# Fostering the Self-Renewal of Teachers: An Underutilized Approach to Innovating Interdisciplinary Education

**David J. Waters, PhD, DVM**[1]
**Dept. Veterinary Clinical Sciences and Center on Aging and the Life Course, Purdue University;**
**Center for Exceptional Longevity Studies, Gerald P. Murphy Cancer Foundation**
**West Lafayette, Indiana 47906, USA**

**and**

**Emily C. Chiang, PhD**
**Center for Exceptional Longevity Studies, Gerald P. Murphy Cancer Foundation**
**West Lafayette, Indiana 47906, USA**

## ABSTRACT

Our goal is to call teachers' attention to the need for self-renewal, challenging them to consider it a necessary approach to innovating interdisciplinary education. Our prescription for sustained self-renewal: Each teacher assembles a gallery of intellectual heroes — gifted and articulate thinkers — to serve as their own life-long teachers. In this paper, we share our experience teaching a "skills course" to interdisciplinary graduate students in Purdue University's Center on Aging and the Life Course. The course, titled "To See and To Seize Opportunities", exposes scholars-in-training to an array of skills and attitudes that foster self-renewal and peak performance. Leading educators must work hard to create better opportunities for self-renewal. By envisioning even our best teachers as unfinished and under construction, we open up a new dialogue situating the self-renewal of teachers at the very core of educational excellence across a broad range of disciplines. To innovate interdisciplinary education, we believe it is time for a curricular re-think, emphasizing the importance of a transdisciplinary skills course in which teachers and their students can explore transformative ideas on personal development and self-renewal — in the classroom together.

**Keywords**: Personal Skills, Learning Attitudes, Peak Performance, Leadership, Heroes, Self-renewal, Interdisciplinary Education.

## 1. INNOVATING EDUCATION THROUGH SELF-RENEWAL

Good teachers instruct students on how to function in the world. Great teachers show students how they can transform it. By seeing education as a dynamic and transformative process, great teachers grow to recognize their own *unfinishedness*. Their philosophies and methods are in a state of both permanence and flux. They are experts, yet open to change.

Disciplinary education journals publish perspectives on great teaching written by award-winning educators who share wide-ranging insights on achieving excellence in the classroom, offering innovative ways to inspire active learning. To these thoughtful recipes for educational success, we would add another key ingredient — the teacher's process of self-renewal. Where does the teacher turn for self-renewal? What skills and attitudes prime the teacher for continued high performance, to navigate that dynamic, ever-changing territory that is the teaching-learning space? What keeps teachers from becoming closed-minded, from slipping into the ruts of their own expertise? Both teachers and administrators recognize the immense importance of self-renewal [1]. Yet few opportunities for the self-renewal of teachers are built into the educational system.

This paper is a call for teachers to take action — to innovate the education process by reaching their highest potential through self-renewal. We have proposed a schema for self-renewal [2] that we believe can assist even the most accomplished teachers with their unfinishedness. Our prescription for sustained self-renewal: *Each teacher assembles their own personalized, hand-picked gallery of intellectual heroes — gifted and articulate thinkers — who in turn serve as their life-long teachers*. The approach has an appealing rationale. If we as teachers can spend a bit more time *thinking about our own thinking*, then we will begin to see our own teaching philosophy from new angles, both analytical and creative. By investing in our own self-renewal, we are putting students first — harnessing new energy, gaining fresh insights into structuring the kinds of educational experiences that will nurture the skills and attitudes that can enable each student to go beyond knowledge to expertise.

