Infusing The Mentorship Model Of Education For The Promotion Of Critical Thinking In Doctoral Education

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ABSTRACT

Effective mentorship is demonstrated in a variety of venues. Good mentors lead students on a journey that forever changes the ways in which they think and act, and consists of different and diverse experiences. Acknowledging faculty beliefs regarding mentorship and instruction is important to understanding why mentors select and implement specific strategies throughout the mentee's academic tenure. The purposes of this paper are first, to describe the "Layered Learning Mentorship Model (LLMM)" presented in the Department of Graduate Programs in Heath Sciences curriculum; second, to provide an understanding of how the LLMM was developed so as to promote critical thinking skills in graduate students; third, to provide educators with an understanding of the tools essential for the integration of critical thinking opportunities at all levels of doctoral education; and finally, to assess student and faculty perceptions regarding the use of LLMM.

Keywords: Mentorship, critical thinking, doctoral curriculum

INTRODUCTION

As scholars and leaders, faculty deal with problematic situations which frequently require answering the question "why?" When working to address the why question, the essence of critical thinking is manifested. It is the ability to integrate critical thinking in order to prioritize and to select optimal alternatives that serve as change agents. As a result, the individual demonstrates unique abilities characteristic of higher level skills. Within a doctoral program, the role of faculty is to foster students' critical thinking skills, thereby providing the required foundational skills to succeed as scholars and leaders in the diverse, complex and every-changing arena of health care. Consequently, the promotion of critical thinking as the key element in doctoral education must be recognized by faculty and students. Critical thinking is developed through a collaborative journey consisting of productive and positive activities, representing a process and not an outcome. The faculty of the Department of Graduate Programs in Health Sciences advocates a layered learning mentorship model (LLMM) of education as the foundation of the doctoral program in health sciences. The success of the programs graduates attests to the effectiveness of the layered learning mentorship model.

Understanding how critical thinking develops and why it is important enables faculty to engage in the mentorship of doctoral students, and more importantly, to assist students to recognize that the doctoral experience is a journey and not an end. Throughout the journey, students develop and sharpen their skills to identify and challenge assumptions, and simultaneously develop, explore, and address alternatives. Moreover, students evolve into what many have termed as a "reflective skeptic." While reflective skepticism promotes a consistent state of chaos for scholars, it is the fuel which continues to ignite the driving desire to ask and resolve the "so what" questions necessary to achieve excellence in health care.

How are students prepared for the journey? The answer lies in the philosophical perspectives on why we teach. Effective mentorship is the goal. Good mentors lead students on a journey that forever changes the way in

which they think and act. Good mentorship takes place in many different and diverse experiences. Understanding one's underlying beliefs about mentorship and teaching is important to fully understand why an individual selects specific strategies as part of the mentorship model.

EDUCATIONAL PHILOSOPHY

Two philosophical perspectives associated with teaching are pedagogy and andragogy. Pedagogy is the art and science of teaching children (Simpson & Weiner, 1989), conveying timeless unchanging knowledge to a passive student. Alternately, andragogy is the art and science of teaching adults (Rosenback, 1921) for the development of independent actively engaged thinkers. The learning assumptions associated with pedagogy suggest that the learning environment is teacher centered with learners who are dependent and bring little to the learning environment. Thus the need to know develops from the external environment. Conversely, the learning environment associated with the andragogy philosophical view focuses on a problem centered approach to learning where the learners are active and bring resources to the learning environment. Thus the need to know develops from within the learner (internal) who is self directed, actively ready to learn and performance centered.

In order to promote change in the way a student thinks, the philosophical perspective of teaching and learning must be founded in an andragogy perspective. The notions associated with andragogy are the foundations of the mentorship model provided during the doctoral experience. Through this mentorship and the associated curriculum which is designed to incorporate corresponding instructional strategies, change is promoted in the way a student thinks. Thus, the curriculum design and educational experiences of a doctoral program must focus on "the how one teaches" which is based on the philosophy of why one teaches. The purposes of this paper are to describe the "Layered Learning Mentorship Model (LLMM)" present in the Graduate Programs in Heath Sciences curriculum, to provide an understanding of how the LLMM promotes critical thinking skills in students, to provide educators with an understanding of the tools essential for the integration of critical thinking opportunities at all levels of educational experiences, and finally to assess student and faculty perceptions regarding the use of LLMM.

