

REVIEWS

The Development of a Professional: Reinterpretation of the Professionalization Problem From the Perspective of Cognitive/Moral Development

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Unprofessionalism is not so much a problem of competence or morals as it is an indication that students and some of their mentors require more profound cognitive and moral development. An analysis of student intellectual complexity using a social, educationally oriented developmental model provides evidence that some students who are more adolescent than adult might be overly challenged by a truly “professional” curriculum. Literature concerning the cognitive/moral development of professionals suggests that many faculty members may not be performing at the professional level themselves. The need for mentoring of students, faculty members, and preceptors emerges as a recurring theme. A comprehensive, developmentally anchored plan for professionalization addresses: (1) barriers that must be overcome and strategies to do so; (2) appropriate curriculum content, assessment, and outcomes, and; (3) developmentally appropriate educational interventions.

Keywords: professionalism, development, mentor

INTRODUCTION

The problem of professionalism and its persistence,¹ currently under much scrutiny in pharmacy,² is not unique to our profession. The ubiquitous “professionalism problem” is a consequence of it being approached from the wrong direction. A deficit in soul or inadequate skills may be a part of the problem, but the primary issue is believed to be developmental. Moreover, the professionalism problem is not just an issue of inadequate student development: it is also an issue of inadequate development of teachers and mentors.

To provide a developmental perspective from which to reinterpret professionalization, this argument begins with a brief description of an educationally oriented model of development, one level of which corresponds with an archetypal “professional.” This is followed by a review of what is known about the developmental attainment of students, faculty members, and professionals and an exploration of some of the systemic developmental barriers to professionalism that are identified in the literature. A synthesis of these data will point to a need for a strategic, developmental process for all participants in pharmacy education – both mentors and students.

AN EDUCATIONALLY ORIENTED DEVELOPMENTAL MODEL

The social, educationally oriented, leveled developmental model described in this section is based upon a

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synthesis of developmental theories extended beyond the years of adolescence into adulthood and social/biological models of complexity.³⁻¹⁰ Such a synthesis is problematic, for a survey of the developmental literature will reveal more dissent than agreement – an unfortunate situation if one is attempting to make educational use of the science. Some of the serious conflicts include (1) whether development is continuous or staged; (2) disagreement about the number of stages; (3) whether development is domain-specific; (4) whether development is innate or socially constructed, and more. The following model sought to reconcile the differences constructively using the qualitative grounded theory method.¹¹ The goal of this approach is to construct explanatory, action-oriented theories using pattern-seeking procedures. The intent is to develop a broad model that identifies the major concepts, their relationships to each other, and relevant processes of transformation that can be used to inform educational practice.

The resultant model of development is comprised of 6 qualitatively different frames of complexity (F0 to F5).^{12,13} It is primarily social, but it harmonizes with psychological models. The model suggests that institutional society has evolved an educational paradigm in which children (and eventually adults) are placed into a series of increasingly complex “social containers” or “frames.” The frames are described in general sense by their titles (see below).

These frames are not accidental – they have evolved because they harmonize with the biological development of the child. However, while a child may not develop in

discreet stages, the frames are qualitatively distinct and can be compared with one another in terms of their objects (and which attributes are accentuated and which ignored), roles, rules, norms, freedoms, responsibilities, and culpabilities. Often, the transition to the next frame is marked by a “rite of passage.” The sign of complete assumption of any frame is indicated by competence in its skills, the ability to balance its freedoms and responsibilities, commitment to its perspective as the most natural way of being, and apprehension of the limitations of the previous perspective.

Attainment of a particular frame of complexity does not mean that one operates there consistently. One of the functions of more profound complexity is the ability to discriminate between tasks that require more intricate, systematic, and time-consuming processes and those tasks for which more superficial approaches are acceptable. Each of the frames is circumscribed by a consistent, encompassing series of expectations, educational tools, and contexts that are specifically designed to “mentor” conscious development of complexity. In this paper, *mentoring* is defined as a process that is purposefully directed toward the growth of mental complexity. Thus, mentoring can occur in a one-on-one relationship, but it can also happen in groups, as long as development is the goal and the outcome. This narrow definition for mentoring must be contrasted with other meanings encountered in the literature that range from a special long-term relationship to a relatively short-term preceptorship. It must also be contrasted with the definition of *instruction*, which is design to build knowledge. Mentoring consists of creating an educational bridge for the transition from one frame to the next, affirming and respecting the protégé for who she or he is now, while maintaining high expectations for what she or he can become.