## 2. TETHERING YOURSELF TO INTELLECTUAL HEROES

In Purdue University's Center on Aging and the Life Course, an interdisciplinary unit fostering both research and education, we are promoting the value of tethering oneself to intellectual heroes. By assembling your own personalized gallery of intellectual heroes, you gain greatly by becoming both teacher and student. You direct your attention toward rapidly

[1] Correspndance: Dr. David J. Waters, Center for Exceptional Longevity Studies, Gerald P. Murphy Cancer Foundation, 3000 Kent Avenue, Suite E2-100, West Lafayette, Indiana 47906, USA. Phone: 765-775-1005; Fax: 765-775-1006; E-mail: waters@purdue.edu

expanding your skills of reading and listening — the art of being taught [3]. This activity fosters personal growth, shaping new understandings that enable teachers to perform at a higher level. By strengthening the habit of strategic tethering, we situate an active, partially guided search for self-renewal and a heightened receptivity to new ideas at the very core of achieving excellence in the research-education space [4]. And as each of us prepare to leap into performance, intellectual heroes show us just how high we can set the bar.

In a previous report [2], we introduced readers to 10 of our intellectual heroes. For each of these sages, we imagined what insights they might offer the teacher seeking self-renewal. Excerpts from that manuscript [2] capturing the wisdom of three of the heroes – the educational psychologist Jerome Bruner, the general semanticist Wendell Johnson, and the essayist Ralph Waldo Emerson – are presented here.

**Jerome Bruner** [5-7]
Of all of our intellectual heroes, Jerome Bruner would have the most to say about self-renewal. His aim, an ambitious one, is to achieve the perfectibility of intellect. One does this by compacting experience into mental models. Building effective mental models requires an ability to create categories. Categories are words, therefore Bruner puts language center stage in intellectual development. He sees language as man's intellectual prosthetic device — enabling us to manipulate our experiences so they make better sense to us, and to transmit to others what we have discovered. Forming rich mental models requires deep thinking. That is why education is most effective when students *leap the barrier from learning to thinking.* In the classroom, the teacher must decide: expose students to "flat declarations of fixed factuality" or instead teach the language of process — how we came to believe what we now believe, and why today's most deep-seated beliefs will someday be added to the scrapheap of what we once held as truth. The best mental models prepare the mind for inquiry, spawning a steady stream of testable guesses that are neither too flimsy, nor too certain. To achieve this, Bruner would insist we develop our sense of intuition, our ticket to deepening our pursuit of understanding. It takes a disciplined intuition to sense when to proceed intuitively, when to be analytical. Through the process of perfecting your intellect you develop a sense of *promisingness* – the ability to choose the most fruitful options among the innumerable possible paths. *Have you spent much time thinking about the current condition of your mental models? In your everyday experiences, are you consumed by details or are you striving to develop the ability to successfully grasp the optimally generic meaning of each encounter?*

**Wendell Johnson** [8,9]
"We see the world through our categories", taught Wendell Johnson. Categories again. If you are a dog and my experience is that all dogs bite, then I see you as a biter. In contrast, a person who has developed more extensive categories of dog behaviors would make no such assumption. A word of caution: Categories can cripple understanding. We oversimplify the world and muddle information when we fall into the trap of either-or-ness. For example, if we see things as either good or bad, we are prone to ask: "Are vitamin C supplements good for me?" Being more precise with language moves you to ask the better question: "Under what circumstances will vitamin C supplements benefit me?" To Johnson, language is the gateway to perfecting our intellect. This is necessary not just for effective communication with others, but *to more effectively talk to ourselves.* For words are the building blocks of Bruner's mental models — how we shape and re-shape the ideas inside our heads. And when we are ready to move our ideas out of our heads through the act of writing, the words we choose enable us to develop deeper lines of reasoning. Perhaps this explains why people find journaling such an effective tool for enhancing the quality of their thinking. Johnson is adamant about one thing: The responsibility is ours to accurately pass on to the next generation what we really know, and what we have yet to understand. The next generation should stand on our shoulders, not start from scratch. Without focus on language and its careful usage, we are at great risk of passing non-sense to the next. *Could the quality of your thinking be enhanced by increasing your precision with language? Have you ever considered taking a course in general semantics to transform your language behavior?*

