assess the impact of these and other self-regulatory processes empirically" (Zimmerman, Foreword in Bembenutty et al., 2013, p. ix).

These deep personal roots became the foundation of a career that fundamentally reshaped how we understand and support learning. As his research evolved, Barry examined how socially modeled behaviors are internalized and transformed into self-regulatory processes, culminating in the development of theoretical models that profoundly influenced the field of educational psychology (Zimmerman, 2013). His work illuminated the causal, cyclical, and developmental nature of SRL, emphasizing that it is not a fixed trait but a flexible, learnable, and contextualized process cultivated through modeling, feedback, and intentional practice (Zimmerman, 2002b). Among his most enduring contributions was the cyclical phase model of SRL, which articulated three interrelated phases, namely, the forethought, performance, and self-reflection, that operate recursively as learners plan, execute, and evaluate their actions (Zimmerman, 1989, 2000, 2013). This model provided a conceptually clear, structured lens from which researchers could investigate the mechanisms and operation of SRL during learning activities. This model also proved to be of great practical value to educators interested in designing instructional approaches or intervention programs that fostered strategic, motivated, and independent learners. By

framing SRL as an active and adaptive process, Barry's model redefined SRL as central to academic success and lifelong learning.

Further, Barry's four-level developmental model of self-regulation stands as a landmark contribution to the field, offering a powerful and practical framework for fostering strategic learning across developmental stages (Zimmerman, 1995a). This model outlines a progression from observation to emulation, followed by self-control and ultimately self-regulation, illustrating how learners gradually internalize effective strategies through social modeling, scaffolded practice, and increasing independence. By mapping a clear path from external guidance to internal control, Barry provided educators with a roadmap for cultivating SRL competencies.

Barry's models of SRL have had far-reaching impact, applied across a broad spectrum of domains, including academic achievement, sports performance, music education, and health behavior (Kitsantas et al., 2000; Zimmerman & Kitsantas, 2005). What distinguishes Barry's theoretical models and empirical research is their conceptual rigor, broad accessibility, and cultural relevance. Barry was especially attentive to the needs of culturally diverse populations, ensuring that his theories resonated with and supported all learners, not just those traditionally positioned for academic success (Zimmerman & Moylan, 2009). He was deeply committed to bridging theory and practice and developing evidence-based interventions that were both research-driven and practically applicable. His work provided concrete, empowering tools that enabled individuals to take ownership of their learning and personal development, transforming self-regulation from an abstract construct into a tangible, teachable skill with lifelong impact.

The prolific and ground-breaking nature of Barry's scholarship has been widely recognized for its cross-disciplinary impact. He published influential research in top-tier journals across multiple fields, including *Journal of Educational Psychology*, *Contemporary Educational Psychology*, *The American Educational Research Journal*, *Journal of Applied Sport Psychology*, and *the Journal of Asthma*, demonstrating the breadth and relevance of his work across disciplines. His research was also featured by the Institute for Education Sciences and other prominent national platforms. Among his many accolades, Barry was named a Charter Fellow of the Association for Psychological Science and served as President of American Psychological Association (APA) Division 15 (Educational Psychology). He received the Senior Research Scientist Award from APA Division 16 and the Sylvia Scribner Award from the American Educational Research Association (AERA), the highest honor for scholarship in learning and instruction. He was also honored with the APA Division 15 Career Achievement Award for Distinguished Psychological Contributions to Education in 2011. In 2015, the Barry J. Zimmerman Award for Outstanding Contributions to SRL was established by the AERA Studying and Self-Regulated Learning Special Interest Group (SSRL-SIG), a scholarly community he helped found. This award stands as a lasting tribute to his pioneering work, profound impact, and unwavering dedication to advancing the understanding of SRL.

Throughout his distinguished career, Barry was a brilliant scholar and also a dedicated mentor and insightful guide. His steady, compassionate support fueled the growth and success of those around him (Bembenutty et al., 2013). He generously dedicated countless hours to modeling rigorous research practices, providing

detailed and thoughtful feedback, and personally visiting remote data collection sites so his students could witness his careful, intentional and methodical approach first-hand. Just as his father had once exemplified the quiet, daily discipline of self-regulation, Barry carried that legacy forward with remarkable humility, quiet strength, and enduring grace—living proof of the values he so passionately researched, taught, and embodied. He did not just share his intellectual ideas; he shared himself. In doing so, he built something enduring—a vibrant and interactive network of scholars, practitioners, and learners shaped by his mentorship, inspired by his example, and empowered by his unwavering belief in their potential. While his ideas filled journals and books, his presence filled people with purpose, direction, and belief in themselves.

The following commentaries reflect powerful testaments to Barry's legacy and far-reaching influence and generational ripple effects across his contemporaries, other esteemed colleagues, and former students or their students. In short, each commentary speaks to the ways that Barry shaped professional identities, scholarly passions, and personal journeys, leaving behind a legacy that continues to illuminate and uplift the field.

Barry J. Zimmerman: Unpretentious Brilliance
Patricia A. Alexander
University of Maryland

Words usually come very easily for me—a blessing when it comes to being an educator and a researcher. However, I struggled to find just the right words to describe an individual who has been a significant part of my academic life, personally and professionally. Those specific words had to capture what I saw as the essence of this exceptional scholar—what set him apart from others I have been privileged to call friends and colleagues. I chose "unpretentious brilliance" because I have not encountered anyone more genuine, open, and approachable than Barry. He never let his obvious intellectual prowess or insightfulness overshadow his way of being. Over the past 40 years, whenever I reached out to him for guidance or to beg a favor, he was always there for me, as he has been for so many. He never made me feel as if I were imposing or demanding, regardless of whatever personal or professional concerns with which he was dealing. For me, he will always remain a role model of what true scholars can and should be. I will strive to emulate his unwavering genuineness, openness, and approachability in my personal and professional relationships.