This social model of development differs from unidirectional biological models in that, beyond a first round that is hinged to maturation, there may be subsequent rounds of development (albeit greatly foreshortened), each time an individual concentrates on acquiring a new focus for mastery or expertise. Moreover, there may be regression in performance when an individual is placed in unchallenging environments.

Although not all of the frames of complexity are relevant to issues in higher education, a general understanding of each of the frames will provide a context for understanding the discussion on professionalism that follows.

F0: Nurturing Infancy - Love and Language

The primary “parental” mentoring goal of F0 is to provide sustenance, supplemented with an education of

love and language. Developmentally, we pass through F0 in infancy, but cognitively, we re-experience F0, albeit briefly, every time we encounter a completely new domain of knowledge. In a sense, an instructor bringing students into a completely new discipline is like a mother – modulating our emotions (“don’t be scared of this...see how exciting it is?”), pointing, and naming.

F1: Schooling Childhood - Work and Involvement

In F1, the mentor/parent helps to direct the formation of an acceptable set of objective intentions and to engender basic ideas of causality by directing children towards certain goals and by demonstrating actions to be taken to attain them. In F1 “the good” is that which facilitates attainment of the most salient goal. Goal-oriented “doing” is important in this frame. We re-experience F1 as we begin to understand the ways in which ideas in a new domain of knowledge can be connected in order to do work or achieve useful, personally important goals.

F2: Apprenticing Adolescence - Competence, Economy, and Measurement

Because the “best” goal may not be the one that is most apparent, the mentor teaches the F2 protégé “rational restraint”; to “think” before acting, seeking “better” goals or considering “better means” to a particular goal.

Rational restraint has 3 prerequisites. The first is measurement, for this provides a way to compare goals or methods with one another. The second is moral rules; ways to decide which goal are “right” to pursue once measurements are made. The third is objects, doings and moral consequences, which must be related using simple schema such as classifications. Since goals are so central to the F2 protégé, she views the world opportunistically, valuing its objects and people in relation to personal goals. Because the moral system is a “given,” the morality of the individual at F2 is oriented towards manipulation or appeasement of those in power.

The F2 person is a “concrete” thinker, thinking about entities and goals that can be demonstrated to be stable and independent from context. She will tend not to articulate abstractions, but instead, give examples of them. The goals of the F2 protégé are short-term and she tends to perceive pros but not cons and does not tolerate ambiguity or non-closure.

While the person at F2 understands that individuals have stories of their own and so have distinct points of view, her empathic social interaction is limited to a rather primitive “participation” and lacks the cognitive component of intentionally imagining herself in the other’s shoes. Apparently empathic acts often arise from the

need to decrease personal distress. With only a hazy conception of a long-term, conditional future, and a fuzzy understanding of interpersonal implications, the individual at F2 does not readily consider obligations that might be required to maintain enduring mutual interpersonal relations. She cannot be counted on to be “responsible,” in the adult sense. Typical of what we call “adolescent behavior,” this frame of complexity is more and more frequently the domain of so-called adults.

F3: Admitting Into Adulthood - Responsibility and Abstraction

The goal of adulthood (F3) is an individual who can make all of his own choices, yet continue to co-evolve “happily” with his environment. To be competent, the choices and actions of the person at F3 must meet social expectations, maintain equilibrium by rationing his reserves, consider the consequences of possible actions (through hypothesis), and ultimately, accept responsibility for error. As goals necessarily become relatively long-term, history becomes more meaningful.

Until the protégé reached F3, the mentor accepted ultimate responsibility for the protégé: socially, physically, and economically. Now this “parenting” role is abandoned. Society helps to facilitate this enormous transfer of power and responsibility through “local culture,” a host of values, goals, and procedures that the protégé is expected to internalize as his personal moral standards. As the F3 protégé begins to identify with these values, he begins to see responsibility as an act of care.

Abstraction is a prerequisite for full recognition as an F3 adult. While you can point to a doing or a goal in F2, you cannot point to “relationship,” “harmony,” “quality,” and “temperance.” Unlike the protégé at F2, the F3 protégé understands these abstractions as meaningful and real. To maintain self and society in perpetuity requires the ability to think logically, hypothetically, and strategically. However, the person at F3 cannot systematically seek options outside his current worldview or elucidate interactions among causal agents. Thus, an encounter with the unexpected is truly problematic. Not having the personal resources to address these problems, the P3 response is to consult with experts or their writings.