**Ralph Waldo Emerson** [10-12]
The tough problems are always solved from within. Ralph Waldo Emerson called this self-reliance. You must grow your capabilities, reach your potential so you can dig deep to meet life's challenges. Emerson's teaching method would be one of *provocation*, rather than instruction. Once provoked, the student turns within to inspect, then revise, his mental models. That is how we tap into the genius within each of us. To Emerson: "Perception makes". When it rains, it is our perception (not the rain) that makes us mope or dance about. Rack up as many provocative experiences as you can because it is through these experiences — and ultimately your categories — that you grow to see and seize the hidden opportunities dancing out there. Do not neglect to tell your students that their experiences are all they have to offer those whom they will teach someday. *Have you ever reflected upon the role provocation plays in your own learning? Do you believe action is more frequently the product of knowing or the consequence of perception and belief?*

## 3. GENERATING MULTI-ANGLED QUESTIONS: BLENDING EXPERIENCE WITH REFLECTION

We posit that progress, whether in the public domain of scientific knowledge or the private domain of personal thought, is benchmarked not by the results, but rather by the questions we ask [13]. A commitment to question-making is a prized product of the "skills course" offered to interdisciplinary graduate students in Purdue's Center on Aging and the Life Course. The course, titled "To See and To Seize Opportunities", exposes students to an array of skills and attitudes that encourage peak performance and self-renewal. Students also get a first-hand look at the payoff that can come from tethering themselves to intellectual heroes. Fresh insights provoked by our intellectual heroes have sparked in us a deeper reflection, coming to see both our teaching and the learning process from new angles. The product of this effort has been a steadily evolving collection of multi-angled questions that invite thoughtful exploration, providing teachers with a framework that is well-suited for across-discipline inquiry:

- **Are your students trained in the art of *problem finding,* not just problem solving?**

- **Do you teach the *history* of your discipline, enabling your students to witness the uneven spits and spurts of progress in that discipline?**

- **How often do we mislead students with a false impression of how much we *know* versus what we believe? Are you training students in the art of making *judgments under uncertainty*?**

- **If mastering the art of seeing the similar as different, the different as similar is an enviable achievement, shouldn't you be teaching a course on *comparative* something?**

- **Have you dedicated yourself to acquiring the opposing skills (analytical vs. creative) necessary for developing a *disciplined imagination*?**

- **Have you ever considered how *your writing influences your reading*? Is it time to re-think the way you write?**

## 4. AVOIDING A SINGLE-MINDED APPROACH: IT PAYS TO BE HYPHENATED

An openmindedness to new ways of seeing – staying out of the ruts of expertise – is one of the key attitudes that fosters the much-strived-for balance between disciplinary focus, appreciation for context, and the limitations of the scientific method. As discovers, we try to make sense of the world. And over the past two decades, researchers have come to recognize the strength of conducting this sense-making in an interdisciplinary way. The mantra for our research group has become "Ignore your mother. Play in the intersection." We expand our chances of creative discovery by daring to operate in the underexplored intersections of domains, not sheltered within any particular silo. Our research team believes, for example, that future breakthroughs in the field of cancer prevention will come from those investigators who are cross-trained in both cancer and aging science, since most cancers develop in old tissues [14]. Old tissues provide the context for the cancer development process. Context matters.

But as discoverers, are we sufficiently schooled in the importance of context? The anthropologist-systems thinker Gregory Bateson singled out the historian-philosopher R.G. Collingwood as one of his intellectual heroes, noting that no one possessed a surer grasp of context than Collingwood [15]. In 1924, Collingwood published *Speculum Mentis: The Map of Knowledge*, an ambitious attempt to resolve the immensity of Nature [16]. Immediately obvious in the text is that Collingwood sees clearly the difficulty in making sense of the world. He puts forth the question: Who will give us the truest view of the world – the artist, historian, philosopher, scientist, or theologian? He quickly finds the solution to his big question will not come easily because, when asked, the artist will offer, "We see the world best through aesthetics, through beauty"; the scientist will say, "We see best when we apply the scientific method", and so on. Collingwood's sobering conclusion: We can't trust any of them. And that's when it hit us – *It pays to be hyphenated*. Historian-Theologians, Artist-Philosophers, and other hyphenated types are in the best position to side-step some of the serious limitations inherent in a single-minded approach to discovering. Our personal bias: We need more Poet-Scientists – scientific discoverers who care deeply about language [4]. It will be through their thinking and writings that we will come to recognize more fully how the act of naming things limits the scientific method, so that a truer reality can be revealed. Emerson wrote: "What is life but the angle of vision." Collingwood's idea echoes Emerson's thinking, encouraging each of us to value the expertise of the multi-angled among us [17]. If our goal is discovering the whole, it will pay to become hyphenated.

