Evidenced-based practice (EBP) involves the use of knowledge obtained from research, as well as attention to provider expertise and patient preference. Despite growing awareness that research utilization improves outcomes, adoption of EBP has been slow (Melnyk, Fineout-Overholt, Fischbeck-Feinstein, Sadler, & Green-Hernandez, 2008). Evidence indicates that practicing nurses are not using EBP skills (Pravikoff, Pierce, & Tanner, 2003; Pravikoff, Tanner, & Pierce, 2005). Furthermore, educational efforts to promote readiness for EBP have been disappointing: “There remains a lack of knowledge about what methods and approaches [to educating nurses in the use of EBP] are effective, with whom and in what contexts” (Kitson et al., 2008, p. 2).

The relevance of EBP has never been greater. According to the Institute of Medicine’s (IOM) report Knowing What Works in Health Care: A Roadmap for the Nation (IOM, 2008):

As the evidence base for health care increases, inevitably there will be an even greater need for trustworthy, scientific synthesis and interpretation of the available evidence...the United States must strengthen its capacity to assess evidence and provide reliable, unbiased information on the effectiveness of clinical services. (p. 1)

Extant research indicates that both contextual and individual factors affect nurses’ engagement in EBP (Estabrooks, 1999), yet there has been little inquiry into the nature of individual factors at work in this process. There is reason to believe that cognitive maturity is one of the important individual factors neglected in this line of inquiry.

After clarifying how we will use the phrases research utilization and EBP in this article, we briefly explore the relatively new field of implementation science. We then describe the cognitive demands inherent in EBP, provide an overview of cognitive development, and use one model of adult cognitive development—the reflective judgment model (RJM)—to situate the construct of cognitive maturity as an important individual factor that may influence EBP. Empirical evidence of patterns of cognitive development among adults provides additional insight into the challenges posed to nurses by EBP. We close by exploring the significance of these theoretical formulations for future research and for instructional design to foster cognitive development.
RESEARCH UTILIZATION AND EVIDENCE-BASED PRACTICE: EVOLVING CONCEPTS, NEW DEMANDS

Although Nightingale made effective use of the outcomes of systematic inquiry to inform nursing practice (Small, 1998), Melnyk, Fineout-Overholt, Stone, and Ackerman (2000) asserted that momentum for basing nursing practice on scientific evidence grew most noticeably in the 1970s and became widely known as research utilization. Research utilization involves analysis and critique of published research and involves efforts to apply some portion of the findings to nursing practice (Polit & Beck, 2008). Evidence-based practice differs from research utilization in that it is a more rigorous process involving the use of a body of evidence (versus individual studies) for a particular clinical question. In addition, EBP incorporates consideration of an integrated body of evidence with clinical data and patient preferences (Fineout-Overholt, Melnyk, & Schultz, 2005). Although some authors apply the expression research utilization to both single-study implementation and the systematically integrative process of EBP, we use the phrase to refer to the process of evaluating and using single-study results and use EBP to refer to the evaluation and synthetic systematics of a body of evidence for nursing practice.

Research utilization can be instrumental, conceptual, and symbolic (Johnson, 1998; Landry, Lamari, & Amara, 2001; Rich, 1979, 1991; Stetler, 1985; Weiss, 1979). Instrumental utilization is the actual observable implementation of research findings in practice. Conceptual utilization occurs when research findings exert some influence on an individual health provider’s thinking about and understanding of research utilization. Symbolic utilization is the use of evidence by someone (e.g., a clinician) to change the minds of other people, typically those in decision-making roles (Profetto-McGrath, Hesketh, Lang, & Estabrooks, 2003).

In its full expression, EBP embodies all forms of research utilization and integrates the best evidence available, guided by provider expertise, with the values and preferences of the individuals, families, and communities who are served (Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000). Thus, it is important not only to understand what qualifies as evidence but also to have some sensitivity to the complexities and ambiguities of clinical practice. There are times when the simple application of the best available scientific evidence may not be appropriate. Some clinical problems do not have straightforward solutions, but rather are knotty and ill structured. It may not be possible to describe or understand these clinical findings in practice with a high degree of completeness or certainty, and multiple alternatives may exist as potential solutions. In such uncertainty, a judgment must be made about the relative value of alternative courses of action. In the face of an ill-structured situation—where solutions are not readily apparent or agreed on by experts—the capacity to acknowledge uncertainty is essential (King & Kitchener, 2002). Openness to real uncertainty and ambiguity is a disposition concomitant with more mature belief systems, suggesting that cognitive maturity is required for EBP.

