Application of Perry's Scheme of Intellectual and Ethical Development in the Post-Secondary Occupational Learning Environment

> "Higher education should prepare students to be ready for the problems and opportunities no one can yet imagine. As students learn a body of knowledge (itself being redefined in many ways), they gain structured practice in skills of a very high order. By learning that they can see something in a wholly new way, they also gain practice in relying on important personal qualities such as humility and imagination. These are often the defining moments in someone's higher education." (Goodman, 1994, par. 11).

Background

"Why do I have to learn anatomy? This is a terminology course."

"Why do I have to memorize all these questions to ask patients when I've got a prompt-card in my lab coat pocket?"

"Why do you keep telling us your 'field' stories? The book has step-by-step instructions for troubleshooting a computer problem."

"Why do we have to learn all these management theories? The don't agree with each other."

These are typical questions and comments heard by instructors at a career college with students enrolled in either diploma or two-year degree programs where critical thinking is a requirement for every program's core curriculum courses. This writer's interest in the present subject came about because of instructors' frustration with many students' overwhelming inability to manifest critical thinking skills.

The gap results from a three-way problem related to cognitive development: students are not sufficiently advanced; instructors are not proficient at guiding students toward higher levels; and, the school does not provide curriculum or instructional support for encouraging advancement. Employers expect post-secondary occupational education (PSOE) graduates to enter the job market with critical thinking skills that are not necessarily present in PSOE students because of the problems described here. Frieden & Pawelski (2007) propose cognitive development "should be viewed as a central rather than peripheral outcome in education" (par. 1). However, PSOE instructors generally do not receive the same foundations in student development theories that instructors – even graduate teaching assistants – receive at private non-profit and state-supported higher educational institutions.

Typical PSOE classes contain a broad demographic mixture of students. Demographics influence a student's approach to learning as much as cognitive development (Univ. of CA at Berkeley, n.d.). As this paper describes, traditional students' cognitive progression has been studied and documented. However, very little research has been done on non-traditional students, and none has been found that specifically addresses intellectual development among non-traditional PSOE students. In many respects, non-traditional PSOE students have the same levels of personal and cognitive development, yet not necessarily the same levels of academic achievement, as typical graduate students.

Student Development Theory

Many theories exist regarding college student development. These theories are classified into five broad categories: psychosocial, cognitive-structural, person-environment, humanistic existential, and student development process models. All theories have basic commonalities, such as: One must consider development of the whole student/person. Each student is unique. Learning is the student's responsibility. The student's entire environment is educational. Student development theories assist educators in designing and implementing curricula and learning activities that effectively challenge and support growth of students' identity and intellect by stimulating self-awareness, honing skills, and advancing knowledge.

Specifically, William Perry's (1970) theory of intellectual and ethical development – the focus of this paper – offers a framework for modifying instruction to help learners "make significant progress in their thinking" by "putting students into the middle of an open-ended situation and then mentoring them through their misconceptions" using the instructor's "role as authority to coax them beyond the 'single right answer' mentality" (Pavelich, n.d., p. 1). Moore (n.d.) argues Perry is a "useful, heuristic model for analyzing teaching/learning concerns and attempting to measure the general education outcomes of college and, in particular, the outcomes of the growing national focus on critical thinking" (par. 6) that is an expectation in PSOE, as described above.

Perry's Scheme of Intellectual & Ethical Development

William Perry (1970) published the results of his multi-year study of affluent, male undergraduates at Harvard. During the research period, he asked respondents, "What stood out to you over the past year?" and developed a nine-position scale of cognitive development after grouping their responses. Perry's scheme is categorized as cognitive-structural because it focuses on intellectual growth among college students. Perry postulates learners approach knowledge from a variety of different perspectives (Univ. of CA at Berkeley, n.d.), which is apparent in a typical PSOE classroom. In Perry's model, learners develop the intellectual ability to apply increasingly complex and abstract knowledge to problem-solving (West, 2004) that is a "reflection of evolving meaning-making about knowledge (learning), self (and peers), and authority (i.e., the teacher)" (Moore, n.d., par. 12). While Moore (n.d.) describes students' evolution in near-existential terms, Perry (1985) is more pragmatic in explaining development/evolution as a broadening of the mind, not just a change in thinking.

Entering college students may have peaked in terms of traditionally measured intelligence, but student development theories presuppose individuals' forms of learning continue to change as a result of evolving frames of reference. Students "eventually develop a set of values and an individual sense of reality" (Naylor, 1985, par. 13) that relate to Perry's use of the term "ethical" in the classical Greek sense of "issues of commitment: identity and personal meaning-making in an ambiguous, relativistic

world" (Moore, n.d., par. 8; Moore, 2001). Perry's model has a strong tie to learning because understanding and answering questions requires development to the appropriate cognitive level (Wankat & Oreovicz, 1993). Thus, Perry's model is useful when setting program goals, planning implementation, and evaluating effectiveness of learning.