Relationships become meaningful things of value to the person at F3, in part because relationships and participation in society become conditional on the protégé’s ability to comply with parochial rules of trustworthiness, demonstrate acceptable behavior, meet expectations, and fulfill responsibilities. (In F2, critical relationships tend to persist regardless of one’s behavior.) Because conformity and harmony with the immediate culture are so impor-

tant at this frame of complexity, prejudice is difficult to avoid, because the individual at P3 cannot control or objectify the cultural rules to which he is subject. A deep ethical introspection mechanism is absent.

F4: Certifying Authority - Expertise and Critical Thought

F4 could be called the “professional” frame of complexity. Generally, a professional is considered by society to be an “authority” (in the sense of authorship of knowledge) and participates in creating standards for, and undertaking^{14,15}:

- Governance of the professions;
- Professional education;
- Expansion, application, and evaluation of a distinct body of knowledge;
- Problem-solving at the cutting edge of the field (non-standardized work that is intellectual, complex, uncertain, and varied that requires consistent exercise of discretion and judgment as compared with the individual at F3 whose work is more routine and circumscribed by societal rules, guidelines, procedures, standards, and error-checking procedures).

The individual at F4 is in a peculiar position of power and responsibility because no one outside her expertise will be in a good position to teach, assess, or govern her work. Therefore, it becomes extremely important that she maintains her competence and upholds stringent ethical standards. Without those habits in place, the public trust in experts and expertise could disintegrate and the modern knowledge system would not be able to function.

In order to maintain expertise, the person at F4 is, of necessity, preoccupied with her development and achievements, her individuality and societal role. The individual at F4 must be a self-directed learner (she can take initiative; set her own goals and standards; use experts, institutions, and other resources to pursue these goals; and take responsibility for her direction and productivity in learning). The work of an expert has the tendency to expand indefinitely, so she has had to develop a system to prioritize and balance the many demands of life: work, family, personal interests, health, and so on.

It is only at F4 that one becomes capable of genuine critical thought; thinking that is conscientious, systematic, and strategic.¹⁶ The individual at F4 has had to learn how to distance herself from biases that arise from having a unique personal history, and that includes her relationships and their obligations and values. But despite this level of objectivity, the individual at F4 is still subject to the principles serving as the foundation for her particular expertise.

If she considered moving to another discipline, chances are her perspective would not grow so much as shift.

At F4 an individual negotiates power by dint of her unique knowledge, aiming for a robust social contract. To balance the power of her expertise, an individual at F4 becomes responsible to those who consult her and must monitor her own self-interests and boundaries while operating within the context of a caring relationship. A boundary violation occurs when the professional places his or her needs above those of the client and the fiduciary relationship.

Most people who develop “expertise” do so in a narrow subject area and continue to perform at F3 in all other areas of their lives. True integration of F4 probably occurs only when people apply the perspective broadly in all of the important areas of work and social life.

F5: Criticality - Embracing Meta-Paradigmatic Understanding and Sustainability

The F4 process of expertise (and knowledge growth) can continue indefinitely until 1 of 2 things happens: axiomization of the knowledge system is attempted (an attempt to completely describe a system using its own propositions, as has happened in mathematics, morality, and religion), or a collision of fundamentally incompatible systems occurs (these could be knowledge disciplines or they could be cultures). The attempt to axiomize any knowledge system results in the discovery that the system is and always will be inherently incomplete.¹⁷ A move towards F5 occurs when one can embrace this fact by accepting that one’s best values and guiding principles—moral and ethical principles included—are provisional.

There are 3 possibilities when a collision of incompatible knowledge systems occurs. The first 2—mutual repulsion (interaction is minimized) and conflict (one system tries to eradicate the other)—are not developmental. The third possibility, however, is mutual transformation and transcendence. When the search for this kind of transformation becomes habitual, without sacrificing the productivity of the knowledge systems, the perspective of F5 has been adopted.

COMPLEXITY LEVEL OF STUDENTS AND MENTORS

The developmental model suggests that the goal for professionalization is F4, and that mentoring is required to develop this frame of complexity. The prerequisites then are (1) an understanding of the current developmental attainment of students; (2) mentors who are sufficiently developed themselves to be able to facilitate the required growth; and (3) a developmental frame – an

environment that mentors students toward a more complex way of being. What is known about these factors?

Immaturity of Students

A simple comparison of students’ and faculty members’ behaviors with those defining the higher frames of complexity reveals much about their levels of attainment.