EMERGENCE OF IMPLEMENTATION SCIENCE

Rapidly expanding scientific knowledge has not always translated into practice improvement. Experts estimate that a 10- to 30-year lag exists between discovery and implementation of new knowledge (Balas & Boren, 2000; Bostrom & Wise, 1994; Landrum, 1998; Squires et al., 2011). Recognition of this phenomenon gave birth to implementation science, organized explicitly to synthesize and integrate widely scattered research findings about factors contributing to this problem (Eccles & Mittman, 2006). Implementation science focuses on methods to promote systematic uptake of research findings into practice to improve the quality and effectiveness of health services and generate theory regarding research utilization.

More than 25 models of research utilization exist in nursing alone (Cummings, Estabrooks, Midodzi, Wallin, & Hayduk, 2007). Although contextual and individual factors that affect research utilization are included in these models, the latter have received less attention (Cummings et al., 2007). For example, authors of the highly regarded and widely used PARiHS framework (Promoting Action on Research Implementation in Health Services) posit that successful implementation of research-based knowledge action is a function of three general categories of factors: the nature and type of evidence, contextual qualities, and process facilitation (Kitson et al., 2008). As useful as the PARiHS framework has been for guiding research utilization, it fails to adequately account for the influence of individual factors affecting research utilization. Kitson et al. (2008) stated “Now there is widespread recognition that guideline implementation, and evidence implementation more generally, requires whole system change implicating both the individual and organisation [sic]” (p. 1).

Application and testing of the multilevel model of Estabrooks, Midodzi, Cummings, and Wallin (2007) revealed that individual factors accounted for most of the variance in research utilization. Rycroft-Malone (2007) identified theoretical perspectives of potential value for inquiry into the influence of individual factors, among which are educational, attitudinal, and motivational theories; marketing and professional development theories; change theories; and decision-making and cognitive theories. Although she mentioned cognitive theory, Rycroft-Malone offered no further explication of its specific value, perhaps because its potential contribution is so vast. Cognitive theory evolved from work in many disciplines, including cognitive psychology, neuroscience, and neurolinguistics. One perspective with great informative potential is that of the cognitive developmentalists.

COGNITIVE DEMANDS INHERENT IN EVIDENCE-BASED PRACTICE

Human cognitive development involves epistemological change across the life span. Epistemology is the branch of philosophy that examines the nature and certainty of knowledge: what knowledge is, how knowledge is acquired, and how knowledge claims are justified. It is purported that each individual has a personal epistemology, or set of assumptions about reality, used to understand and interact in the world (Stewart, 2005). Because these epistemic assumptions about the nature, source, and certainty of knowledge are core elements in personal epistemologies, they profoundly influence openness, inquisitiveness, and other attitudes toward thinking and learning.
These assumptions change as an individual matures cognitively. Usually, these assumptions evolve in concert with other human developmental processes and life experiences, including education. Theoretically, more mature epistemic assumptions are required for an individual to be positively disposed to clinical inquiry and EBP readiness.

**PATTERNS OF POSTFORMAL COGNITIVE DEVELOPMENT**

Exploring changes in personal epistemology has become the interest of cognitive developmentalists. In 1956, Swiss psychologist Jean Claude Piaget (1956/1974) described the processes by which children and adolescents come to know and the evolution of this epistemological change. His theory proposed three stages of cognitive development: preoperational, involving magical thinking and egocentrism; concrete operational, involving concrete thinking and the development of logical reasoning; and formal operational, involving the development of abstract reasoning. The formal operational stage, from adolescence to adulthood, was viewed as the final stage of cognitive development.

Many models of ongoing cognitive development in adulthood evolved in the wake of Piaget’s work, including the work of Perry (1970) and King and Kitchener (1994). Although Piaget demonstrated that the capacity for abstract thinking and logical reasoning develops in the formal operational stage, theories of adult cognitive development show that during the period that follows the acquisition of formal operations, the individual develops the capacity for more relativistic and contextual reasoning (Baxter-Magolda, 1993).

**COGNITIVE DEVELOPMENT: THE REFLECTIVE JUDGMENT MODEL**

Of the several adult cognitive development models proposed, the RJM is the best studied, both cross-sectionally and longitudinally (King & Kitchener, 2002). One valuable window of understanding on postformal cognitive development is offered in the construct of reflective judgment (Pascarella & Terenzini, 2005), which is the highest stage of cognitive development in the RJM.