Nine Positions of Perry's Model

Following later research by Knefelkamp (1974) and others, Perry's nine positions were grouped into categories, commonly regarded as stages (although Perry rejected that term), for simplification. Various researchers use different naming conventions and allocate positions to slightly different states. This paper adopts the following stages and associated positions:

- ***Dualism*** (positions 1-3) – Knowledge and meaning are absolute and strictly quantitative; answers are right or wrong; ambiguity is an error; and, all problems are solvable (Pascarella & Terenzini, 1991; Rapaport, 2006). Individuals may resist learning that challenges their established beliefs. Transitional students begin to acknowledge legitimate uncertainty in the world (Moore, 2001) and recognize even authorities (e.g., instructors) are uncertain temporarily, but they are working to find the truth.
- ***Multiplicity*** (positions 4-5) – Knowledge is contextual, relative (Pascarella & Terenzini, 1991; Frieden & Pawelski, 2007), and pervasively uncertain, but "uncertainty is legitimate" (Reynolds, 1996, p. 3). The most important growth is an individual's thinking about knowledge and developing a sense of idea ownership (Moore, 2001). Students recognize diversity of opinions and believe everyone has a right to his own. Opinions have no pattern or system, and none can be judged right or wrong. This stage is inherently transitional: Movement from position 4 to 5 is the most significant progression because it represents a fundamental transformation of perspective from right/wrong with exceptions to contextual with a only few exceptions (Moore, 2001; Moore places position 5 in Relativism). Transition to Relativism is initiated by an individual's recognition of a need to support his opinions.
- ***Relativism*** (positions 6-7) – Knowledge is qualitative and infinitely contextual. An individual's judgement is based on evidence, logic, emergence of patterns, and comparison among diverse opinions. True learning (long-term), as defined by andragogical principles (Knowles, 1984) occurs at this stage. Transitional learners may make an initial commitment to some important aspect of life, such as values or career, but the individual remains unsettled (Wankat & Oreovicz, 1993).
- ***Commitment*** (positions 8-9) – In Perry's model, Commitment is a mature decision growing out of a relativistic world view. Individuals make Commitments to ideas, values, behaviors, and other people (Pascarella & Terenzini, 1991). Previous life commitments now have deeper meaning. Because Commitment is a free-will action, it is perceived as risky and usually manifests as tentative ventures into "safe" areas of the individual's life (Wankat & Oreovicz, 1993). Learners experience

implications of commitment and explore issues of responsibility as they realize Commitment is an ongoing, unfolding, evolving activity (Rapaport, 2006). This stage, resulting from reflection and growth, helps establish an individual's identity and style (Wankat & Oreovicz, 1993).

The first five of Perry's positions represent learners' attempts to account for divergence among others' opinions, their personal experience, and "truth" (Moore, 2001). Various researchers propose positions 7, 8, and 9 may not exist. They require a level of self-actualization (Maslow, 1954) many adults never reach, and Perry's Commitment stage presupposes a routine renegotiating of one's life commitments. Perry suggested position 9 occurs after graduation (Wankat & Oreovicz, 1993), in keeping with Jung's observation that middle age brings questioning of long-held convictions (e.g., Perry positions 7-9) (Naylor, 1985).

In Perry's model, students pass sequentially and predictably from position to position, yet their transition is not strictly linear. Development can not skip positions, but it can be recursive/cyclical (Wankat & Oreovicz, 1993; Reynolds, 1996; Finster, 1997). Students can be at asynchronous positions simultaneously in different areas of their lives (Rapaport, 2006; Wankat & Oreovicz, 1993) and may have made life commitments that belie their levels of intellectual development. Therefore, educators' expectations for students' progress must be flexible. No assumptions can be made about duration at any position (Pascarella & Terenzini, 1991; Frieden & Pawelski, 2007). Students will develop, deflect, retreat, or escape/avoid when presented with new, challenging knowledge (Wankat & Oreovicz, 1993). Movement between major stages can result in sense of loss or grief (Reynolds, 1996; Perry, 1985). Students can stall out or regress if stressors are present (Reynolds, 1996; Frieden & Pawelski, 2007), and progress through the stages is sometimes repeated (Rapaport, 2006).

Moore (n.d.) argues, "As students' perspectives evolve through the positions of the Perry scheme, knowledge is seen as increasingly conjectural, uncertain, and open to interpretation – thus demanding a focus on analysis, critical thinking, and integrative connection-making" (par. 12). Decision-making and problem-solving are relevant to adult intellectual development (Naylor, 1985), though higher levels of cognitive processes likely require less formal reasoning (Kurfiss, 1983). Ironically, at lower stages, instructors are most useful to students when they assume the Dualistic role of "Authority" to confirm students can break free of structured knowledge and become independent thinkers (Pavelich, n.d., p. 4).

Comparison of Perry's Scheme to Selected Student Development Theories

Piaget. Chronologically, Perry's model follows Piaget's theory of structured intellectual development in children but is not necessarily a follow-on (Wankat & Oreovicz, 1993). Piaget postulates change occurs through assimilation, or integrating new information into existing structure; accommodation, or modifying existing thought to incorporate new information; and dissonance, the precursor to developmental transition (Frieden & Pawelski, 2007). Perry accepted assimilation,

accommodation, and Piaget's logical/hierarchical sequence of development, but he rejected Piaget's notion of stages (Univ. of CA at Berkeley, n.d.). Further, Piaget's concepts of concrete and formal operational thought (logic, problem-solving) were not important to Perry (Wankat & Oreovicz, 1993).

