

COMMENTARY

Unleashing the Power of the Right Brain

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We envision a paradigm shift where our profession no longer follows but leads the charge to develop a whole mind approach in our pharmacists. Left brain skills remain critical but are no longer sufficient to combat the current threats of abundance, automation, and outsourcing within the pharmacy landscape. It is vital that pharmacists be skilled problem solvers and empathizers. We must capitalize on characteristics that make pharmacists essential while innovating new opportunities and jobs. We call on the Academy to reimagine curricular design and offer deliberate messaging and modeling that fosters a higher priority on right brain skill development.

Keywords: right brain, curriculum, affective skills

INTRODUCTION

Neuroscience has been through an evolution of research on how the brain works.^{1,2} Current research suggests that each hemisphere is very dependent on the other and they work congruently almost all the time.² Even so, it is well accepted that the right hemisphere focuses on creative and emotional skills while the left hemisphere focuses on logical and verbal skills.^{1,2} “They are actually two half brains, designed to work together.”² This commentary implies that affective skills tend to be right-directed, while cognitive skills tend to be left-directed.

Pharmacy coursework naturally lends itself to *left-directed thinking*, such as analyzing clinical data, memorizing drug information, and calculating pharmacokinetics. But pharmacy educators must also be intentional about emphasizing *right-directed thinking*, incorporating both high touch and high concept skills. High touch skills include building patient relationships, recognizing nonverbal patient cues, and responding empathetically to patient concerns, while high concept skills include creative problem solving, intellectual curiosity, and visualization.³ (Table 1)

The Accreditation Council for Pharmacy Education (ACPE) Standards 3 and 4 promote the need for student pharmacists to build competence in the affective domain.⁴ Furthermore, the Center for the Advancement of Pharmacy Education (CAPE) 2013 Outcomes highlight the benefit of expanding beyond the cognitive domain stating, “The affective domain bridges foundational scientific knowledge with essential skills and approaches to practice and care”.⁵ However, each school has the discretion to adopt and weight curricular outcomes. Given the amount of content and skill development required to achieve a pharmacy doctorate degree, creating balance between each domain may be a challenge. If each school were to evaluate their entire curriculum and count the frequency in which the cognitive domain is intentionally taught and assessed versus the affective domain, would there be balance? Which domain would you guess is prioritized at your institution?

Although current literature provides discourse on the importance of right brain skills and offers a myriad of examples for its development, this manuscript seeks to invoke a paradigm shift.^{3, 6-11} This shift will allow the affective domain within the current ACPE Standards to reach the intentional level of implementation originally intended. We particularly call on chairs and faculty who serve on curriculum committees to drive this transformation, especially as we develop ACPE Standards 2025.

DISCUSSION

Driving Threats

Daniel Pink’s *A Whole New Mind* calls on evidence that describes a shift in society from factory workers and knowledge workers (left brain) to creators, empathizers, pattern recognizers, and meaning makers (right brain).³ He attributes this shift to three things: abundance, automation, and outsourcing.³ Each of these impact pharmacy, putting our profession at risk if we do not act.

Over two decades, the profession of pharmacy has incrementally worked its way to an oversupply of pharmacists. In 2008, the Pharmacist Demand Indicator (PDI) was 3.78 (pharmacists in demand) and in the final quarter of 2018 it was

2.91 (slight surplus of pharmacists).¹² A PDI of 3.0 is defined as the point at which supply and demand is balanced. Furthermore, the Department of Health and Human Services (DHHS) developed a Health Workforce Simulation Model (HWSM) that projects an oversupply of pharmacists somewhere between 18,640 and 50,720 by the year 2030.¹³ However, this could be a self-created barrier to some extent as our profession may not be capitalizing upon roles currently deemed non-traditional.

Automation has played a central part in shifting the pharmacist's role from product-focused to a patient-centered clinical service. However, this is a narrative we must be intentional about driving. If we look to the future at the capabilities of artificial intelligence (AI), we see International Business Machines' (IBM) Watson[®]. Watson can search, process, and analyze unstructured patient information and medical literature and accurately read imaging while never getting tired or succumbing to distractions and human errors. It is realistic that Watson, or other AI, will one day diagnose and personalize a safe, effective, and affordable treatment plan based on primary literature, patient specific medical data, and insurance carrier.¹⁴

Outsourcing refers to someone or something executing the pharmacist's role for a lower price. An example is medication reconciliation, which is still conducted by nurses or medical assistants at times.¹⁵ Furthermore, health care and pharmaceuticals have been listed in the highest risk category for outsourcing to other countries.¹⁶ As drug prices soar in the United States, patients are looking for cheaper alternatives online.¹⁷ Additionally, COVID-19 has prioritized telehealth. While telepharmacy regulations currently specify that the pharmacist or pharmacy must be within the United States, we must remain vigilant.¹⁸

Left brain skills remain critical but are no longer sufficient to combat these threats. Instead, we must elevate right brain capabilities to provide students a higher level of the following elements: *marketability* to seek both traditional and nontraditional pharmacy roles; *career satisfaction* to harness one's full scope of capabilities within one's position; *emotional intelligence* to connect with patients in a manner that personalizes patient care and provides optimal outcomes; and *innovative prowess* to channel creative thinking skills and the confidence to be part of the changing landscape rather than simply reacting to it.

Invoking the Paradigm Shift

To invoke this needed shift, the Academy should focus on two key areas. It is imperative to reimagine curricular design and offer deliberate messaging and modeling that fosters a higher priority on right brain skills.

Reimagining Curricular Design

How do we transform an already complex curriculum to establish balance between left and right brain skills? This transformation does not need to add to the curriculum. Instead, left brain activities offer right brain skill development opportunities that have yet to be capitalized upon. In other instances, right brain activities could seamlessly integrate into courses (basic science and pharmacy practice) across the curriculum. Outlined below are some general recommendations on moving toward this goal using intentional design.