Reflection has been postulated to occur, or be necessary, only in the face of a problem or uncertain situation (Dewey, 1933; Freshwater, 2002; Freshwater, Taylor, & Sherwood, 2008; King & Kitchener, 1994). A reflective judgment, then, is made to bring closure to an uncertain situation. Arriving at that judgment involves an ongoing verification, evaluation, and integration of data and theory to solve the problem. The solution can then be defended, given the data and situational conditions (King & Kitchener, 1994).

In the RJM, King and Kitchener (1994) focused on the evolution of epistemic assumptions necessary to recognize and grapple with ill-structured problems. The RJM highlights the broad spectrum of adults’ openness to uncertainty and beliefs and assumptions that may exist about legitimate sources of knowledge and the degree of certainty of knowledge claims. Thirty years of RJM research has provided substantial evidence that “reflective thinking develops slowly and steadily over time and in a manner posited by the Reflective Judgment Model” (Kitchener, King, & De Luca, 2005, p. 90). Although cross-cultural validation of the RJM is limited, German student response patterns were found in one study to be consistent with the sequential ordering of the RJM and with scores comparable to U.S. samples (Wood, as cited in King & Kitchener, 1994).

Cognitive development described in the RJM comprises three broad phases of change in epistemic assumptions: prereflective, quasireflective, and reflective. In the prereflective phase, individuals believe knowledge (gained from authorities or first-hand experience) is certain and correct. Prereflective thinkers have difficulty understanding and accepting the need for evidence to justify a point of view. In the quasireflective phase, individuals believe that knowledge claims may be uncertain. These individuals would have difficulty understanding research, appreciating marks of quality in research, or embracing the need for evidence as grounds for decision making in practice. Quasireflective epistemic assumptions make it difficult for individuals to understand how evidence can be used to reach a conclusion or judgment. In the reflective phase, individuals believe that knowledge is “the outcome of a process of reasonable inquiry in which solutions to ill-structured problems are constructed...beliefs are justified probabilistically” and judgments are made based on thorough evaluation of available evidence (Kitchener, King, & DeLuca, 2005, p. 77).

**Critical Thinking and Cognitive Maturity**

It is the achievement of the formal operational development level that makes critical thinking possible. In nursing, as well as in other fields, there has been widespread confidence that skill in critical thinking naturally leads to research utilization, yet a study of baccalaureate nursing students revealed no significant relationship between critical thinking skills and the application of research findings in practice (May, Edell, Butell, Doughty, & Langford, 1999).

In the consensus definition of critical thinking (Facione, 1990), experts posited that critical thinking comprises both cognitive and affective dimensions—a body of skills and the disposition to use them. The critical thinking dispositions characteristic of the ideal critical thinker include being:

- habitually inquisitive, well informed, and 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. (Facione, 1990, p. 3)

This disposition characterizes the orientation required for EBP: a “spirit of inquiry [or] ongoing curiosity about the best evidence to guide clinical decision making” (Stillwell, Fineout-Overholt, Melnyk, & Williamson, 2010, p. 58). The authors (King & Kitchener, 2004) of the RJM posited that individuals who are cognitively mature exhibit greater care when applying critical thinking skills.

Profetto-McGrath et al. (2003) used the California Critical Thinking Dispositions Inventory (CCTDI) to examine the
relationship between these critical thinking dispositions and research utilization in a convenience sample of 141 nurses employed in acute care settings at university-affiliated hospitals. They found that nurses who were more open-minded, inquisitive, and systematic were more likely to use research findings in their work. However, using the same data set, Estabrooks et al. (2008) found that although CCTDI scores clustered around nursing units characterized by high research utilization, no statistically significant differences were found between individual nurses in high, medium, and low research utilization categories. Empirical evidence on the hypothesized relationship between critical thinking and cognitive maturity provides some explanation for these equivocal findings.

Positive critical thinking dispositions reflect awareness of the need for knowledge and confidence that research findings provide reliable knowledge resources and the ability to respond to ill-structured problems. Because many dispositions of the ideal critical thinker are also characteristic of an individual with a high degree of cognitive maturity, critical thinking dispositions could be conceived as proxy measures of cognitive maturity. Indeed, one of the seven CCTDI subscales is called cognitive maturity. However, it is important to note that the measure of critical thinking dispositions (CCTDI) is not a direct measure of cognitive maturity but rather a self-report measure of beliefs and attitudes toward critical thinking. High CCTDI scores reflect a strong desire to apply one’s critical thinking skills in decision making and problem solving. Nonetheless, “being skilled does not assure one is disposed to use critical thinking. And, being disposed toward critical thinking does not assure that one is skilled” (Facione, 2000, p. 81).