Knowles. As described by Knowles (1984), adults are internally motivated learners (Perry's Relativism and Commitment) (Samuels, 2004). Unlike pedagogy (child-style, didactic learning), andragogy (adult-style, exploratory learning) is autonomous, pragmatic, and self-directed. Andragogy demands respect for, and occurs in context to, life experiences (Gigliotti & Gigliotti, 1998; Naylor, 1985; Samuels, 2004). Self-direction is a developmental accomplishment, and students require appropriate methods of instruction and pacing through support and challenge (Frieden & Pawelski, 2007; see discussion below). Adults take longer to process complex information (Samuels, 2004). Cognitive patterns are distinct in each adult; if no past experience exists, the brain will "construct a new network" (Morse, 2004, p. 46). "By making connections to an existing broad-based knowledge schema, older students are more likely to integrate new learning with various life roles in a more multidimensional way compared to younger students" (Bye, Pushkar, & Conway, 2007, p. 142). Samuels (2004) contends, "adult development impacts how adults learn. Biological, psychological, socio-cultural, and cognitive changes that occur in adulthood are linked to learning" (p. 8). Late in his career, Knowles revised his theory to recognize the pedagogy-andragogy learning continuum is not related to age but represents development from teacher-centered (Perry's Dualism) to student-centered learning (Perry's Relativism and Commitment) (Samuels, 2004; see also Kurfiss' (1983) discussion of learners' locus of control).

Maslow. Perry's model does not draw on Maslow (1954). However, there is an inherent psychosocial assumption that Maslow's first two hierarchical steps are met before students enroll in college-level learning (V. Marshall, personal communication, February, 2005). Movement up Maslow's hierarchy beyond level 2 requires cognitive development at least to Perry's late Multiplicity stage. Self-actualization, the highest point of Maslow's hierarchy, correlates to Perry's Commitment stage. Sumerlin (1997) proposes achieving self-actualization "demands an ability to give up defenses, leaving a person vulnerable and open … risk-taking must accompany development" (p. 1102). A self-actualized person is open to new experiences and relies on internal evaluation and validation. Non-self-actualized individuals' intellectual development ranges from Perry's Dualism to early Multiplicity because they are"fearful, rigid, and unfulfilled" (p. 1102).

Self-actualizing adult behavior includes furthering one's education (Samuels, 2004). Bye, Pushkar, & Conway (2007) argue non-traditional students have "strong intrinsic motivation to learn and the capacity to commit to a long-term" college education (p. 143). Intrinsic motivation, in keeping with Knowles' (1984) description of adult learners, engenders autonomy, intellectual exploration, and sustained interest without authority feedback/support. Externally motivated learners seek approval and are Dualistic in their preference for procedural activities *versus* content-enhancing questions of the

instructor. An intrinsically motivated student "becomes caught up in the feedback loop between learning, interest, and enjoyment" (p. 146).

Chickering. Key developmental steps in Chickering's (1983) model are being self-sufficient and taking responsibility for one's goals. Such self-reliance does not require the validation of others' opinions. According to Chickering, anxiety, fear, anger, depression, guilt, shame, and other stressors can overwhelm and thwart the educational process, as occurs in Perry's scheme when students face positional transitions. Chickering contends emotions must be redirected for intellectual development to occur. Concomitant with Perry's (1985) scheme, Chickering & Reisser (1993) contend globalizing one's values requires a transition from objective belief in the literal interpretation of rules (Perry's Dualism) to a subjective viewpoint where relativity between rules and their purposes is interpreted.

Kohlberg. Drawing on Piaget's work in terms of moral judgement in children, Kohlberg (1971) proposed a theory of moral development in adolescents that correlates to Perry's stages. Kohlberg's Preconventional / Egocentric Level A is similar to Perry's Dualism; Kohlberg's Conventional / Sociocentric Level B is similar to Perry's Multiplicity / Relativism; and Kohlberg's Postconventional / Ontocentric Level C is similar to Perry's Relativism / Commitment. Arguably, high levels of moral development in adults could be ancillary to their intellectual progression. A well-founded moral standard is anticipated among students in post-secondary education because they are bound to covenants such as codes of conduct, honor, or ethics upon enrollment.

Dichotomous Cognitive Development in PSOE Classrooms

Perry found students enter college at position 4 on average, but other studies consistently find more enter at lower levels (Wankat & Oreovicz, 1993). Traditional-age students typically enter at position 2 (Dualism) (Rapaport, 2006; Montgomery, 2005; Finster, 1997). Higher education's goal is to facilitate students' development to positions 5 or 6 (Relativism/early Commitment) by graduation (Pavelich, n.d.). Most non-traditional PSOE students arrive at college with significant life experience, resulting in asynchronous developmental positions on Perry's scale described above. They have already progressed cognitively beyond Perry's typical entry-level undergraduate. Thus, extreme frustration for PSOE educators manifests as developmental levels dichotomy in a single classroom.