Our first recommendation is to assemble a powerhouse to lead the charge that should include the following members: experts in affective skill development, didactic and experiential faculty currently engaged both in high touch and high concept activities as well as those with a primary focus on left brain content, chairs and/or members of curriculum committee, and executive leadership. The next recommendation involves mapping the curriculum to pinpoint where affective and cognitive domains are addressed and assessed. Consideration should also be given to co-curricular opportunities, electives, and micro-credentialing within this process.

Identifying right brain development opportunities within existing left-brain activities is essential as well. For example, Kevin Dong, a 2023 PharmD Candidate, wrote an insightful article discussing the ability for students to develop empathy through a variety of activities ranging from research, data analysis, and SOAP note construction to medication reconciliation and simulations.⁷ Although the latter examples are more familiar to us with respect to affective skill development, this pharmacy student pushes the envelope by encouraging his peers and faculty alike to strengthen right brain muscles even within left brain-directed tasks. With respect to data analysis, he implores readers to, "Try to understand what the different implications of the data represent for a patient and its impact on their lives beyond a number in a cell..."⁷

The final recommendation is to fill the gaps to correct the imbalance. Literature provides innovative examples of right brain activities that have been embedded within the curricula of various health professions (eg, improvisation, poverty simulation, discussion of articles regarding the person-centered language movement, narration of patient stories, etc.).⁸⁻¹¹ However, reimagining curricular design to intentionally elevate affective skill development is only half of the battle. We must also provide deliberate messaging and modeling for our students that will encourage them to place a higher priority on these skills.

Messaging and Modeling

How many students have suggested your affective skill building course should be an elective? Or, if you were to poll your current students, to what level would they prioritize right brain skill development in comparison to left brain? Furthermore, how are we, as faculty, balancing the importance of right and left brain skills in our messaging and/or modeling to students?

To encourage students to give higher priority to vital right brain skills, faculty messaging and modeling must provide the *why*. For example, when orienting students to activities that focus on interpersonal skill building, instructors can introduce the *Jefferson Scale of Empathy*, a validated tool to measure empathy in health care professionals, while disclosing how numerous publications have correlated higher levels of empathy with better patient outcomes.^{19,20} Faculty can also communicate the concept that providing the correct medication for patient care is only a part of the process. However, personalizing the care plan based on a patient's needs through active listening, empathy, and strong communication is also vital and falls beyond the reach of automation.

In addition to communicating and demonstrating the importance of high touch skills, faculty should be intentional with respect to high concept skills. Creative problem solving, intellectual curiosity, and visualization can serve as highly effective tools to undermine the threats of abundance, automation, and outsourcing. Story telling could be a powerful method to help students understand the impact these skills may have on their patients and their career. For example, faculty can share the story of a community pharmacist working with a patient who was unable to afford her medications. This pharmacist stayed up all night problem solving and finding lower cost alternatives for the patient. Later, this pharmacist created Rx Savings Solutions[®].²¹ Another strategy could be engaging a panel of pharmacists from various settings to discuss how high concept skills are employed day to day. More globally, faculty should highlight the affective skills within learning objectives or performance competencies both didactically and experientially.

The examples above are simple steps that faculty can implement to begin to lay a foundation for a larger paradigm shift. However, to invoke such a change, messaging should be embedded within program core values and curricular outcomes. Furthermore, schools and colleges of pharmacy should learn from and embrace changes that are already occurring in medical education.²²

The Association of American Medical Colleges (AAMC) has given credence to the movement of humanities in medicine by publishing a "Getting Started Guide for Arts and Humanities in Medical Education" and awarding arts and humanities grants to medical schools and teaching hospitals.²² Furthermore, AAMC has partnered with the National Endowment of the Arts and StoryCorps, encouraging health professionals to journal experiences during the COVID-19 pandemic, promoting humanities in medicine.²² Medical schools across the United States have started to create programs and tracks centered around the humanities as well.²² By developing such a movement, the medical education community is modeling the importance of right brain skills to their students and thus, invoking this shift in other health professions.

CONCLUSION

In this age of abundance, fast-growing technology like AI, and outsourcing, it is vital that pharmacists be skilled problem solvers and empathizers. We must capitalize on characteristics that make us essential, while innovating new opportunities and jobs. We must continuously ask: "Is what [we are] offering in demand in the age of abundance...? Can a computer do it faster?, Can someone ... do it cheaper?"³

This commentary is a call to action for the Academy to reimagine curricular design by intentionally elevating the affective domain so that it serves as a foundational priority in conjunction with the cognitive domain. In addition, we need to encourage deliberate messaging and modeling that fosters faculty and students to place a higher priority on vital right brain skills. We hope this, in turn, incites a paradigm shift where our profession no longer follows, but leads the charge to develop *A Whole New Mind* in pharmacists.

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Table 1. Left Brain vs Right Brain Tendencies^{1,2}

Left Brain Characteristics	Controls the right side of the body
	Is sequential
	Specializes in text
Left Brain-Directed Skills	Analyzes details
	Convergent thinking
	Rational thinking
	Calculation
	Rule-based thinking
	Reading, writing, and speaking language
Right Brain Characteristics	Objective awareness (eg literal interpretation)
	Controls the left side of the body
	Is simultaneous
Right Brain-Directed Skills	Specializes in context
	Synthesizes big picture
	Divergent thinking
	Detection of patterns and opportunities
	Visualization
	Artistic and emotional thinking
Deriving the subtleties (eg tone, emotion) from language	
Interpersonal awareness	

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