There is also an affective dimension to the experience of growth in reflective judgment. The affective domain has been described (Anderson & Krathwohl, 2001) as including feelings, values, appreciation, motivations, and attitudes. Growth in this domain begins with receiving (having awareness of) and then responding to phenomena; attaching worth to phenomena, objects, and behaviors (appreciating and selecting); organizing values into priorities; and, finally, the most complex level—in-ternalizing values. Freshwater et al. (2008) defined reflection as a process of intellectual and affective activities involving examination of one’s experience to create and clarify meaning and leading to a new conceptual perspective. Freshwater (2002) described reflection on action as awareness of uncomfortable feelings about a situation and critical analysis of feelings and knowledge, giving rise to a new perspective. She paralleled this description with a three-stage process to arrive at articulated learning aimed at positive change or action. Both Freshwater’s model and Tanner’s (2006) model of clinical judgment describe processes that parallel phases of growth in the affective domain.

Although some conceptual similarities and correlations have been identified between critical thinking and reflective judgment, they are not identical constructs. Evidence suggests that acquisition of critical thinking skills is a necessary, but not sufficient, condition for developing high levels of reflective judgment (Brabec, 1983; King & Kitchener, 1994; Wood, 1990). In contrast to critical thinking, cognitive maturity refers to the individual’s epistemic assumptions (beliefs about the certainty of knowledge and the importance of evidence for making a judgment) and values more deeply embedded in the individual. Characteristically, traditional and adult undergraduate students hold epistemic assumptions of the RJM’s prereflective or early quasireflective phases. These assumptions constitute an important basis for development of the reflective thinking characteristic of the highest stage of the RJM and also provide guidance important for the design of developmental instructional approaches (Kitchener et al., 2005).

Cognitive Maturity Levels of Nursing Students and Other College-Aged Adults

Kitchener (1990), as well as Love and Guthrie (1999), posited that various authors have agreed that the evolution of cognitive maturity comprises a “sequence that begins with the belief that knowledge is certain and directly knowable to the belief that knowledge is uncertain but can be constructed by judging evidence and opinion” (Kitchener et al., 2005, p. 74). Using Perry’s (1970) scheme of development, Valiga (1983) described the cognitive maturity of baccalaureate nursing students and found their thinking to be equivalent to those of prereflective and quasireflective levels of maturity in the RJM. Nickerson (1991) found prereflective and early quasireflective thinking among senior nursing students from two different curricular designs (building and progressive), with no difference in reflective judgment levels between students in the two curricula. These findings are similar to those reported for other traditional college-aged populations. Aquilino (1997) found that junior and senior baccalaureate nursing students demonstrated only moderate levels of cognitive development in relation to clinical diagnostic ability. Maskey (2011) found fourth-semester students in an associate degree nursing program to be thinking at the quasireflective level.

Parry (2010) found the thinking of associate and baccalaureate degree radiography students to be largely at the quasireflective level. In a study of medical students, Knight and Mattick (2006) found predominantly simplistic levels of epistemic assumptions similar to the prereflective and early quasireflective phases of the RJM. In a longitudinal study of third-year predoctoral dental students, Boyd (2008) found a progression from prereflective thinking to quasireflective levels in dental students engaged over the course of the year in clinical training.

In a qualitative study of Scottish university teacher education students, MacLellan and Soden (2004) found that none of the rationales offered by students reflected epistemic assumptions characteristic of reflective thinking as defined by the RJM (King & Kitchener, 1994). Forty percent of the rationales reflected prereflective assumptions; the remaining 60% were characterized as quasireflective.

Epistemic assumptions that characterize various phases of cognitive development also manifest in the information-seeking behavior of students across undergraduate majors. Whitmire (2004) examined the relationship between levels of cognitive maturity and self-described online information-seeking behaviors among first-year undergraduate students. She observed that prereflective thinkers often selected the first hits gleaned through the use of search engines and were not selective in their judgments about the quality of Web sites. Quasireflective thinkers more often applied criteria of quality and exhibited more
skepticism about the information they encountered. No participants from the undergraduate sample exhibited the characteristics of the reflective thinking phase.