PSOE Student Demographics

Approximately 25-30% of PSOE students are classified as traditional: single, under 24, living with and/or obtaining significant financial support from parents, who enter college within one year of completing high school or its equivalent. This cohort fits the description of typical undergraduates in Perry's (1970) scheme and its corollary studies. The majority of PSOE students, however, are non-traditional: predominately females older than 24, some of whom may have previous higher education

experience (Bauman, Wang, DeLeon, et al., 2004; Bye, Pushkar, & Conway, 2007; Carney-Crompton & Tan, 2002; Quimby & O'Brien, 2006; Samuels, 2004). The non-traditional cohort is an increasingly larger – possibly majority – segment of the college student population, estimated at 40-50% but maybe as high as 70% (Macari, Maples, & D'Andrea, 2006; Chao & Good, 2004; Bundy & Smith, 2004; Bauman, Wang, DeLeon, et al., 2004; Bye, Pushkar, & Conway, 2007; Hart, 2003; Carney-Crompton & Tan, 2002; Gigliotti & Gigliotti, 1998; Samuels, 2004). Limited research to-date compares non-traditional students to their traditional counterparts but does not describe them clearly or is unidimensional (Chao & Good, 2004; Bundy & Smith, 2004; Carney-Crompton & Tan, 2002; Gigliotti & Gigliotti, 1998; Samuels, 2004). There is a need for comprehensive, qualitative research to understand non-traditional students, their complex life roles – family, school, workplace – and their "unique ways of integrating their complex life and work experiences and classroom learning into a comprehensive learning activity" (Chao & Good, 2004, p. 10).

Many non-traditional students suffer the effects of long-term low socioeconomic status (King, 2003; Johnson, 30), although many work – often full-time (Hart, 2003) – but seek an opportunity to change careers or occupations (Chao & Good, 2004; Bauman, Wang, DeLeon, et al, 2004; Samuels, 2004). A large number are inspired to enroll in college by some life-changing event (Bye, Pushkar, & Conway, 2007; Samuels, 2004), and most are seeking personal fulfillment while reevaluating commitments to work and family (Perry's late Relativism/early Commitment) (Hermon & Davis, 2004). Some are senior-aged, and some are "empty-nesters," though a significant percentage have dependent children and/or parents (Samuels, 2004). All are "pulled in 100 different directions" (Johnson, 2005, p. 30), making college a monumental challenge. For non-traditional learners, their identity as "student" is central, important, and taken seriously (Gigliotti & Gigliotti, 1998), though they are often unprepared for student responsibilities and suffer resultant role conflict (Samuels, 2004). Some lack confidence and self-esteem (Chao & Good, 2004; Bauman, Wang, DeLeon, et al., 2004), but most display an overall sense of hopefulness and well-being (Chao & Good, 2004; Quimby & O'Brien, 2006). Although Taniguchi & Kaufman (2005) report non-traditional students have low completion rates, other studies show non-traditional students perform as well or better in studies of aptitude, motivation, academic style, and achievement – generally higher academic performance (Chao & Good, 2004; Carney-Crompton & Tan, 2002).

Non-Traditional Student Development

Macari, Maples, & D'Andrea (2006) report "nontraditional students scored significantly lower than traditional students" (p. 283) on a test of three measures from the Student Developmental Task and Lifestyle Assessment: establishing and clarifying purpose, developing autonomy, and developing mature interpersonal relationships. The more non-traditional a student was, the lower his/her psychosocial development level. Self-concept is an outcome of individuals' psychosocial development.

Gigliotti & Gigliotti (1998) describe three phases of self-concept that relate to Perry's stages: What people tell us (Perry's Dualism); forming judgements based on a comparison of our actions to others' (Perry's Relativism); and witnessing outcomes of our actions and claiming responsibility without external comparison (Perry's Commitment).

According to andragogical principles (Knowles, 1984), adult learners align self-concept with knowledge acquisition and intellectual development. Psychological (self-efficacy) and academic (GPA) performance improve as a function of age and throughout one's academic career (Carney-Crompton & Tan, 2002). Self-concept of academic ability (Gigliotti & Gigliotti, 1998) is related to demographics, psychological correlates (e.g., motivation), outcomes (e.g., satisfaction and grades), and overall self-esteem, leading to self-actualization as postulated by Maslow. High academic achievement leads to self-esteem and ego enhancement (Perry's Relativism) as opposed to younger students Dualistic or "more fixed academic identity" (Carney-Crompton & Tan, 2002, p. 149).

Traditional/Dualist PSOE Students

According to Perry's scheme (1970), traditional undergraduates in the PSOE classroom are Dualists. These students respond negatively and question the credibility of teachers who do not respond with the "right" answer immediately (Battaglini & Shenkat, 1987). Dualists receive truth and right answers from instructors or other authorities and demonstrate "learning" through memorization and regurgitation of correct answers on exams (Univ. of CA at Berkeley, n.d.). In terms of andragogical principles (Knowles, 1984), such information-churning is only short-term retention, not true learning.