Yet, Barry's influence on me went far deeper than just the personal. When I was a doctoral student in the late 1970s, my mentor, Ruth Garner, was fascinated with the construct of metacognition, or "thinking about thinking," and its effects on text comprehension. For her sabbatical, she went to Stanford to learn all she could from John Flavell (1979), the father of metacognition, which eventually led to her book *Metacognition and Reading Comprehension* (Garner, 1987). I, too, became invested in metacognition and how awareness, monitoring, and regulation of cognition are highly influential on learning and performance.

It was about this time when Ruth and I (1989) began to examine metacognition more critically that I encountered Barry's (Zimmerman, 1989, 1995b) foundational writings on self-regulation and SRL. Three aspects of Barry's conception of self-regulation were especially transformative. First, his theoretical framework was not solely cognitive in orientation but embraced a social cognitive view of human learning and performance first articulated by Bandura (1989). According to this theory, humans' thoughts and actions are continuously and reciprocally influenced by who and what they encounter in the world around them. Second, Barry applied the notions of awareness, monitoring, and regulation to all realms of human activity—physical, cognitive, social, motivational, and emotional. Finally, Barry (Zimmerman, 1986) was invested in how this broad understanding could be implemented to produce better self-regulated learners. As someone strongly committed to classroom-based applications of educational psychology theory and research, I found this last point particularly significant because it centered the principles underlying self-regulation where they most belonged—in practice.

Despite all that I have come to learn about self-regulation and SRL vis-à-vis metacognition, I must confess that my colleagues and I still wrestle with the true nature of their interrelations (Dinsmore et al., 2008). Maybe that will always be the case. Theoretical boundaries are never fixed or truly orthogonal. That being said, I will greatly miss the opportunity to sit down with my friend Barry to ponder these perplexing questions together and to benefit once more from his truly unpretentious brilliance.

Barry J. Zimmerman: Mentor, Role Model, Educator, and Colleague
Maria K. DiBenedetto
University of North Carolina, Greensboro

Barry was an extraordinary mentor, educator, and scholar whose pioneering work on SRL profoundly shaped the field of educational psychology. I first met him in 2001 while exploring the doctoral program at The City University of New York's Graduate Center, and from that initial meeting, I was struck by his intellect, warmth, and humility. I was fortunate to have Barry as my mentor; his guidance shaped both my academic trajectory and personal development in meaningful ways. His teaching brought clarity to complex theories, and cultivated a classroom environment where students were valued as active contributors to the evolving discourse in the field.

Barry lived by the principles of SRL in both his scholarship and relationships. During a demanding time in my life, his steady support helped me stay the course. I will always remember him saying, "You are the expert now," just before my dissertation defense—words that helped me internalize self-efficacy beliefs of myself as a researcher. Beyond mentorship, he cared greatly about my family, often asking about my daughters with genuine interest. We later co-authored multiple articles and I had the unique privilege of collaborating with Barry and his esteemed colleague, Dale H. Schunk—an experience that remains one of the most meaningful honors of my professional life. Barry's legacy endures through the influential body of work he helped shape and the countless lives he enriched with his intellect, generosity, and unwavering support.

The scope of Barry's contributions to educational psychology is vast. Yet, as an educator and researcher, I find myself repeatedly returning to a select group of his influential works that have had a prominent influence on my thinking and practice. One influential piece (Zimmerman, 1998) reframed academic studying not as a passive task but as a dynamic, self-regulated process involving six interrelated dimensions: motivation, method, time, physical environment, performance, and self-reflection. His framework resonates strongly with the challenges and habits I observe in the college students I work with and has become a touchstone in how I support them in developing more intentional and effective learning strategies.

Equally impactful is another work (Zimmerman, 2002b), in which Barry offers a concise and accessible synthesis of SRL theory for both scholarly and applied audiences. This perspective has had significant implications for educational practice, informing interventions aimed at fostering metacognition, motivation, and academic resilience.

Another work that has deeply resonated with me is one in which Barry explored the development of SRL within the context of adolescent growth and autonomy (Zimmerman, 2002a). He framed this process as a dynamic interplay of challenge and mastery—what he described as "trials and triumphs"—highlighting how students learn to navigate increasing complexity in both academic and personal domains. As someone whose research focuses on secondary and post-secondary students, I find the developmental lens offered in this piece to be especially powerful and enduring.

Looking ahead, current and future SRL research should increasingly center on its integration within digital and AI-enhanced learning environments. Scholars are investigating how SRL processes unfold within adaptive platforms such as intelligent tutoring systems, learning analytics dashboards, and mobile applications that support key self-regulatory skills like goal setting, self-monitoring, and time management (Azevedo et al., 2020; Bannert et al., 2021). The proliferation of accessible digital tools that assist students with task management—such as assignment reminders and progress tracking—holds great promise when grounded in solid SRL theory.

Concurrently, there is a critical need for effective teacher-friendly interventions across diverse educational contexts. As pre-service teacher programs increasingly incorporate SRL into their curricula, research must guide the development of practical instructional strategies and lesson plans that nurture these skills in authentic classrooms (DiBenedetto, 2018). Additionally, longitudinal and developmental studies are essential to chart how SRL evolves from early childhood through adulthood and how it can be intentionally fostered across educational transitions and life stages.