Data from a broad range of developmental studies are similarly revealing. Latif and Berger found that the moral reasoning of pharmacy students, on average, was at the level of a conventional adult, ie, F3.¹⁸ Unpublished admission assessments of entering pharmacy students in 3 institutions (two of them with 2 years of required course prior to admission into pharmacy, one with direct admission from high school) have confirmed this finding, but perhaps more interestingly, have yielded some data on the range of their abilities. At Auburn University the moral thinking skills¹⁹ of about 18% of the entering students for 2002 and 2003 were at the junior high or lower level; 25% at the senior high level (F2); 34% at the undergraduate level (F3); 17% at the professional level (F4), and 6% at the metasystematic level (F5). An assessment of the entering students’ complexity of thought paralleled these statistics: 52% at F2; 42% at F3; and 4% at F4.

Developmentally, many students are advanced adolescents who have a shaky framework for comprehending responsibility, accountability, and contracts (F3). Perhaps this is why value statements and oaths of adherence to value statements are not reliable educational tools in many cases. In one study, 3 months after taking a medical oath, only 18% of students could recall even 3 of the 10 sworn obligations, and only 3% thought taking the oath would influence their behavior.²⁰ Moreover students’ definitions of professionalism commonly include respect, competence, and simple empathy,²¹ and do not consider deeper aspects such as altruism (F3), and the social contract, ethics, and participation in professional societies (all F4).

While students entering at the conventional adult frame have a chance, given appropriate mentoring, to achieve the professional (F4) frame during 4 years of study, attaining this frame of complexity is probably not easy for less-developed students to attain.

Mentor Immaturity

To develop F4 abilities and attitudes in students, at least that level of competence is required of the educator (not just “high morals” and good intentions). Latif and Berger found that the mean score for pharmacists on the Defining Issues test was 36.3, an indication of conventional (F3) morality.²² Kegan estimates that less than one quarter of all adults have achieved a level of develop-

ment equivalent to F4.⁴ In a composite of research about the cognitive complexity of 207 professional, highly educated people, he found that 2.5% were at the equivalent of F2, 2.5% in transition to F3, 15% at F3, 33% in transition to F4; 40% at F4, and 7% in transition to F5. The results of his studies are paralleled by those of Armon.²³ This means the majority of the potential mentors for emerging professionals were not themselves at the professional level.

Even in environments where mentoring is embraced and there is an explicit commitment to the values of care and professionalism, the attitudes and behaviors that are modeled often are not at the “professional level.” Many students are initiated into a culture of detachment and self-interest (essentially F2)²⁴ or conformity (F3),²⁵ both in the classroom and in the clinical setting.²⁶

Most pharmacy graduates do not start an expert practice, they get a job. This employee mentality is indicative of, at most, an F3 perspective. An employee relinquishes much self-direction and self-definition, and is strongly influenced to leave the thinking to others. This is, in essence, the abandonment of professionalism.

Curricular innovations are unlikely to result in professionalism and pharmaceutical care until a majority of pharmacy teachers model the requisite F4 attitudes, skills, and dedication.²⁷ This probably will only occur if and when a professional culture is created and sustained: one in which everyone— faculty members, staff members, and students—takes part.²⁸

DEVELOPMENTALLY CONGRUENT EDUCATION

An educational environment that facilitates the development of cognitive and moral complexity, and ultimately, professionalism, is a mentoring environment. A mentoring environment reduces (and preferably eliminates) the barriers to growth, and consistently challenges all participants to shift to a more complex paradigm of thought and action by creating a more complex space in which students and faculty members are constantly operating at the frontier of their competence.

Mentoring environments do not simply transfer information or help students create knowledge. To effect socially desirable changes in the day-to-day actions of an individual without the need for constant policing, a mentoring environment changes perspectives and preferences, and thereby the chosen actions that arise from them. The primary ways in which preferences are modified include situational framing (often using cultural myths), reward (and punishment), and structuring social interactions to influence norms.

Situational framing influences choices and preferences by exploiting people’s need for affiliation and esteem. It establishes a community with a distinctive perspective that biases members’ perception of a problematic situation by drawing attention towards some aspects and away from others to promote a particular problem definition, causal interpretation, or moral evaluation and/or action.²⁹ Thus, the same objective set of events can be interpreted very differently in different developmental environments. Consider, for example, the story of John, who shows up late for class. If John is being mentored to F2, it is the parent whose moral status is questioned. On the other hand, if John is being mentored to F3, it is his *own* responsibility that is questioned.