## 5. CONCLUSIONS

The intent of this paper was to call teachers' attention to the need for self-renewal, challenging them to consider personal renewal as a necessary approach to innovating education. It argues that tethering ourselves to intellectual heroes does not limit our creative potential but instead *achieves exactly the opposite effect – enabling us to see and reach our own greatest potentialities.* To innovate interdisciplinary education, we believe it is time for a curricular re-think, emphasizing the importance of a transdisciplinary "skills course" in which teachers and their students can explore transformative ideas – generating multi-angled questions, avoiding single-minded approaches.

## 6. REFERENCES


[1] J. Gardner, **Self Renewal: The Individual and the Innovative Society**, New York: Harper and Row, 1963.

[2] D. J. Waters, L. S. Waters, "On the Self-Renewal of Teachers", **Journal of Veterinary Medical Education** Vol. 38, No. 3, 2011, pp.235-241.

[3] M. J. Adler, **How to Read a Book**, New York: Simon and Schuster, 1940.

[4] D. J. Waters, "The Paradox of Tethering: Key to Unleashing Creative Excellence in the Research-Education Space", **Informing Science** Vol. 15, 2012, pp. 229-245.

[5] J. S. Bruner, **On Knowing: Essays for the Left Hand**, Cambridge, MA: Harvard University Press, 1962.

[6] J. S. Bruner, "The Perfectibility of Intellect", In: A. Gil, ed. **The Relevance of Education**. New York: WW Norton, 1971, pp. 3-19.

[7] J. S. Bruner, **Actual Minds, Possible Worlds**, Cambridge, MA: Harvard University Press, 1996.

[8] W. Johnson, **People in Quandaries**, New York: Harper & Brothers, 1946.

[9] W. Johnson, **Your Most Enchanted Listener**, New York: Harper & Row, 1956.

[10] R. W. Emerson, "Self-Reliance", In: **Essays and Journals**, Garden City, NY: Nelson Doubleday, 1968.

[11] R. W. Emerson, "Intellect", In: **Essays and Journals**, Garden City, NY: Nelson Doubleday, 1968.

[12] R. H. Orth, A. R. Ferguson, eds. **Journals and Miscellaneous Notebooks of Ralph Waldo Emerson**, Vol. 13, pp. 1852-1855, Cambridge, MA: Harvard University Press, 1977.

[13] N. W. Pirie, "Selecting Facts and Avoiding Assumptions", In: A. E. Berthoff, ed. **Reclaiming the Imagination**, Upper Montclair, NJ: Boynton/Cook Publishers Inc., 1984, pp. 1249-1261.

[14] D. J. Waters, E. C. Chiang, D. G. Bostwick, "The Art of Casting Nets: Fishing for the Prize of Personalized Cancer Prevention", **Nutrition and Cancer** Vol. 60, No. 1, 2008, pp. 1-6.
[15] G. Bateson, **Mind and Nature: A Necessary Unity**, London, UK: Wildwood House, 1979.
[16] R. G. Collingwood, **Speculum Mentis: The Map of Knowledge**, Oxford, UK: Oxford, 1924.
[17] R. W. Emerson, "Natural History of Intellect", In **The Complete Works of Ralph Waldo Emerson XII**, Boston, MA: Houghton Mifflin, 1921.