DOCTORAL CURRICULUM DESIGN

Eisner (1994) suggested that curriculum "implies a track, a set of obstacles or tasks that an individual is to overcome, something that has a beginning and an end, something that one aims at completing."[1] The question for educational programs and mentors focuses on how to design a curriculum that has obstacles that students must overcome to develop and advance active independent critical thinking. Tyler in 1949 noted four fundamental questions that are useful when developing a "racecourse".[2] These four questions are helpful when designing educational curriculum as they provided a logical ordering of questions and responses for reflection.

1. What educational purposes or goals should the school seek to attain?
2. What educational experiences can be provided that is likely to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can it be determined whether these purposes or goals are being attained?

Alternately, Walker (1971) in his naturalistic model of curricular development suggested that discussions amongst faculty culminate in a shared vision for the program. The program vision provides for a platform for which all discussions are founded. These discussions ultimately emerge into programmatic decisions. The platform includes "what is" and "what should be" the program vision and guides the mentors to what they should do to realize the program vision. Walker's naturalistic model does not support an orderly progression for curriculum development but a process of discussions amongst faculty with thoughtful deliberation that informs curricular decisions.

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[1] Eisner EW. The Educational Imagination: On the Design and Evaluation of School Programs (3rd ed). New York: Macmillan, 1994.

[2] Tyler RW. Basic Principles of Curriculum and Instruction. Chicago: University of Chicago Press, 1949.

Both the Tyler and Walker models are important to consider when designing curriculum. All mentors (faculty) must embrace the agreed upon program platform discussed in Walker's model so that educational experiences can be effectively organized to meet the program goals suggests by Tyler's model. Both models have provided the conceptual framework for the "Layered Learning Mentorship Model" (LLMM) of the Graduate Programs in Health Sciences (GPHS).

Additionally, the LLMM was based upon the andragogy perspective of teaching, in concert with the philosophical orientation of cognitive processing-reasoning proposed by Eliot Eisner (1979). Cognitive processing-reasoning focuses on empowering students to develop and refine their intellectual processes. The priority of the mentor is on how the student develops thinking and reasoning skills, rather than the means associated with acquiring facts. Ultimately, the program's philosophical orientation/platform must be compatible with the learning theory used in the curriculum design. The learning theory underlying the LLMM is based on Robert Gagne's cognitive hierarchy of learning. This theory proposes that learning develops from simple/concrete knowledge to more complex abstract understanding. In addition to Gagne's learning theory, the six levels of the cognitive domain identified in Bloom's Taxonomy (1956) expand the concept of cognitive hierarchy of learning. Bloom's six levels of cognitive domain illustrate a progression of steps that serve as a framework for the development of thinking and reasoning skills required for higher order thinking skills. Figure 1 displays the theoretical constructs utilized to develop the LLMM which emphasizes the "how" to learn, in contrast to the "what" to learn. Shared by the faculty and guided by Bloom's Taxonomy, the platform of the mentorship model consists of learning within each layer, and consequently, promotes students' critical thinking throughout the program's curriculum.

Figure 1
Layered learning mentorship model (LLMM) foundational perspectives which focuses on teaching students to develop and refine their intellectual processes for addressing the "Why" and "So what" questions via practical experiences with the "how to".

Tyler's Fundamental Questions	Walker's Naturalistic Model	Bloom's 6 levels of cognitive domain	Gagne's hierarchy of learning	Program design focusing on Cognitive Processing- Reasoning "HOW"
Purpose	Platform of beliefs and vision	Knowledge	Facts	Program Philosophy
Experiences	Deliberation	Comprehension	Concepts	Program Goals
Effective organization	Design decisions	Application	Principles	Program Objectives
Outcome measure		Analysis	Problem solving	Program Content
		Synthesis		Program Experiences
		Evaluation		Evaluation / Outcomes