Barry's work promises to guide us to intentionally cultivate SRL across critical educational milestones and life's many transitions. Throughout his distinguished career, Barry's pioneering research, mentorship, collaborations, and unwavering dedication have left an indelible mark on educational psychology, establishing him as one of the foremost architects of the SRL framework. Inspired by Barry's visionary and foundational work, these directions ignite a powerful hope—an opportunity to deepen and extend SRL's transformative influence in today's learning environments, allowing his remarkable legacy to live on and inspire future generations.

Barry J. Zimmerman's Pioneering Insights about the Dynamics and Complexity of Motivation and Self-Regulated Learning
Avi Kaplan
Temple University

I learned of Barry's (Zimmerman, 1989, 1990a, 1990b; Zimmerman & Martinez-Pons, 1986, 1988) groundbreaking work on SRL during my doctoral studies in the Combined Program in Education and Psychology (CPEP) at the University of Michigan in the mid-1990s. Barry's scholarship marked an explicit shift from what was, then, the taken-for-granted approach to research on the relations between motivation and engagement. That approach involved using variance-based analyses of self-report survey data to test hypotheses about generalized, stable, and linear partial correlations between constructs like mastery goals, task value, self-efficacy, or interest, with the reported use of cognitive and metacognitive strategies. For me, a neophyte scholar who was learning the normative approach, Barry's social-cognitive, cyclical, dynamic, and applied theory of SRL and his interview approach that focused on students' experiences of engaging in different domains and tasks seemed both innovatively different and very challenging. To begin with, Barry's findings and their consequent cyclical model of SRL highlighted the fact (obvious to anyone who observes and talks to students) that effort and use of strategies are neither stable nor linear. Instead, engagement and SRL are variable, shifting, sometimes showing and at other times not, and manifesting somewhat different forms among different students in different domains and tasks. Barry's perspective and findings made it clear that to understand students' SRL deeply, researchers need to define and investigate task engagement as having different phases, as dynamic and iterative, and as involving shifting perceptions, goals, and strategies.

In addition to challenging conceptions of SRL and methodologies for capturing it, Barry also complexified the role of motivation in SRL. He convincingly argued that metacognitive capacities are not enough to give rise to SRL, and that motivation processes are as central to the phenomenon (Zimmerman, 1995a). Barry pointed out that motivation for SRL was multidimensional (Zimmerman & Risemberg, 1997), but more impactfully, he built on Bandura's (1978) concept of reciprocal determinism among personal cognition and emotion, behavior, and the environment to provide a complex view of motivational processes that called on scholars to consider the characteristics of the social context and the task, as these interplay with the student's motivation and perceived competencies to manifest in self-regulated engagement (Zimmerman, 1989). His SRL model's three-phases and sub-processes challenged the common practice of focusing on a single a-priori motivational construct, or even on a few, as this does not capture the multitude of motivational processes that a student may harness when engaged even in a single task or how various motivation and SRL processes may ebb and flow during different phases of task engagement and under different contextual conditions (Zimmerman, 2011).

Finally, along with his theoretical insights and methodological innovation, Barry's scholarship was inspirational to me as an emerging scholar in his commitment to translating his theory and findings into practical applications that aim to support students' agency in becoming effective self-regulated learners (Zimmerman, 2002a,

2002b). Since those graduate school years, Barry's scholarship and his generous support have had an important impact on my scholarship. I have followed his lead in viewing motivation and SRL as a diverse, multidimensional, and contextualized phenomenon (Kaplan, et al., 2011; Lichtinger & Kaplan, 2015), in arguing for students' agency, self-reflection, and identity exploration as central educational goals (Flum & Kaplan, 2006; Kaplan & Flum, 2012), in adopting a complexity perspective on the relations of motivation and self-regulation (Kaplan, et al., 2019), and in committing to applying scholarship to promote diverse people's motivation, self-regulation, and identity exploration in diverse educational settings (Kaplan et al., 2014, 2020). Barry's pioneering theoretical insights, methodological innovations, and value-based commitments to bridging research and practice continue to be extremely important in guiding the relevance of educational psychology to people's learning and growth in all life domains.

Self-Regulated Learning in Motion: Barry J. Zimmerman's Enduring Contributions to Sport and Physical Education
Athanasios Kolovelonis
University of Thessaly

Barry's pioneering theoretical and empirical work on SRL transformed our theoretical understanding of how students regulate their learning and provided teachers and researchers with instructional frameworks to guide research and practice across various fields, including sport and physical education (Zimmerman, 1989, 2000). Considering students as active and reflective agents in their learning, Barry (Zimmerman, 2008b) offered new insights into how they set goals, plan, monitor, and reflect on their learning. His significant and lasting scholarly contributions advanced the field of educational psychology and extended beyond the development of robust theoretical models to include practical innovative practices fostering effective teaching methodologies and learning interventions (Zimmerman, 2008a). His writing clarity and ability to communicate complex concepts or ideas and bridge theory and practice were exceptional. For instance, the clarity of the developmental phases in self-regulation of motor and sport skills (e.g., how to shift from process to performance goals), which can facilitate students' learning and motivation in physical education (Zimmerman & Kitsantas, 1997), is particularly illustrative. Generations of teachers and researchers have benefited from his foundational work, and his legacy will likely continue to inspire new generations in the field of educational psychology.