Dualist students define "smart" as "being able to absorb lots of right information" (Reynolds, 1996, p. 3). They prefer a high degree of structure and clarity in the classroom and assignments: taking notes; memorizing facts; true/false, multiple-choice, or short-answer exams (Knefelkamp, 2000). Instructors who do not give explicit instructions/content are unfair or incompetent, even frauds or malicious (Reynolds, 1996; Perry, 1970). Structure is important in instructors' presentations, especially at beginning of learning, to facilitate "buy-in" and the rudiments of self-efficacy (Peterson-Veatch, 2006). Detachment is difficult for Dualist students (Univ. of CA at Berkeley, n.d.), so exposure to diversity of opinion brings on discomfort leading to doubt, anger, and sadness (Frieden & Pawelski, 2007). Dualist students do not learn well if they feel passive, fearful, or stressed (Morse, 2004). They feel powerless to direct their own learning or guide a teacher to respond to their needs (Peterson-Veatch, 2006). Dualist students do not understand the use of evidence. They believe critical thinking is the formulaic process for finding a right answer (Reynolds, 1996). Instructors' intentional ambiguity as a learning tool is viewed as a shortcoming or game used to get "the" answer (Pavelich, n.d.). Typical Dualist responses to instructors' challenges include "We can't find information and can't do more until we find it. This is worthless; why did we have to read it? We aren't experts. Tell us what to do" (Pavelich, n.d., p. 1).

Frieden & Pawelski (2007) recommend redirecting students' negative emotions into transformative challenges that facilitate intellectual growth. Instructors who recognize Dualistic responses give problems designed so students can learn to find right answers through independent thought. Transition from Dualism to Multiplicity can be facilitated by simple learning activities, such as asking students to compare/contrast theories (Reynolds, 1996).

Non-Traditional/Multiplicity-Relativist PSOE Students

Because of their accumulated life experiences, non-traditional undergraduates typically enter college at Perry's (1970) Multiplicity or early Relativism stages. At the Multiplicity positions, students recognize theories as metaphors and manage "gray areas" of knowledge to satisfy what they believe is the instructor's "game" (Kurfiss, 1983; Peterson-Veatch, 2006). These students see patterns and connections in knowledge and value experiential learning, such as research and case studies. They benefit from thematically related courses or projects and place a high value on collaborative learning (Knefelkamp, 2000). Learning should challenge students at the Multiplicity leve to develop, evaluate, and defend their opinions (Finster, 1997).

Students at the Relativism stage recognize ambiguity is endemic in learning activities. Pavelich (n.d.) notes the Relativist student weighs evidence to find a better answer in context because he "understands the need to use evidence and explore alternatives in open-ended problem solving, the need for judgements based on personal and articulated standards, and the need to be open to changing circumstances" (p. 1). As students transition from Relativism, their life-identity, especially values, emerges as commitments are made. However, having to make one's own decisions in an uncertain world with no one to tell the student if he is right can be disconcerting (Kurfiss, 1983).

Non-Traditional PSOE Students at the Commitment Stage

While it is highly unusual for a PSOE classroom to contain students at Perry's Commitment stage, individuals who enroll in vocational training for a career change may very well have reached advanced levels of cognitive development (McMahon, 2005). These students can create a life-long project from making sense of new knowledge and experiences (Perry, 1970). They are aware of their responsibility to use knowledge well and recognize the value in outside-classroom learning activities (Knefelkamp, 2000). Advanced students expect learning to be generalizable (Frieden & Pawelski, 2007). Diversity of knowledge may be unsettling, but it is no longer feared (Knefelkamp, 2000).

Specific Applications of Perry's Model to PSOE

Bye, Pushkar, & Conway (2007) posit "age has been measured as a predictor for cognitive maturity and strategies in learning styles" (p. 143). As intrinsic learners, "older students approach learning in a qualitatively different way from younger students" (p. 143). Frieden & Pawelski (2007)

report "the competencies needed to solve complex problems go beyond a technical analysis of information and specific expertise" (par. 1). Learners need "to be not only technically proficient but intellectually capable" (par. 1). Therefore, it may be beneficial to delay intellectual growth until students complete introductory courses (Wankat & Oreovicz, 1993). In the PSOE model, however, published curricular objectives often expect students in introductory courses to engage in critical thinking, regardless of cognitive level.

Older students need to enjoy the learning process in order to persist to program completion. Although some of their comments are biased, Gigliotti & Gigliotti (1998) report adult students' perceived ability to interact with instructors is important to academic achievement, yet instructors often fail to direct sufficient attention to the needs of non-traditional students. Typically, PSOE instructors are subject-matter experts employed as adjunct faculty and are untrained as adult educators (J. Rogers, personal communication, January 26, 2006). Boice (1992) suggests faculty lacking adult education experience or training will teach as they were taught, which was most likely through didactic content delivery. Such instruction preempts students' progress through Perry's intellectual development positions.