LLMM PROGRAM OVERVIEW

The GPHS PhD in Health Sciences offers advanced study in 3 specialization areas: Health Professions Leadership, Speech-Language Pathology and Movement Science. Five global areas of study, core courses, research courses, practicum, electives and dissertation process experience, were designed to provide a consistent body of knowledge across the specializations while fostering the layered learning paradigm. Threaded across the three layers of the LLMM are the "Research Forum Series," which enables students at all levels to discuss their research ideas, methods, and findings among colleagues and the program faculty. Students participate initially as an observer and progress as a presenter. Program outcome measures of this step-wise layered learning progression consists of 1) Candidacy Examination, which is a 2 day written examination; 2) Dissertation Seminar 1, which culminates in a formal proposal hearing; 3) Dissertation Seminar 2, which consists of research data collection, analysis, and initial write up; and 4) Dissertation Advisement, which consists of students formal oral defense and final dissertation document write up. Figure 2 identifies the 3 layers of the Layered Learning Mentorship Model within the GPHS as they relate to Bloom's Cognitive Domain, cognitive requirements, and program learning experiences.

Figure 2
Layered learning mentorship model curricular approach.

	Bloom's Taxonomy Cognitive Domain	**Cognitive Requirement**	**Program Learning Experience**
LLMM Layer 1	**KNOWLEDGE**	**Recall information**	• Didactic information • Literature review • Annotated bibliography • Assessment Tools
	COMPREHENSION	**Understanding** (questions can be answered by restating material in a literal manner)	• Integrated written paper
LLMM Layer 2	**APPLICATION**	**Solving** (questions involve problem solving in new situation)	• Oral presentation • Individual class project • Group class project • Use of Assessment Tools
	ANALYSIS	**Exploration of reasoning** (questions require students to break the idea into its component parts)	• Threaded Discussion • Self reflection • Journal • Peer Review
LLMM Layer 3	**SYNTHESIS**	**Creating** (questions require students to combine ideas into a statement)	• Tools • Practicum • Independent Study • Research Forum • Research Symposium • Candidacy Process • Dissertation
	EVALUATION	**Judging** (Questions require students to make a judgment about something by using judgment principles.)	

While we hypothesis that the infusion of the Layered Learning Mentorship Model of Education promotes critical thinking in doctoral education, future work is needed to assess critical thinking skills via a standardized assessment tool during pre and post engagement in each layer. As part of this exploratory pilot study, student and faculty perceptions were assessed as an initial attempt to determine the effectiveness of the layer learning mentorship model. 39 doctoral students volunteered and completed an on-line Asset survey on "Students Perceptions on Mentorship" and 6 faculty members within the department voluntarily completed an on-line Asset survey on "Faculty Perceptions on Mentorship". Table 1 to 7 present the % agreement using a 5-point Likert scale of students and faculty perceptions on several questions regarding the mentorship model used. As noted by the responses presented in Table 1, the mentorship model was found to positively foster the mentee's skills in knowledge development, information comprehension, application of skills, and analysis of information and evaluation of information.

Table 1: Students' Perceptions (%)
Mentorship model fosters the mentee's skills in:

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Knowledge Development	51.3	41	7.7	0	0
Information Comprehension	38.5	48.7	10.3	2.6	0
Application of Skills	56.4	33.3	7.7	2.6	0
Analysis of Information	53.8	33.3	12.8	0	0
Synthesis of Information	59	26	15.4	0	0
Evaluation of Information	51.3	38.5	7.7	2.6	0

Responses presented in Table 2 suggest that students positively agreed that the mentorship model is essential in the development of scholarship and varies upon the need of the mentee thus supporting its need to be individualized.

Table 2: Students' Perceptions (%)
The mentorship model:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Is most effective in one-to-one delivery mode	64	25.6	7.7	2.6	0
Is essential in development of scholarship	84.6	12.8	2.6	0	0
May be provided in a group format	15.4	33.3	28.2	17.9	5.1
Varies based upon the needs of the mentee	51.3	35.9	10.2	0	2.6
Is most effective when mentor and mentee are same gender	2.6	5.1	30.8	43.6	17.9

The responses presented in Table 3 support that the role of the mentor in the learning process is diverse. The mentor is expected to lead, challenge, support, empower and defend the mentee throughout the learning journey.

Table 3. Students' Perceptions (%)

The role of the mentor when assisting the mentee in learning consists of the following actions:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Leading	35.9	41	10.3	10.3	2.6
Challenging	51.3	38.5	5.1	2.6	2.6
Supporting	76.9	20.5	2.6	0	0
Empowering	71.8	23.1	5.2	0	0
Defending	33.3	28.2	25.6	10.3	2.6

Percentage agreement noted in Table 4 positively supports that the mentorship model fostered mentee's skills in awareness development, response development, value development, and the organization and internalization of a value system.