I have never had the opportunity to meet Barry in person; his work, however, has profoundly influenced and inspired my academic and research journey. Indeed, Zimmerman's (2000) models of self-regulation of learning (i.e., the cyclical model and the four-level model) have been central to my research and practice. As a teacher and researcher in physical education, I have always been interested in enhancing students' ability to become active agents in their own learning of motor and sport skills. Barry's models provided me with a clear and robust theoretical basis for conducting my research (specific examples are outlined below). Moreover,

by incorporating these models into my teaching practice, I not only provided my students with guidance and social support during practice but also actively engaged them in self-regulatory processes, such as goal setting, self-monitoring, and self-reflection, thereby facilitating their learning and performance of motor and sport skills in physical education. These models are particularly well-suited for sport and physical education settings as they involve processes (e.g., goal setting, modeling, and feedback) that are widely used in learning and mastering motor and sport skills (Zimmerman & Kitsantas, 1996, 2005). Furthermore, they are not merely theoretical models that describe the dynamic nature of SRL and the interrelations of the processes involved, increasing our understanding of how students learn how to learn. Most importantly, they facilitate and promote the translation of theoretical tenets into practical instructional tools for students and teachers (Kitsantas et al., 2018).

Barry's models have guided my research in several areas. First, I focused on goal setting and self-recording, two of the main processes involved in SRL, that students can use to master sports skills and become self-regulated learners in physical education (e.g., Kolovelonis et al., 2011a, 2011b). Moreover, considering Barry's cyclical model suggestion that students can use several self-control techniques during learning and performance, I emphasize self-regulatory processes that fit better in physical education and sport settings, such as self-talk (e.g., Kolovelonis et al., 2012).

Furthermore, inspired by his commitment to practical application, I explored the effectiveness of the four-level model as an instructional model of teaching students' motor or sport skills. This line of research (e.g., Kolovelonis et al., 2010) involved various motor (i.e., dart-throwing) and sport skills (i.e., basketball dribbling and shooting), not only in laboratory-like experiments but also in real-life physical education interventions (e.g., Kolovelonis et al., 2013). Alternative teaching styles (e.g., the reciprocal style and the self-check style) were also effectively incorporated into the four-level model (Kolovelonis et al., 2011b). Moreover, I investigated the metacognitive aspects of performance involved in SRL, such as the accuracy of students' estimations of their learning and performance (i.e., calibration). Generally, research findings suggested that students tend to overestimate their sport performance (Kolovelonis & Goudas, 2019), with potential detrimental effects on their learning. However, learning sport skills through the four-level instructional model may help students enhance their calibration accuracy (Kolovelonis et al., 2022). This evidence suggested that Barry's four-level model can serve as a powerful guiding framework that can help students master motor and sport skills effectively and become self-regulated learners.

Reflecting on this research, I realize how privileged I was that my research journey crossed with Barry's theoretical and empirical work on SRL early in my career. Undoubtedly, his work will continue to inspire and influence my future research, opening new pathways of knowledge and practice. One promising direction lies in applying his four-level instructional model to personalize teaching and learning for students with varying competencies and experiences. Leveraging this framework to foster individual growth and enhance motor and sport competence presents an important and timely challenge for future research in physical education.

Remembering Barry J. Zimmerman: A Personal Reflection From the Field
Brian Mandell
Smithsonian Science Education Center

I feel a wide range of emotions regarding Barry's passing. He was an exceptional person, an inspirational mentor, and a timeless figure in the field of educational psychology. Even though I never had the privilege of meeting him, his work has profoundly shaped me, and I am grateful for the opportunity to share his impact on my life as one of his academic "grandchildren."

Like many first-year doctoral students, I entered George Mason University with questions, optimism, and uncertainty. I took a research methods course taught by Anastasia Kitsantas, and one day after class, I shared what I was observing in my own middle school science classroom. I noticed students increasingly struggling, not with content, but with managing their own learning, especially in complex digital learning environments. After I shared these observations, Kitsantas pointed me to Barry's article, *Attaining Self-Regulation: A Social Cognitive Perspective* (Zimmerman, 2000). After reading that piece, everything changed. I saw myself and my students reflected in that magnificent article. Concepts like goal setting, metacognitive monitoring, and causal attributions mapped directly onto the struggles I witnessed. I discovered later that Kitsantas was one of Barry's most treasured students, making this meeting even more meaningful; I had not just learned a framework; I stepped into a legacy of mentorship and research that would shape the rest of my career.

From that moment on, I immersed myself in Barry's work. One article that I found deeply inspiring was *Enhancing Self-Regulation of Practice: The Influence of Graphing and Self-Evaluative Standards* (Kitsantas & Zimmerman, 2006). Using dart-throwing as the learning task, the study elegantly demonstrated how process and transitional goals could outperform outcome goals. I have referenced it in dozens of professional development presentations as it is a compelling metaphor for how we should think about education.

Another influential study was DiBenedetto and Zimmerman's (2010) microanalytic research on science learners, which became foundational to my dissertation (Mandell, 2013). Like their work, I used microanalysis to study how students plan, monitor, and reflect on their learning in real time while engaging with digital science content. I found that frequent use of goal setting, strategic planning, and self-monitoring strongly correlated with higher task performance. Microanalysis also revealed how high-performing students adjusted their strategies mid-task, while many other learners struggled to reflect or misjudge their progress. Barry's influence shaped every phase of my research.

After earning my doctorate, I joined the Smithsonian Science Education Center, where I led the development of *Smithsonian Science for the Classroom*, a K–5 curriculum aligned to the Next Generation Science Standards. Given my background in science education and passion for SRL, I advocated for embedding SRL reflective prompts into the student-facing parts of our curriculum. Our team created Stop and Think prompts that include language such as, "How confident are you that your strategy is working?" that are designed to help students pause and reflect (Smithsonian Science Education Center, 2018—2024). These SRL prompts are now in every

Student Activity Guide and have reached over three million students and tens of thousands of teachers. Once again, Barry's work was the foundation.