A mentor’s job is a balancing act: continually vigilant to the need for equilibrium between liberty and responsibility, he must both empower his protégés and civilize them. Safety and challenge must be available in equal measure. Mentoring must unbalance the protégé. Unbalancing occurs when the current way of being is destabilized (rapidly, significantly, and meaningfully, in several life domains³⁰ and the future way of being is supported. It must generate many opportunities for error and failure when the lower, less-developed paradigm is used, so that the protégé may learn not to trust it and chooses to try the more difficult but ultimately more robust perspective.

Mentoring is difficult because it requires flexibility in teaching style. Teaching must initially meet the protégés at their current level of competence, both professionally and intellectually. However, once trust and confidence are established, the mentor modifies his or her methods and “persona” to increase the level of challenge and promote growth in the most efficient and effective way. A bridge⁴ is established by beginning with confirming learning tasks and preferred teaching methods for the particular frame of development and progressively moving toward challenging learning tasks and teaching methods (Table 1). It is a delicate balance: tasks that are too simple result in underachievement or disengagement; tasks that are too complex result in anxiety, fallback strategies that reflect less than the learner’s capabilities, or once again, disengagement.

A primary challenge for mentors is the issue of control: ultimately, a mentor wishes to fade from the protégé’s life, leaving the protégé to assume responsibility for his or her own actions (according to the expectations for any particular frame of complexity). Immature students (or unmotivated) will require much external control, whereas mature, motivated students require more personal control.

The first step in the process of mentoring is assessment: where are the students now? Developmental stage/frame may be estimated using the prototypes described above (eg,

Table 1. Matching Teaching and Learning to Developmental Frames

Teaching/Learning Aspect	F2 - Adolescence	F3 - Adulthood	F4 - Authority	F5 - Criticality
Developed learning skills	Memorization, comparison	Analysis, reasoning	Synthesis, problem-solving	Meta-paradigmatic synthesis
Emerging learning skills	Analysis, reasoning	Synthesis, problem-solving	Meta-paradigmatic synthesis	
Preferred teaching methods	Lectures	Guided discovery, guided design	Facilitated problem-based learning, thesis	Synergic cooperation across paradigms
Challenging teaching methods	Guided discovery, guided design	Facilitated problem-based learning, thesis	Synergic cooperation across paradigms	

adolescence, adulthood) and existing assessments of complexity (eg, Defining Issues Test,¹⁹ the subject object interview,³¹ essay evaluation³²). Next, a professionalism curriculum can be designed according to the specifications discussed below. But the most important step is designing a mentoring environment that is totally congruent with the intended frame of development according to the model described above, and this may require self-development on the part of the mentor.

Eradication of Systemic Barriers to Development

Systemic barriers can limit growth, causing people to settle for less-developed perspectives and actions. Such barriers include the following.

Stress and fatigue. Stress and fatigue work against development. In addition to leading to mistakes, excessive stress causes people who are otherwise predisposed to pursue expertise to take shortcuts and narrow their scope of activity. Most professional schools do not teach self-care and affective skills, which are the most potent means of circumventing these problems.

Stress also can be reduced by eradicating the lockstep curriculum. This has the added advantage that less-developed students have the time to develop intellectually and ethically. Decreasing the breadth of coverage and a concurrent increased focus on depth would also promote development. One way to reduce content rationally is to construct a curricular blueprint rationally, perhaps based on Pareto's law (currently being used to construct the new curriculum at Auburn).

Punishment and reward. Punishment and reward can force students who are uncommitted to the tenets of the profession to "behave" professionally. But reward and coercion are socially dependent strategies for change that require surveillance and follow through if they are to be successful. The rewarded and punished behaviors must have significant consequences (grades, enrollment, esteem), and the results must be consistent (in every class, by every mentor, applied to every student) and prolonged enough that students can begin to perceive intrinsic

rewards as a result of behavioral changes. Otherwise the professional behavior will likely disappear once the source of the coercion and reward is removed.

Coercive strategies are probably most effective for students at F2, and are more likely to be considered insulting by more mature students. Reward strategies can be successful in all frames, although the type of reward would need to change as students mature. Approbation and inclusion rewards individuals at F3 and professional accolades and responsibility rewards those at F4. But the central effort to professionalize students should not be focused on these strategies. Students are much more likely to be professionalized by mentors who embody the attitudes and behaviors of F4 and encourage all those around them to do the same.