Several widely accepted adult instructional methodologies (Knowles, 1984) can facilitate knowledge acquisition and cognitive growth. Just as effective instructors employ multiple information-delivery methods, they should address multiple cognitive levels in each learning activity. Instructors should avoid unnecessary criticisms or directives and maximize "curiosity, interest, and flow in the classroom" to promote learning among older students (Bye, Pushkar, & Conway, 2007, p. 155). Pavelich (n.d.) suggests instructors listen to students individually and in groups, acknowledging each student's perception has value (never scoff or belittle), perhaps mentoring to encourage students' movement beyond their current development. Instructor-mentors can guide students to expound on other solutions under consideration, explaining this is typical in open-ended problem solving. Chao & Good (2004) argue broadening resources enhances learning. Internal resources include self-efficacy, hopefulness, resilience, motivation, positive emotions; external resources include academic support received from instructors and peers through classroom discussions. Chao & Good (2004) contend students can prepare for their future careers by deriving individual meanings from existing situations through connecting real-life experience to learning.

Encouraging PSOE Student Development Using Perry's Model

Perry's theory is "inherently value-laden insofar as it assumes that relativism is the most desirable intellectual stance and perhaps an end in itself" (Battaglini & Shenkat, 1987, par. 10). However, many authors (including Perry) have questioned the appropriateness of fostering students' intellectual growth. Perry (1970) originally estimated 75% of students graduate between positions 7 and 8, but other studies consistently find more graduates at lower levels (Wankat & Oreovicz, 1993).

Reynolds (1996) reports about 75% of students graduate in stage 2 (Perry's Multiplicity/Relativism, positions 4 through 6. Students typically leave college at this level because it takes several years to reach. (Pavelich, n.d.) argues effective mentoring can move more students to position 5 before graduation. Ironically, Dualistic (didactic) teaching models – lecture, minimal participation – dominate undergraduate education (Battaglini & Shenkat, 1987). A less-structured learning environment that supports risk-taking and diversity of tasks, coupled with concrete learning experiences that reinforce divergent knowledge, will encourage growth to higher positions (Wankat & Oreovicz, 1993).

Students' cognitive maturity develops best in a learning environment that balances intellectual challenge and support (Pavelich, n.d.; Reynolds, 1996; Kurfiss, 1983). In fact, Frieden & Pawelski (2007) argue support is critical, while Wankat & Oreovicz (1993) contend students need assurance of capability for growth from the onset of learning. Pavelich (n.d.) maintains challenge "readily exposes students to the legitimate vagaries of knowledge and requires them to deal with them" (p. 2). Further, support calls for "actions by faculty that help students deal with the mismatch, the discontinuity, between the student's perception and the professor's" (p. 2). Such support "requires an affirming of the students in their struggles while helping them to see a step or two beyond their current perception. This requires professors to understand the students' perceptions, to be patient with their misperceptions, and to be skilled at getting students to think beyond them" (p. 2). Effective learning experiences occur at a level students understand but simultaneously challenges them (Wankat & Oreovicz, 1993), optimally one position beyond their current level on Perry's scale (Kurfiss, 1983).

Methods for Challenging PSOE Students to Attain Intellectual Growth

An effective curriculum supports students' current development while challenging beliefs, stimulating new ideas, and encouraging tentative steps to new, more adaptive ways of knowing (Frieden & Pawelski, 2007). "Most faculty are not interested in content coverage for its own sake, but in the transformation of learners through engagement with certain content knowledge, with an appropriate knowledge base grounded in a meaningful context, namely, students' lives and experiences" (Moore, n.d., par. 3). According to cognitive psychology research, transformation of perspective occurs through dialectical (Perry's Multiplicity/Relativism) and contextual (Perry's Relativism/Commitment) thinking (Samuels, 2004). The following methods have been used successfully by the writer of this paper in her PSOE courses, both in college and workforce training.

Reflective practice. "Experience linked to reflection leads to transformation" (Frieden & Pawelski, 2007, par. 13). Transformational learning "means reassessing one's perspectives or correcting distorted assumptions" and leads to emancipatory learning, which leads to social action (Perry's Commitment) (Samuels, 2004, p. 17).

Collaborative learning. Perry's model is a "particularly appropriate framework to use, both for assessing and for understanding collaborative learning" (Moore, n.d., par. 5). Perry recognized

peers as legitimate sources of learning at the Multiplicity level (Univ. of CA at Berkeley, n.d.). Moore (n.d.) praises collaborative learning as

> grounded in the fundamental goals of American higher education: critical thinking and analysis, ability to work with others and an appreciation for diverse perspectives, connection making and integration of learning, and involvement in one's own learning process, among others. These goals are often part of the rhetoric of higher education, but more often than not are either ignored in practice, in terms of both teaching and assessment, or simply assumed to occur as a student persists in her college years" (par. 2).

Moore (n.d.) continues, "Collaborative learning environments promote a wide range of cognitive and affective student learning outcomes" (par. 5). Students come "to understand what constitutes a good argument in a given context" (par. 11).

Frieden & Pawelski (2007) find students become increasingly self-directed through collaborative learning activities. They report peer questioning and validation encourage testing of beliefs and assumptions, which leads to development in Perry's scheme. Hermon & Davis (2004) argue collaborative learning is especially useful for nontraditional students' development because they find social activities are most important to their overall wellness, a critical factor in the holistic nature of student development theory.

Metacognitive skills. Collaborative learning encourages metacognition through constructivism – having students become aware of and manage emotions related to learning (Morse, 2004). Lerner (2007) couples reflective practice with metacognitive skill, recommending students prepare a final assignment due the last day of each class. Students respond to a series of questions designed to elicit responses from both knowledge and cognitive development gained in the course. The questions encourage students to review and evaluate the course as a whole, encouraging them to consider their learning processes and what helped or hindered it.