Table 4. Students' Perceptions (%)

A mentorship model of teaching and learning fosters the mentee's skills in:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Awareness of Development	43.6	53.8	2.6	0	0
Response Development	33.3	56.4	7.7	2.6	0
Value development	46.1	41	7.7	5.2	0
Organization of personal value system	25.6	35.9	23.1	7.7	7.7
Internalization of value system	33.3	41	20.5	0	5.1

In reviewing faculty perceptions of the mentorship model role in fostering mentee skills, the findings were generally consistent with that of the students in the areas of knowledge development, information comprehension, application of skills, and analysis of information, synthesis of information and evaluation of information (Table 5).

Table 5. Faculty Perceptions (%)

Mentorship model fosters the mentee's skills in:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Knowledge Development	28.6	57	14.3	0	0
Information Comprehension	28.6	71.4	0	0	0
Application of Skills	57.1	42.9	0	0	0
Analysis of Information	71.4	14.3	14.3	0	0
Synthesis of Information	71.4	14.3	14.3	0	0
Evaluation of Information	57.1	42.9	0	0	0

While faculty also supported the notion that the mentorship model is essential in the development of scholarship, they felt that mentorship could also be positively provided in a group format which was not consistent with the student perceptions of a one-to-one delivery mode preference (Table 6).

Table 6. Faculty Perceptions (%)

The mentorship model:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Is most effective in one-to-one delivery mode	28.6	14.3	28.6	28.6	0
Is essential in development of scholarship	71.4	14.3	14.3	0	0
May be provided in a group format	57.1	28.6	14.3	0	0
Varies based upon the needs of the mentee	28.6	71.4	0	0	0
Is most effective when mentor and mentee are same gender	0	0	14.3	57.1	28.6
Is most effective if it is individualized	0	71.4	0	14.3	14.3

While faculty perceptions were generally consistent with that of students regarding the role of the mentor in leading, challenging, supporting and empowering the mentee, the faculty did not positively support the notion of defending mentee's as a role of the mentor (Table 7).

Table 7. Faculty Perceptions (%)

The role of the mentor when assisting the mentee in learning consists of the following actions:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Leading	28.6	42.9	28.6	0	0
Challenging	57.2	42.8	0	0	0
Supporting	42.8	57.1	0	0	0
Empowering	57.1	42.8	0	0	0
Defending	14.3	28.6	42.9	14.3	0

CONCLUSION

Along the educational journey, doctoral students evolve into what many have termed as a ***"reflective skeptic."*** While this reflective skepticism promotes a consistent state of chaos for scholars, it is the fuel which continues to ignite our desire to ask, act, and answer the ***"so what"*** question. It is essential that mentors/teachers identify and implement strategies to foster students' development of critical thinking skills which emphasizes the "how" , empowering students to ultimately answer the "so what" questions. Mentors must communicate and incorporate strategies to transform information so that the mentee "gets it", to engage the mentee in "active collaborative" learning experiences, and to teach the mentee how to learn by "inquiry and reflection". The "Layered Learning Mentorship Model (LLMM)" presented in the Graduate Programs in Heath Sciences curriculum is founded in these ideas and provides a positive educational journey, as supported by survey results of consistent student and faculty perceptions surrounding the presented mentorship model. Based upon the supporting student and faculty perceptions of the LLMM, future work can commence to ascertain the effects of the LLMM on developing student critical thinking skills via the use of a standardized assessment of critical thinking.

AUTHOR INFORMATION

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REFERENCES

1.   Bloom B (ed). *Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain*. New York: David McKay, 1956.
2.   Eisner EW. *The Educational Imagination: On the Design and Evaluation of School Programs (3rd ed).* New York: Macmillan, 1994.
3.   Gagne RM. *The Conditions of Learning*. New York: Holt, Rinehart & Winston, 1970.
4.   Shepard KF, Jensen GM. *Handbook of Teaching for Physical Therapists (2nd ed).* Boston: Butterworth-Heinemann, 2002.
5.   Tyler RW. *Basic Principles of Curriculum and Instruction*. Chicago: University of Chicago Press, 1949.
6.   Walker D. The process of curriculum development: a naturalistic model for curriculum development. *School Review* 1971;80:51.