Inadequate Selection Procedures and Standards

Selection based on high grades in science subjects does not necessarily guarantee the presence or development of appropriate professional attributes. One solution that has been suggested is simply to select more developed students. However, given the current distribution of developmental attainment in applicants, this would probably result in classes being half-filled.

Since a significant proportion of applicants are functioning as adolescents at F2, it may be necessary to reconsider our curriculum and our educational process. Given adequate motivation for change, Kegan found that progressing through one developmental stage takes about 4 years.⁴ To graduate "professionals," it may be necessary to eradicate lock-step classes and a 4-year curriculum in favor of graduation upon the acquisition of the competencies and dispositions of someone at F4. We may need more than one curriculum in which to track students, depending on their current developmental attainment.

A 2-stage credentialing process may be another solution. In this situation, graduation from a PharmD program might assure F3 competencies (eg, being responsible) and a limited scope of practice. Responsibility for the achievement of full professionalization would then be relegated to developmentally rigorous fellowship programs.

A Weak Sense of Belonging to the Profession as Identified

The consistent provision of pharmaceutical care requires development to P4. While pharmaceutical care has been adopted as the mission of pharmacy by professional organizations, accrediting bodies, and educational institutions, it has not made strong inroads into the practice of community pharmacy. As a result, most students enter practice with a different vision of their future (F3) than is expressed throughout the curriculum. The fact that what the faculty member says is different from what appears to be the case, causes faculty members to lose esteem in the eyes of the students and for the idea of “pharmaceutical care” to lose value.

Social pressures for uniformity (conformity) and belonging are powerful human forces and account for a large part of the way educational environments “facilitate” change. This is why, for example, that students in professional fields often are required to “observe the same rituals,” “wear the same uniform,” “keep the same hours,” etc. Once a student looks like an individual in a given frame, they often become motivated to behave like, and eventually to become, the kind of person they only impersonated at first. People are more motivated to learn and grow when they feel they belong and see that education will improve their ability to have a positive impact on, and increase their esteem within, the community.

The appeal of membership can be enhanced in a number of ways, for example, exclusivity of membership based in excellence. But the most authentic way to enhance desirability and sense of membership is to create a community in which apprenticeship is a central means of education. A “community of practice” model enhances apprenticeship further by adding explicit structure and content. In these kinds of educational environments, mentors work with student as developing colleagues; use collaborative learning methods to create positive interdependence; and expose protégés to practices that link professional esteem, the provision of pharmaceutical care, and remuneration.

The “community of practice” model has the added benefit of increasing professionalism in both the pharmacist/mentors and students as long as there is at least one highly developed mentor serving as a practice leader (not necessarily a “manager”) in each practice.³³

Mentor Reluctance

When schools attempt to initiate a comprehensive mentoring program in which all faculty members assume some mentoring responsibilities, it becomes very clear that a significant proportion of the faculty have no inter-

est in that role. In fact, a good number believe that such mentoring is not their responsibility. While this attitude probably has a developmental component, this reluctance may also stem from a relatively peripheral interest in professional pharmacy, either fundamentally (many faculty members have no pharmacy background, although they have developed authority in a peripheral discipline), or as a result of cumulative disappointment leading to disenchantment. When asked to mentor graduate students rather than PharmD students, many formerly reluctant faculty members enthusiastically accept and embrace the mentoring role. Therefore, one important solution is to encourage more student pharmacists to pursue PhDs and academic careers.

Developmentally Appropriate Teaching

Research in cognitive complexity³⁴ has shown that an optimal growth environment is moderately complex with respect to the abilities of the student: too much or too little complexity in the environment leads to a decrease in performance, leading to an “inverted U”-shaped response curve. We can manipulate complexity by increasing or decreasing structure, adding or removing irrelevant variables, and increasing or decreasing the complexity or number of problems presented in a given situation.