Meaning of Cognitive Developmental Change for Evidence-Based Nursing Practice

Nursing students and practicing nurses require a high level of cognitive maturity to be adequately disposed to clinical inquiry, research utilization, and EBP. This kind of openness to real uncertainty and ambiguity is a disposition concomitant with more mature belief systems. Ample evidence (Baxter-Magolda, 1993; Brabec, 1983; French, 2006; King & Kitchener, 2002; Kitchener et al., 2005) exists that cognitive maturity also affects an individual’s perceptions of the meaning and the value of research findings as evidence for truth claims. Smirnoff, Ramirez, Kooplimae, Gibney, and McEvoy (2007) asserted that “social cognitive theory…frames human functioning as an interaction of the domains of personal, behavioral, and environmental events” (p. 25). Given that the individual is always free not to act, our concern must extend beyond the contextual factors influencing EBP to individuals’ assumptions, beliefs, and thought processes vis-à-vis particular knowledge claims. Any rational choice to act or not to act will rest on those individual characteristics. This claim affirms, complements, and further nuances Tanner’s (2006) assertion that “Clinical judgments are more influenced by what the nurse brings to the situation than the objective data about the situation at hand” (p. 205).

Value of the Reflective Judgment Model for Scaffolding Learning Experiences

The RJM stages of cognitive development can provide a framework for learner-centered instructional experiences that support individuals in their cognitive development stage, while challenging them one step beyond that level. The RJM guides nurse educators in higher education and staff development to give students EBP experiences within their zones of proximal development (Vygotsky, 1978) or within a holding environment (Kegan, 1982), where students are accepted as they currently are, but they also are invited to grow and advance their thinking. For each developmental level, the model offers descriptions of the epistemic assumptions, cognitive characteristics, and learning experiences that will both affirm the student in his or her current way of thinking and challenge him or her in a stepwise, measured way that is respectful of the limitations of each phase of thinking. Using this developmentally conscious approach to EBP instruction enables faculty to be responsive to the cognitive, as well as affective, challenges inherent in the experience of changing belief systems (King & Kitchener, 1994).

In their review of how college education affects cognitive skills and intellectual growth, moving students from prereflective to quasireflective ways of thinking, Pascarella and Terenzini (2005) touted the importance of the small gains in cognitive maturation. In spite of the seemingly slow movement of individuals through the phases of cognitive development, important developmental changes do occur:

|The change from prereflective to quasireflective represents a qualitative shift from a style of reasoning based on personal beliefs to one that explicitly uses reason and evidence in forming judgments. As such, it may represent an important pre-requisite for the development of a reasoned approach to addressing ill-structured problems. (Pascarella & Terenzini, 2005, p. 162) |

Developmentally sensitive, scaffolded EBP instructional design can foster this movement, which is important not only to nursing students and practicing nurses but also to the profession and ultimately to the individuals for whom we care.

IMPLICATIONS FOR FUTURE RESEARCH

Little attention has been paid to the relationship of cognitive maturity to research utilization or EBP, even though cognitive maturity is recognized as an important substrate for critical thinking (King & Kitchener, 1994). Individual factors that have been studied include age, gender, education, and attitude toward research. Individual factors identified as negatively affecting nurses’ engagement in EBP include uncertainty (French, 2006; Estabrooks, Floyd, Scott-Findlay, O’Leary, & Gushta, 2003), limited skill and self-confidence in reading and evaluating research, and negative attitudes toward nursing research (Pravikoff et al., 2003). These latter dispositions are characteristic of an early quasireflective level of reflective judgment or cognitive maturity.

Although postulates of the RJM have the potential to explain the influence of the nurse’s cognitive maturity on the ability to see and resolve ill-structured clinical problems, on the expectation of certainty in knowledge claims, and on perceptions about the value of research evidence for clinical decision making, limited inquiry has been made into those relationships. Some descriptive evidence is available about the levels of cognitive maturity characteristic of college-aged adults. These studies are instructive but woefully limited and need to be expanded.

IMPLICATIONS FOR EDUCATION

Educational efforts to increase research utilization have continued to focus on knowledge and skills related to research, the research process, information literacy, and the process of asking relevant clinical questions (Rolloff, 2010; Stillwell et al., 2010). Indeed, Tucker, Olson, and Frusti (2009) affirmed the importance of nurses’ understanding research and evidence-based guidelines, stating “the translation process requires at least basic knowledge of the research process, how to interpret research findings and identify the best research evidence” (p. 208). Although educational interventions in both academia and nursing staff development have a measurable effect on knowledge and skills, they seem to have had little transformative, and often disappointing effects on the poor attitudes of nurses (and nursing students) toward research and EBP (Ciliska, 2005).