We also applied SRL principles to digital learning. One of my favorite projects is Tami's Tower: Let's Think About Engineering, a K-2 digital game that features a golden lion tamarin named Tami, inspired by the Smithsonian's conservation work. Players help Tami build a tower to reach fruit while other animals run by and shake the ground, making the towers' stability essential. When a structure fails, a shadow of the original remains, encouraging reflection, encouraging growth, and offering a chance to learn from their mistakes; all features inspired directly by Barry's work. Since its publication in 2018, *Tami's Tower* has become one of Smithsonian's most successful games and according to a 2024 internal report by the Smithsonian Science Education Center, was the most downloaded Smithsonian educational app in 2023 (Smithsonian Science Education Center, 2024). Tami's Tower's continued success demonstrates a real demand for educational content grounded in evidence-based educational theory.

Looking ahead, I believe SRL research will play a key role in shaping how science classrooms are designed, how content and practices are taught, and how students develop the cognitive and metacognitive skills needed to engage meaningfully with artificial intelligence. Whether I am developing science curriculum or digital games, or leading professional development, I continue to draw on Barry's theoretical models and empirical research. His ideas have helped me find my voice as a teacher, a curriculum developer, a game designer, a researcher, and even as a father. Ultimately, I hope that my professional activities and work can help others feel some of the immense inspiration and guidance that Barry's work has provided for me. Thank you, Barry!

Barry J. Zimmerman's Research Into Self-Regulation: A Program of Work With Deep Roots and Forward Reach
Andrew J. Martin
University of New South Wales

Barry's work on self-regulation has rippled through my team's research program for over two decades. His research into motivation and engagement (Cleary & Zimmerman, 2012) provided guidance to help us better understand alignments and distinctions between motivation and engagement, including our ordering of these constructs in academic process models (Martin et al., 2017). Specific components of Barry's self-regulation cycle (Zimmerman & Campillo, 2003; Zimmerman, 2002a) have informed key parts of the multidimensional Motivation and Engagement Wheel (Martin, 2023), including the planning and monitoring, task management, and persistence components. For our research into adaptability, Barry's work (Zimmerman, 2002a) informed our decision to locate adaptability under a self-regulation umbrella, as a specific form of self-regulation in the face of uncertainty (Martin et al., 2013). Our research into personal best (growth) goals (Martin & Elliot, 2016) drew on Barry's concepts (Cleary & Zimmerman, 2012; see also Zimmerman, 2013) to explain why we found mastery approach goals to be more closely related to motivation, while personal best goals were more closely related to engagement. For our work

on academic buoyancy (Martin et al., 2010), Barry's research (Zimmerman, 2002a) provided a helpful means to explain how self-regulation was important for students to plan ahead and thereby offset or reduce the degree of challenge they needed to navigate. Alongside our research into "normative" populations, the work we have conducted into attention-deficit/hyperactivity disorder (Granziera et al., 2023) drew on some of Barry's ideas (Zimmerman, 2011) to frame the findings and also resonated with his own interest in academically at-risk samples (e.g., at times of transition from high school to college; Nota et al., 2004). Looking in the rear-view mirror, then, it is striking how much Barry Zimmerman has been ever-present at each iteration of our team's research program.

Going forward, Barry's work into self-regulation will help inform how we navigate one of the most significant educational revolutions ahead: generative artificial intelligence (genAI). Whilst there is tremendous potential for genAI to support and enhance students' learning, poorly designed genAI tools or ineffective use of genAI can impede learning (Martin et al., 2025). Researchers are now seeking to identify the personal attributes and capacities needed to mitigate the risks posed by genAI, whilst also harnessing its many opportunities for student development. It is becoming clear that self-regulation is one such personal capacity (Albus & Seufert, 2024; Martin et al., 2025).

Self-regulation plays a crucial role in the use of generative AI in two key ways—both of which are meaningfully informed by Barry's work on self-regulated learning. The first is by way of the self-regulation needed to effectively use genAI. Tankelevitch et al. (2024) have drawn on Barry's work (Zimmerman, 2001; see also Zimmerman & Moylan, 2009) to emphasize how effective use of genAI relies on learners' capacity to recognize their thoughts, emotions and actions, develop specific goals and intentions, and engage in task decomposition to pursue these goals. Likewise, Xia et al. (2024) drew on Barry's work (Zimmerman, 2002b) to explain how students' effective leveraging of genAI will require them to develop strong self-regulated learning skills, including goal setting, self-monitoring, self-assessment, and adaptive learning strategies.

The second is in terms of how genAI can support effective self-regulation. Drawing on Barry's self-regulation cycle and his ideas around meta-cognition (Zimmerman & Moylan, 2009), Huang (2024) identified how genAI can assist students in setting learning goals, designing implementation plans, and engaging in reflection during project design and enactment. Chang and Sun (2024) also harnessed Barry's cyclical framework (Zimmerman, 2000, 2002b; Zimmerman & Moylan, 2009) as a basis for conducting a literature search and systematic review of genAI effects on self-regulated learning. Indeed, genAI research (e.g., Ng et al., 2024) draws on Barry's concepts (Zimmerman & Schunk, 2011) to develop survey tools to assess the effectiveness of genAI interventions for students' self-regulation and motivation.

It is thus clear that researchers are drawing on Barry's influential contributions to help navigate the transformation in education that is now and ahead. His work not only has deep roots in the research that has gone before but also stands to reach and impact well into the future as genAI continues to evolve and the need for effective self-regulation in the face of this becomes ever more important.