Whether the topic is science or the humanities, if students are expected to memorize facts and procedures without deep and prolonged reflection on their meaning, without struggling with the profound and important problems of the discipline, they are being expected to perform only at F1 or at best, F2. Similarly, Hartshorne and May³⁵ showed that simple indoctrination into “moral values” may make us expect profound morality in ourselves and others but fail to enhance moral behavior. This discrepancy can lead to a sense of powerlessness. This kind of education could be called “anti-developmental.” If students are to grow in complexity, we need to teach the fundamental pharmaceutical sciences, as well as the philosophy, history, sociology, politics, ethics, and literature of the profession in a way that encourages deep inquiry. Students not only need to learn “about” these subdisciplines, but also how to “be practitioners” of them. But the level of complexity must be selected judiciously. If many current students are only “advanced adolescents” then attempting a truly critical approach (eg, invoking complexity, questioning what it means to know) would require the students to work with complexity far beyond their current capability (F5). Our educational process needs to be incremental and we must assess students’ attainment at every step. If the student is currently at F2, then when he can think hypothetically and when he can

consider the possibility of interactions between causal agents and/or recognize cons as well as pros, these should be viewed as gains. The gain should be recognized, but the remaining gap between this attainment and the ultimate goal (F4) must also be acknowledged.

Developmentally Appropriate Testing

Testing should be focused more on assessment; less on evaluation. As assessment, testing is a process for improving quality and is inherently developmental. Assessment is critical for developing lifelong learning skills and increasing performance in diverse contexts. When done correctly, it develops metacognitive skills and leads to empowerment.³⁶ However, when testing is undertaken in the spirit of negative evaluation (“that was bad,” “you were terrible,” etc), it can lead to avoidance of reflection and feedback because of the negative emotions it engenders. Professionalism is operationalized through an educational/practice culture that embraces assessment as its core process. This is a culture in which every person learns to seek assessment enthusiastically and in which every aspect is assessed and thereby subject to change and improvement – faculty members, students, curriculum, and administration.

In a culture of assessment, all aspects of assessment are negotiated between the assessor and the assessee: focus, criteria, feedback, and pace. The assessor respects the assessee, values his or her ideas, and provides non-judgmental feedback, focusing only on areas of performance (not the performer) that the assessee feels she or he can work on improving at this time. Conversely, the assessee desires to improve performance and seeks assessment from a mentor who is respected for the honest, constructive feedback she or he gives. The assessee strives to interpret assessments as being nonjudgmental, even when they are not delivered as expertly as might be desired.

Developmentally Appropriate Learning Goals

Development takes time. If a student enters the program with an F2 worldview, then F3 knowledge, values, and habits must be inculcated before performances at F4 can be expected. Table 2 highlights some curricular expectations for “professionalism” within the developmental framework. It may take more than 4 years for entering F2 students to achieve truly “professional” outcomes.

DEVELOPING PROFESSIONAL MENTORS

Ultimately, the most powerful way to influence students is through mentors’ F4 behaviors. But to accept practitioners and faculty members as mentoring role models, students must see them as being legitimate

experts. Students’ acceptance of mentor legitimacy can be facilitated through making them aware of the accreditation process. Students’ acceptance of mentor expertise can be facilitated by maintaining competency requirements, displaying degrees, certificates, and awards, and making students aware of the ways in which the mentor’s expertise is sought by others (eg, invited lectures). However the most profound illustration of true mentor status is the consistent use of critical thinking and ongoing self-challenge, self-assessment, and self-learning to sustain and enhance professional expertise.

Faculty development interventions might include:

1. Challenging critical thinking tasks for faculty members. True critical thinking is profound, comprehensive, complex, and systematic and involves both skills and dispositions.¹⁶ Faccione et al included these descriptors:

... purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based... ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit.

All faculty tasks and processes – teaching, the development of curriculum, committee work, research – should consistently be assessed using standards of critical thought and rewarded accordingly. In practice, this may mean that the school will be forced to identify internal or external mentors to develop faculty abilities.

2. Developing “professional” (F4) sites for advanced practice experiences. Prospective students can only know pharmacy as they experience it in life. If “professional” (F4) pharmacies are rare, then sites and practitioners within them must be developed. A training program, accreditation, and rewards for the preceptors must be established. In fact, it may be necessary for the academy to reconsider its role. Perhaps the best use of academic resources is in the development of high-quality P4-level practice sites where students can learn most of their curriculum through apprenticeship!