Meaning-making. As described previously, Moore (n.d.) regards making meaning from knowledge and learning to be a critical component of Perry's model. Moving through Perry's positions propagates changes in how learners view and understand knowledge and learning, view themselves and their peers, and view the role of teacher.

Self-Authorship. Kegan (1994) described self-authorship as a potential ultimate result of students' evolution through his own model based on Perry's developmental stages. Many highly regarded experts on Perry's scheme have explored Kegan's proposal in their research and writing. Baxter Magolda (1998) defines self-authorship as "the ability to develop one's own perspective" (p. 41), which is fostered through reflective practice and collaborative learning. She writes,

> "Adults in contemporary America are expected to be productive citizens who can manage their own affairs. They are expected to make informed decisions for themselves and their fellow citizens, appreciate diverse perspectives, manage conflict appropriately, and act responsibly in their communities. They are expected to be lifelong learners in the face of constant change and increasing complexity. Meeting these expectations requires the ... capacity for self-authorship" (p. 41).

Recommendations for PSOE Instructors

Battaglini & Shenkat (1987) report Perry's model "offers college teachers a lens to clarify the diversity of backgrounds and dispositions that students bring to a topic" (par. 16). In PSOE, unfortunately, instructors' "expectations for student understanding of sophisticated concepts and principles are beyond many students' levels of cognitive development" (par. 16). Many PSOE instructors want – or are expected – to teach at the critical thinking level, but students are not always intellectually ready for it. Instructors' resistance to "dumbing-down" or "spoon-feeding" creates a gap and frustration on both sides. Good teachers build knowledge and teach critical thinking simultaneously by challenging the way students think while providing them with mental and emotional tools to resolve developmental dilemmas (Finster, 1997). Separating evaluation from instruction may bolster such a strategy (Wankat & Oreovicz, 1993).

Naylor (1985) observes "adult educators need a thorough understanding of the stages and transitions of adult life, the stages of career development, the interrelationship of adult development and career development, and counseling techniques for use with individuals in transition" (par. 21). Reynolds (1996) encourages instructors to keep cognitive development theories in mind, "not as 'truths' but as tools" (p. 4). Frieden & Pawleski (2007) argue "it is incumbent upon the professor to continually evaluate how teaching may facilitate or in some cases inhibit the kind of environment needed to support students' developing capacities and readiness to learn [and express] creativity in letting go of traditional methods of instruction as well as outworn habits and routines" (par. 17).

Examples of such creativity include creating mindmaps, troubleshooting, problem-solving, or otherwise thinking out loud instead of relying on pre-packaged teaching aids. However, instructors should carefully avoid appearing omniscient (Wankat & Oreovicz, 1993). Teachers do not have to be experts on their topics. McMahon (2005) suggests by demonstrating how their own learning takes place, instructors "actually encourage students to begin their own journey through the Perry stages" (p. 1). Courses need significant amounts of writing or discussion, both of which generate levels of cognitive dissonance necessary for intellectual growth (Wankat & Oreovicz, 1993). Knefelkamp (2000) recommends a practice-theory-practice methodology where learners engage in an introductory hands-on activity, follow with a directed study of relevant content, then perfect their skills through a reinforcing activity. This model is perfect for vocational/technical courses in PSOE.

Effecting intellectual maturation "requires that we refine our teaching methods, not that we change our curriculum" (Pavelich, n.d., p. 2). PSOE instructors need to understand how adults learn (Samuels, 2004). Student-centered education fulfills the andragogical paradigm, gives students control, and makes them responsible for learning (Morse, 2004). Gigliotti & Gigliotti (1998) caution "faculty should be particularly attentive to having positive interactions with adult students" (p. 309). Instructors who fail to listen carefully or show regard for student input violate students' expectations, thus reducing their self-efficacy and developmental outcomes.

Significant Related Studies

Several academicians – including Perry in the 1980's – have performed significant follow-on studies to validate Perry's (1970) original research. While they are more structured than Perry's initial inquiries, these studies essentially replicate Perry's published findings (Wankat & Oreovicz, 1993). Research has shown developmental differences are primarily gender-related, but pure stereotypes are not applicable. More than likely, gender differences in learning and knowing result from socialization styles (Reynolds, 1996; Wankat & Oreovicz, 1993). The Perry Network organization supports modern research on advanced cognitive development topics, such as self-authorship, the relationship between intellectual, identity, and/or moral development, and multicultural applications of Perry's scheme.

Adams – Numerous published reports describe her studies of peer learning and cognitive and moral development in relation to diversity and social justice learning (Adams, 2002).

Baxter Magolda & Porterfield – One of the primary Perry value-added studies, Baxter Magolda & Porterfield's four-stage model, roughly equivalent to traditional Perry stages, contends knowing evolves from Absolute to Transitional to Independent to Contextual. Individually, Baxter Magolda studies gender differences and advanced cognitive development. Her research indicates students' understanding and involvement in learning experiences are affected by broad categories of knowing and by reasoning patterns (Baxter Magolda & Porterfield, 1988; Baxter Magolda, 1992).