Barry J. Zimmermann: A Model Researcher
Matthew T. McCrudden
The Pennsylvania State University

Early in my career, I met Barry several times, and I remember him as a kind and thoughtful person. As a graduate student, I recall chatting with him for an hour in-between sessions at AERA. This was impactful because I had read some of his work (Kitsantas et al., 2000; Schunk & Zimmerman, 2007; Zimmerman & Kitsantas, 1997, 1999, 2002), which had a powerful influence on my thinking, theoretically and methodologically, as my professional identity was developing (e.g., McCrudden et al., 2005). These ideas have influenced my research in general and recently in research with my graduate advisees who were interested in self-regulated writing in classroom settings (Escott & McCrudden, 2022; Finlayson & McCrudden, 2020, 2022).

Barry's work significantly influenced my approach to scholarship. As a graduate student in 2000, my introduction to his work was Zimmerman and Kitsantas (1997). The article examined the effects of goal-setting and self-monitoring during self-regulated practice. What first caught my attention and others in the graduate student office at Nebraska was that the skill to be acquired was dart throwing. I wondered, "Why on earth would an article in the *Journal of Educational Psychology* focus on dart throwing?" *Lesson one*: Measurement. If you want to evaluate the impact of an intervention, the impact needs to be measurable (Cleary & Zimmerman, 2004). Whether it is dart-throwing, writing, mathematics, comprehension, or any other skill, if you want to measure change over time or compare levels of an independent variable, you need a reliable and valid way to measure it.

I also noted that the participants were asked to rate their beliefs about themselves and their abilities. *Lesson two*: Theory. Self-regulation theory is a framework for understanding behavior. Dart-throwing was merely an example, a context for understanding how a person's beliefs, interests, and skills can change based on their experiences and the goals they set. Beliefs are not static; they change (Bandura, 1997). Further, learners can be taught to regulate their learning. This can empower learners to direct their practice in productive ways, which in turn can potentially increase motivation and performance. Thus, theory provides a framework for understanding and explaining behavior.

When playing darts, the object of the game is to throw the dart as close as possible to the bulls-eye. But how do you do that? *Lesson three*: Do not put the cart before the horse. Goals influence skill development. Goals can change over time and initially focusing on the process can build a bridge to desired outcomes. In learning contexts, educators (e.g., teachers and coaches) have an idea about what they want learners (e.g., students, athletes) to learn. It is important to have a target, but it is also important to learn how to get there and how to cope with challenges along the way. This idea has merit in research and in the application of self-regulation in applied settings.

Dart-throwing is a skill. It includes various subskills, including grip, stance, sighting, throw, and follow-through. *Lesson four*: Learn to walk before you learn to run.

With respect to dart-throwing, this relates to subskills including grip, stance, sighting, throw, and follow-through. The lesson translates to any complex skill. Identify the key subskills, practice, and monitor performance. That is, focus on the process. Once learners reach proficiency in subskills, then bring the subskills together and shift the focus to the product; hone and master the skill. This includes emerging and established researchers who seek to develop their research and writing skills.

If someone is unfamiliar with dart-throwing, watch someone else perform the skill. *Lesson five*: Learn through observation. Whether it is dart-throwing or conducting and writing research, identify mastery models and emulate their behaviors. Find people who do excellent work and look for patterns. When learning to be an educational researcher, find several models. Look for patterns in each model's work and look for patterns across the models. What do they do well, and how can you use these patterns to advance your own thinking and skills? For me and numerous others in the field, Barry was one such model.

Honoring Barry J. Zimmerman: Scholar, Mentor, and Model of Generosity
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I would not be the researcher I am today without my interactions with Barry. Though our exchanges took place mostly via email, they were profoundly formative. His intellectual generosity and genuine curiosity made a lasting impression on me early in my career. Barry's willingness to listen, his encouragement, and his belief that even a novice scholar had something valuable to contribute served as a model for the kind of academic I aspire to be. His exemplary mindset and modeling showed me how mentorship and humility can coexist with brilliance.

I met Barry only once in person, in the summer of 2008, during my first international PhD research stay. I travelled from Albany to Manhattan with a sense of awe and expectation. When I entered his office, what struck me most was the way he listened and treated my ideas with respect and enthusiasm, despite my limited experience. He invited me to join his doctoral seminar that day and continued to answer my questions generously in the years that followed. Although our direct interactions were limited, the sincerity of that encounter and his continued openness had a lasting impact on me.

Those qualities extended into his role as a mentor at a distance. Over the years, I reached out to Barry with conceptual questions about the boundaries between self-regulation, metacognition, and self-efficacy. His responses were always considered, precise, and rooted in both theoretical and empirical reasoning. One reply, in particular, stayed with me. I had asked him about the place of emotions in his cyclical model. He responded with a careful explanation of why emotions were not positioned as central motivators in the forethought phase, citing research showing that self-efficacy consistently outperformed anxiety as a predictor of academic performance (Richardson et al., 2012). His replies were never defensive, just clear, evidence-based, and generous in tone. They taught me how to defend a model while remaining open to critical reflection.

Barry's conceptual contributions to SRL were foundational and enduring (Zimmerman, 2013). His cyclical model of self-regulation offered a dynamic and comprehensive framework that integrated motivational, emotional, and cognitive processes across three distinct yet interacting phases (Zimmerman, 2000; Zimmerman & Moylan, 2009). I have long regarded it as one of the most pedagogically usable and psychologically balanced models in the literature (Panadero, 2017). Its conceptual clarity and applied potential have made it a cornerstone in my teaching and research.

I have used Barry's models—both the cyclical model of SRL and the four-level model of competence development—as core frameworks in multiple empirical studies and theoretical writings (e.g., Panadero & Broadbent, 2018). The cyclical model, in particular, has been central to my work on formative assessment and feedback. I have even developed pedagogical games for teacher education based on its structure, using them to scaffold understanding of the phases and subprocesses of self-regulation in practical, interactive ways. Across doctoral seminars, initial teacher education, and faculty development, Barry's cyclical model continues to guide how I introduce and deepen understanding of SRL in educational contexts, while the competence development model provides a powerful lens for supporting the gradual internalization of self-regulatory strategies over time.