Cognitive development theory sheds light on why training focused on knowledge and skills alone may not suffice to prepare nurses for EBP. It proposes, in part, that to understand the concept of research, individuals must accept the premise that truth claims depend on evidence gleaned from research. Such acceptability is a disposition or attitude characteristic of greater cognitive maturity. What is needed are individuals whose defi-
nitions of authority are significantly enlarged, who recognize that legitimate disagreements can exist between authorities on controversial or problematic issues in practice (King & Kitchener, 1994), and who accept that, in some situations, knowledge is uncertain. Thus we see that there are affective, as well as cognitive, shifts that occur with progression to more mature epistemic assumptions. The prevalent acontextual approaches to learning in higher education often short circuit the affective, as well as the cognitive, progression of students from authority-based thinking to the more complex self-authoring mode (Benner, Sutphen, Leonard, & Day, 2009; Saltzberg, 2011).

Current conceptualizations of research utilization and EBP clearly suggest that higher level cognitive processes are necessary for the appropriate selection, utilization, and evaluation of knowledge for practice, providing some guidance for nurse educators. In their systematic review of studies examining the influence of individual characteristics of nurses on their research utilization, Estabrooks et al. (2003) identified six categories of potential individual determinants: beliefs and attitudes, involvement in research activities, information seeking, professional characteristics, education, and other socioeconomic factors. In the beliefs and attitudes category, attitude toward research was the most frequently occurring variable across studies and “the only [individual factor] with a consistent pattern of positive effect” on research utilization (p. 516).

CONCLUSION

A groundswell of concern exists in the United States about the ability of health care professionals to marry extant knowledge with clinical concerns. The problem observed more than a decade ago of how research is incorporated into practice still exists and has been viewed as “something of a ‘black box phenomenon’” (Estabrooks, 1999, p. 758). Significant progress has been made in modeling the relationships among factors associated with research utilization and EBP. We understand well the nature and influence of contextual factors that affect research utilization in service settings, but we still have few insights into the influence of individual factors on the research utilization process. As one individual characteristic amenable to change, cognitive maturity may well be one of the most important individual factors affecting participation in EBP. It is essential that nurse educators focus on cultivating the requisite cognitive maturity for the process of integrating ever evolving knowledge into practice.

As health care evolves in complexity, “rules of formal logic may not suffice, and tentative answers or solutions... need to be ‘constructed’ rather than ‘discovered’” (Pascarella & Terenzini, 2005, p. 160) by nurse clinicians and managers. Even when deductive and inductive logic is of good quality, the prevailing prereflective and quasireflective assumptions among nursing students and practicing nurses interfere with an accurate and clear understanding of the value of research evidence in practice. King and Kitchener (1994) reminded us that an individual may use formal logic but may also believe in authority or revealed truth as the criterion for knowledge and fail to perceive the need to evaluate evidence. On the other hand, mature epistemic assumptions should enhance interest in and willingness to engage in clinical inquiry, research utilization, and EBP.

Inquiry into the relationship between cognitive maturity and EBP can inform instructional design to foster cognitive development and enhanced readiness for EBP. Systematic attention to the cultivation of cognitive maturity in both academic and practice environments can be anchored in models of cognitive development, such as the RJM, making it possible for faculty to be able to support and challenge learners more deliberately. Careful instructional design also has the potential to enhance students’ tolerance of the uncertainty and ambiguity inherent in some health care situations, freeing them to more effectively exercise clinical inquiry, clinical judgment, and advocacy and moral agency. A theoretically grounded approach to the intellectual development of nursing students and practicing nurses can cultivate more mature assumptions about the sources and certainty of knowledge and the role of evidence in the construction of truth claims. These more mature assumptions will foster greater engagement of nurses and nursing students in research utilization and EBP.

REFERENCES


King, P.M., & Kitchener, K.S. (2002). The reflective judgment model: Twenty years of research on epistemic cognition. In B.K. Hofer & P.R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 37-61). Mahwah, NJ: Lawrence Erlbaum.


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calaureate nursing education. IMAGE: Journal of Nursing Scholarship, 15, 115-119.