Belenky, Clinchy, Goldberger & Tarule – Another seminal study, their work determined gender differences in the ways men's and women's learn. Ways women learn include notions of voice, truth, and knowledge. Their four-stage model is comparable to traditional Perry stages: Received Knowledge = Dualism; Subjective Knowledge = Multiplicity; Procedural Knowledge = Relativism; Constructed Knowledge = Commitment (Belenky, Clinchy, Goldberger & Tarule, 1986).

Erwin – Devised the *Scale of Intellectual Development* (SID-XII). Items on the SID-XII are designed to measure four stages: Dualism, Relativism, Commitment, and Empathy. The first three stages correspond roughly to Perry's nine positions; however, in 1983 Erwin removed Multiplicity and added Empathy as the level at which a student can see others' viewpoints while maintaining the integrity of his own (DeMars & Erwin, 2003).

Kegan – Developed his five-stage theory based on Perry's scheme. Kegan (1994) maintains "organisms organize, and human organisms organize meaning" (p. 29). Individuals move from ego-centric though to acknowledging other people and things have enduring and unique preferences and abilities. At the pinnacle of Kegan's (1994) model, individuals evolve from modern to postmodern thought, casting off their personal systems for inclusion in a global ideology.

King & Kitchener – Their seven-stage, increasingly intricate model places less emphasis on ethical commitments and focuses on epistemology – how people think about problems when clear solutions do not exist. King & Kitchener proposed a major epistemological shift occurs when individuals' belief in the uncertainty of knowledge is firmly established (Perry's Relativism). The endpoint of their model is true reflective thinking that results in constructed knowledge (King & Kitchener, 1994; King has collaborated with a significant number of experts in Perry's scheme).

Knefelkamp – Working independently and with others (e.g., Cornfield, Slepitza) Knefelkamp refined Perry's original scheme by combining the positions into stages. Her current work includes student development in diverse (multicultural) populations and identity development (Knefelkamp, 1974 & 2002; see also Slepitza, 1983).

Kurfiss – Compared Perry's scheme to selected major developmental theories and proposed the orderly advancement of Perry's positions, both logically and psychologically. She hypothesized cognitive advancement and reliance on formal reasoning are inversely related. Kurfiss delineated recurring themes in all developmental models: concrete / simplistic / absolute leads to abstract / complex / relativistic; migration from external to internal locus of control; increasing reflection; and responsibility for actions and choices (Kurfiss, 1983).

Mezirow – Found that transformation in intellectual development and learning occurs through three stages: perspective shift, active surfacing of assumptions, and critical reflection. He proposed learners make choices based on their current developmental stage (Mezirow, 1990).

Moore – Reported learners' perceptions of teachers' roles changes from authority / truth-giver to authority / resource with expertise, while students' role changes from passive receptor to active agent for defining arguments and creating new roles. Most Perry model researchers use Moore's (1983) *Measure of Intellectual Development* for data-gathering. The essay-based survey incorporates students' self-evaluations and must be scored by trained raters (Moore, n.d., 1983, 1988, 1989, 1994 & 2001).

West – Synthesized Perry, Belenky et al., Baxter Magolda, and King & Kitchener into a four-stage model of epistemological development that is adaptive, rather than hierarchical. West's stages are equivalent to Perry's: Stage 1 – Absolute Knowledge (Perry's Dualism); Stage 2 – Personal Knowledge (Perry's Multiplicity); Stage 3 – Rules-based Knowledge (Perry's Relativism); Stage 4 – Evaluative Knowledge (Perry's Commitment) (West, 1996).

Relevant Points of Student Development Perry Does not Address

West (1996) argues Perry's description of Commitment ignores underlying cognitive changes, limiting Perry's "contributions to understanding epistemological development" (p. 62). Moore (n.d.) recommends collaborative over individualized learning because it "encourages students to acquire an active voice in shaping their ideas and values and a sensitive ear in hearing others" (par. 2). King & Kitchener (1994) support implementing a program of reflective judgement as a way to understand and promote intellectual growth and developing critical thinking skills in adults. Baxter Magolda (2000) recommends modifying teaching methods to promote cognitive and identity maturation. Baxter Magolda (2001) and numerous others have expanded Kegan's (1994) theory of self-authorship that is the natural next level after Perry's Commitment.

Potential for Further Research

Generally speaking, faculty development programs addressing Perry's model and recommending teaching methodologies that foster cognitive growth are nearly non-existent. Pavelich (n.d.) observes "in effect, we need to be more attuned to what our students are thinking and to respond to them based on a scholarly understanding of developmental theories" (p. 3). Carney-Crompton & Tan (2002) argue "postsecondary institutions need to evaluate how the structure and delivery of courses, as well as provision of resources, meet the needs" of nontraditional students (p. 150). McMahon (2005) suggests instructors apply Perry's scheme to their own knowledge-gathering. Institutions need to provide continuing education for faculty members in principles of adult education, theories of student development, and appropriate instructional methodologies for use in teaching adults – especially in the typically mixed-level classrooms that are prevalent in the PSOE industry.

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