Moreover, I have adapted the cyclical model conceptually in my own work to reflect the particularities of the assessment field (e.g., Panadero et al., 2019). In doing so, I have always maintained fidelity to Barry's foundational ideas while seeking to extend them to emerging practices and domains. His emphasis on the interplay between personal agency and contextual affordances provided the intellectual foundation for many of the arguments I have developed over the years. It is not an exaggeration to say that my 2017 review on SRL models would not exist in its current form without his work (Panadero, 2017). His theoretical architecture provided the backbone for the structure and analysis in that paper, and his personal support throughout the process was invaluable.

Barry's commitment to knowledge dissemination also deserves recognition. When I worked on publishing a Spanish-language version of his model, he immediately granted permission and offered feedback to strengthen the manuscript (i.e., Panadero & Alonso-Tapia, 2014). He even reviewed an English draft for me and encouraged the inclusion of his multi-level training model (Zimmerman & Kitsantas, 2005) alongside the cyclical one (Zimmerman, 2000), suggesting I make the distinction explicit for readers—an insight that informed later work (Panadero, 2017). His support extended beyond disciplinary boundaries and language barriers, reflecting his conviction that theoretical knowledge should be accessible and useful across contexts.

Barry never assumed a hierarchical stance. He responded to my conceptual questions with both depth and respect, engaging in dialogue rather than instruction. That gave me a sense of intellectual legitimacy at a time when I was still finding my voice as a researcher. He exemplified the kind of scholar who lifts others up, who believes that good ideas can come from anywhere, and who treats junior colleagues not as protégés, but as peers in the making.

True to the recursive nature of his model, Barry's scholarly stance embodied a cycle of inquiry, dialogue, and refinement whether with established peers or early-career researchers like myself. He leaves behind an intellectual architecture that continues to guide the field. Perhaps more importantly, he leaves behind an example of what it means to be a generous and generative scholar. I am deeply grateful to have met him.

More Than a Scholar: Barry J. Zimmerman's Legacy of Kindness, Mentorship, and Passion for Self-Regulated Learning
Jill D. Salisbury-Glennon
Auburn University

It is my sincere privilege to have the opportunity to honor the life and scholarship of Barry. Although I did not directly study under Barry, his many contributions to the field of self-regulated learning have contributed immensely to my own understanding and passion for self-regulation. His work substantively influenced my own research agenda and contributed to my professional growth and development.

When I first entered graduate school in 1991, I was curious why some students performed better academically than others. Like many students at that time, I initially became interested in the potential value of learning strategies. I had written my Master's thesis on metacognition and college students' use of the elaboration strategy, yet I yearned to better understand the rich complexities of college students' learning. Then, I discovered the 1990 *Educational Psychologist* special issue on self-regulated learning. I literally photocopied the entire issue, consuming every article with much interest and enthusiasm. At that time, I knew that I had found compelling theoretical frameworks that could help me to investigate my emerging research questions. I also knew that this was the very research area I wanted to pursue for my dissertation. What I did not know, however, was that self-regulated learning would become an integral aspect of my research agenda for the next 30 years.

While the entire special issue was fascinating and informative, I found Barry' article entitled *Self-regulated learning and academic achievement: An overview*, to be an especially helpful framework (Zimmerman, 1990). His model was a foundational component of my dissertation entitled *The Effects of Text, Motivation, Self-Regulated Learning and Epistemological Beliefs on Conceptual Change* (1996), which was largely grounded in Zimmerman's research (Zimmerman, 1986, 1989, 1990; Zimmerman & Martinez-Pons, 1986, 1988; Zimmerman & Schunk, 1989).

I had the honor of meeting Barry at AERA in 1995 at the Studying and Self-Regulated Learning SIG Business Meeting. While I was initially starstruck as a graduate student, I was also struck by how friendly and welcoming everyone was. The Studying and Self-Regulated Learning SIG quickly became my home away from home while attending AERA for the next 30 years, as I felt I had truly found my research people. Barry was one of the founding members of this SIG, and I have always felt so welcomed by him as well as by his students.

Throughout my career, Barry's research on self-regulated learning has inspired my own research more than any other scholar. Specifically, his models of self-regulated learning have served as the foundational theoretical frameworks for several of

my publications. Highly based on Barry's work, I co-conducted a qualitative study of six medical students in a problem-based learning curriculum focused on situated self- regulation (Evensen, et al., 2001) and another focused on creating contexts for motivation and self-regulated learning in the college classroom (Salisbury-Glennon et al., 2001). I then mentored one of my graduate students who examined the role of self-regulation in doctoral students' status of all but dissertation (ABD; Kelley & Salisbury-Glennon, 2016) and co-authored an article that focused on empowering college students to decrease digital distraction through the use of self-regulated learning strategies (Wang et al., 2022). As these selected publications indicate, Barry has impacted my professional career more than any other scholar.

While the prolific and transformative nature of Barry's scholarship is evident, I believe that he will be most remembered for his never-ending kindness and his dedication to humbly mentoring all who shared his passion for self-regulation. As just one small researcher in this vast field, I am in awe of how significantly Barry and his research has impacted graduate students, researchers, professors, study skills programs, K-12 teachers and students.