3. Creating and sustaining an F4 culture within a school. Faculty and staff members must agree on which F4 behaviors will be assessed, and they must expect to be assessed as much as the students are. This enculturation

Table 2. Some Developmentally Appropriate Curricular Outcomes for Professionalism³⁷

F3 Expectations	F4 Expectations
Being conscientious, reliable, dependable, accountable for own work;	Assuming responsibility for the work of the institution and profession;
Honoring written and oral contracts;	Collaborating to create just and practicable contracts;
Completing assigned work according to stated criteria;	Functioning independently to choose and complete professional tasks, self assessing to assure quality - delegating routine work;
Fulfilling continuing education requirements to remain competent;	Maintaining and extending expertise: self-assessing, developing a learning plan, undertaking self-learning and evaluating achievement;
Managing personal time well;	Utilizing others' time wisely;
Communicating understandably, though sometimes lacking detail or completeness. All important ideas addressed but may lack conciseness and organization. Occasional linguistic violations do not obscure meaning; important claims are supported;	Communicating empathically, articulately, with a clear, coherent, complete, and evidence-based statement/argument using appropriate terminology, complexity and voice. Communication is focused, organized and developed and exhibits control of expression, grammar, and mechanics;
Obeying rules and laws, applying simple moral standards;	Adhering to high ethical and moral standards by thinking critically;
Honestly representing and acting within personal areas of competency without exaggeration, misrepresentation or concealment;	Using meaningful self and peer evaluation and following through to enforce standards of practice and exercise accountability;
Practicing personal hygiene - maintaining health and grooming habits, obeying a reasonable dress code;	Operationalizing, through appropriate clothing, manner, and language, an image that will sustain and enhance trust in self and profession;
Being respectful, civil (tactful, inoffensive), fair, not demeaning others' values and norms regardless of age, culture, gender, socio-economic status, religion and spirituality, sexual orientation, when working and interacting with them;	Assertively, astutely (in a political sense) and rationally negotiating norms and respecting these; Fostering an inclusive climate of respect for all peoples regardless of national origin, race, beliefs, sex, marital status, age, sexual orientation, physical or mental impairment;
Subordinating personal interests to the interests of others by AVOIDING actions that are or could be perceived as a conflict of interest or for individual gain;	Seeking opportunities and negotiating with others to discern their needs and collaborating to meet those needs despite societal and healthcare system barriers;
Accepting and applying constructive criticism, responding openly and positively to feedback, modifying behavior if necessary.	Undertaking peer-reviewed scholarship to share knowledge for the benefit of others, whether patients, other practitioners, or the community.

process must include, among other things, repeated, facilitated opportunities for deep self-reflection on a faculty member's needs and weaknesses that may lead inadvertently to professionalism transgressions, boundary issues, resistance to the role of "mentor" (not everyone should be a mentor!), and thorough consideration of each professionalism competency within the context of one's own daily tasks. The reflective, discursive process described by Kegan and Lahey might be a particularly powerful tool for cultural development toward an F4 goal.³⁸

SUMMARY

The social model of development suggests that we can mentor students' growth in professionalism by modeling the behaviors ourselves and creating mentoring

environments – qualitatively distinct social “containers” that create challenges to students with respect to the construction and purpose of knowledge, decision complexity, self-understanding required, interpersonal interactions and expectations, responsibility (for self and others), and approaches to education.

Adopting such a developmental approach is not easy. First, if the model is adopted, it suggests that a few interventions will not suffice. Instead, we must create a comprehensive environment that makes it impossible to succeed at one's current frame of development so that students (and faculty members) are forced to develop a more complex way of being. All the educational environments in which students find themselves must pose the same kinds of developmental challenges. That means

that schools must consider not only their own developmental needs, but also those of the structured practice sites. It also means that it is not acceptable for even 1 or 2 faculty members to continue to use educational methods that reinforce adolescent behaviors.

Second, while knowledge development is fairly neutral in an emotional sense (except for the stress that goes along with an overly ambitious informational volume) developmental challenges tend to engender existential angst. In a sense, movement from one frame to the next requires the death of an "old self" so that a "new self" can be born. Containing students' feelings of fear and anger and constructively directing them requires solidarity among faculty members and administration. Moreover, many faculty members – those who will require some development themselves in order to become mentors – may experience these feelings themselves. Department chairs will find it necessary not only to mentor their faculty members in a cognitive sense, but sometimes to play the role of an understanding counselor.

For those schools that decide to adopt a developmental perspective, the result should be rewarding for students and faculty members alike. For a developmental environment is always exciting, fresh, and challenging, and participants in that environment enjoy the rewards of ongoing growth, advancing expertise, and supportive collegiality.

In a developmental environment, one no longer will need to fret about student professionalism. Instead, we will see students for who they are and challenge them accordingly. Often at first, they will be adolescents who we will expect to corral just as we would unpredictable teenagers. And when they develop into adults, we can then call on them to exhibit true professionalism, which will no longer seem so unattainable.

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American Journal of Pharmaceutical Education 2005; 69 (1) Article 6.

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