Barry J. Zimmerman's Transformational Influence on Educational Psychology: A Personal Reflection
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University of North Carolina, Greensboro

Barry was my valued mentor, esteemed colleague, and dear friend. He affected my life in many ways. I met Barry in 1982 at the AERA Conference in New York City. I was doing a poster session that was not attracting much attention. I was in a corner of a large, mostly empty ballroom in a hotel. I noticed a man entering this ballroom from across the way. He made his way over to me, and I got excited over the prospect of having someone with whom I could talk. He introduced himself as Barry Zimmerman. I was overjoyed because I knew of his research and writings on social cognitive learning and modeling and was quite impressed with him. He sought me out because of my research on self-efficacy in learning settings. We talked that day and subsequently at the conference. Thus began a 45-year friendship and collaboration.

There is so much I can say about Barry, but it would not begin to capture how I felt about him. He ranks among the most admired people in my life. Of all his great attributes, Barry possessed a heart of gold—freely giving of himself to uplift others and make a difference in their lives. His concern for the future was evident in his steadfast dedication to mentoring the next generation, a passion that permeated all his interactions. Barry's genuine care for others was palpable; a characteristic I deeply admired and tried to emulate in my career. Just as he sought me out at the AERA conference, he dedicated himself to helping many throughout his long and impactful career. Barry was a genuinely kind and exceptional man whose legacy of empathy, care, and mentorship continues to inspire us all.

Over the years, we frequently visited one another—whether in his hometown, my hometown, or at conferences throughout the country. These occasions served various purposes, such as planning a new book, sketching a conference presentation, or

engaging in theoretical discussions about SRL. We always accomplished a lot, but I have always felt that I benefited more than he did. However, our times together were not all business. A visit to Barry in New York usually included seeing a Broadway show. And, yes, he wore his signature hat.

I have so many wonderful memories, and he left such a legacy to education. I think of him every day and how much I miss him. It has been written many times that Barry was a transformational figure in educational psychology (Bembenutty et al., 2013; Patterson-Hazley et al., 2013) and especially how he developed and advocated for theory, research, and practice in SRL. It is altogether fitting that the highest award given by the AERA Studying and Self-Regulated Learning Special Interest Group is the Barry J. Zimmerman Award for Outstanding Contributions to self-regulated learning theory and research. We can honor him by passing on his legacy of kindness and concern for others.

Barry was a transformational figure in the field of SRL. More impressively, he led the development of a new conception of SRL. Before his influence, SRL was viewed largely in behavioral terms. However, Barry redefined it to emphasize cognitions, motivation, and affect (Zimmerman, 1989). This set the stage for a view of learners who proactively arrange factors conducive to learning (Zimmerman, 2002a, 2002b, 2013), which importantly placed heavy emphasis on the "self" in SRL (McCombs & Marzano, 1990; Zimmerman & Bandura, 1994). Barry also developed a cyclical, phase model of SRL and a model delineating the development of strategic and self-regulatory skills (Zimmerman, 2002a, 2002b, 2013). He argued for investigating SRL as a dynamic process and how it affects outcomes such as learning and motivation at various points as skills develop (Zimmerman & Kitsantas, 2005). Barry greatly expanded our conception of SRL to have relevance in educational and other applied settings (Bembenutty et al., 2013).

In closing, and true to his transformational legacy, Barry redefined the boundaries of SRL, championing a richer and more nuanced understanding of the cognitive, motivational, and behavioral processes that empower learners to take control of their self-regulatory functioning. His visionary advocacy inspired a wave of research focused on fine-grained analyses of SRL in action, which is a focus that continues to shape theoretical advancements and chart new directions for inquiry today.

Conclusion

Over the past several decades, educational psychology has flourished as a vibrant and dynamic discipline, thanks to visionary research and groundbreaking theories pioneered by legendary scholars. Among these influential figures, Barry stands out as an innovator and influential contributor, particularly in the realm of SRL. As highlighted in this commentary, Barry's contributions are profound and enduring—shaping the way scholars understand and apply self-regulation across diverse domains and cultural contexts. While each perspective within this commentary offers unique insights, several qualities of Barry's work resonate across contributors. His ability to bridge theory and practical application has earned widespread admiration, with scholars expressing deep gratitude for the clarity, rigor, and accessibility

of his research. There was also widespread recognition for the transformative and generative ways in which his three-phase cyclical model and four-level developmental model inspired scholars at both a personal and professional level.

Yet, beyond his scholarly achievements, it was his gracious mentorship and humanitarian legacy that resonated so personally with us. Whether engaging with trusted colleagues, collaborators, or aspiring graduate students, Barry consistently demonstrated grace, humility, and generosity—attributes that are even more remarkable given his stature and accomplishments. Just as Barry learned lessons in kindness, selflessness, and dedication from observing and interacting with his father, we all had the great privilege to learn from Barry, a master and exemplary model championing these same values.

One of Barry's most enduring legacies was his extraordinary ability to balance transformative scholarly and theoretical influence with humility and selfless mentorship. He achieved what many academics aspire to: reshaping a field in meaningful ways while inspiring future generations to pursue excellence. Through his work and character, Barry exemplified the authentic spirit of scholarly leadership—one that not only advances knowledge but also elevates and empowers others to reach their potential.

Reflecting on his legacy, Barry once shared, "I would wish to be remembered as a person who revered our discipline and sought to instill a curiosity and passion for it in my students and readers" (Bembenutty, 2008, p. 189). Looking back on his career, he expressed deep gratitude for the journey he had undertaken, stating, "After exploring many options, I feel very fortunate to have found such a personally rewarding field of study. The dedicated individuals who I have come to know, through my research or efforts to write about our field, have proven to be wonderful compatriots on a path of discovery—about who we are as learners, as well as who we can become" (Bembenutty, 2008, p. 189).

Declarations

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