The goal of doctor of nursing practice (DNP) programs should be to produce nurses that are uniquely prepared to bridge the gap between the discovery of new knowledge and the scholarship of translation, application, and integration of this new knowledge in practice (American Association of Colleges of Nursing [AACN], 2006). However, there is concern over the variability in DNP programs and expected outcomes. The aim of this article is to describe a 5-point system of evaluation to determine whether a DNP final project meets the outcomes of the AACN Essentials of Doctoral Education in Advanced Nursing Practice (2006) in a comprehensive and rigorous way. In brief, the five criteria that must be met are represented by the acronym EC as PIE (E = Enhances; C = Culmination; P = Partnerships; I = Implements; E = Evaluates). Each criterion must be present and come together to form one complete “pie” representing evidence-based practice that is robust and innovative, culminating in a rigorous doctoral level DNP final project. In addition, we provide detailed examples of how these standards are currently being successfully implemented and discuss additional possibilities.
Background and Review of the Literature

The recent transformation in nursing education is apparent by significant growth in programs and enrollment. In 2006, there were only 20 DNP programs in the U.S.; by 2011, there were 184 programs. Enrollment has grown 10-fold from 892 students in 2006 to 8,973 in 2011 (AACN, 2012). These numbers show that nursing educators have taken AACN's (2004) and the IOM's recommendations to heart and are trying to meet the goal of increasing the educational level of nurses (IOM, 2010; NAS, 2005).

It must be a high priority for nursing faculty to insist on comparable quality in DNP and nursing doctor of philosophy (PhD) programs (Edwardson, 2010). Nursing leaders have called for building a culture of clinical scholarship to distinguish nurses who graduate with a practice doctorate (Mundinger et al., 2009) from a research doctorate. Arguments have been made that the DNP and the nursing PhD are complementary degrees (Hathaway, Jacob, Stegbauer, Thompson & Graff, 2006; Edwardson, 2010). A review of the doctorate in nursing practice briefly describes the DNP final project as “the implementation of research or other evidence into practice” (Dennison et al., 2012; p. 233) but does not provide specific examples or guidelines on how this project should be devised or implemented. Chism (2009) offers many DNP project options but offers no discussion of rigor or guidance to the educational institution or program on this issue. These inconsistencies pose several problems. In the absence of discrete guidelines, institutions are employing widely disparate interpretations of what a DNP doctoral project entails. Portfolios of case study narratives, logs, and short writing projects are some of the only descriptions in the literature of the final DNP project (Smolowitz & Honig, 2008). A DNP final project that is not clearly differentiated from competencies required of nurse practitioner students currently graduating at the master's level is also problematic. These deliverables are the current standards in courses in master's programs that prepare nurse practitioners and do not seem adequate for the level of achievement assumed when earning a doctoral degree. The (EDEAPN) describe an advanced practice nurse as one who is able to do much more than provide direct patient care (AACN, 2006).

The (AACN, 2006) provides some explanation on the final DNP project and gives various examples; however, there are concerns that these example projects do not require the DNP graduate to demonstrate doctoral-level knowledge and skills. Some critics question how the Commission on Collegiate Nursing Education (CCNE) can accredit programs with few required credit hours and no evidence of a project that is at the doctoral level. However, this critique is misplaced. The CCNE can only determine if a program meets the guiding criteria (AACN, 2006; National Organization of Nurse Practitioner Faculties [NONPF], 2007). We propose that if discrepancies have caused this confusion, then changes need to be put into place to clarify the standards. Until these changes occur, the critique and the responsibility will lie with the DNP-granting institution's faculty. The faculty must decide that the program and the graduates that they are responsible for will obtain a doctoral degree with rigor and quality (Edwardson, 2010).

This variability and nonstandard implementation across the country makes it very difficult to judge the quality or to compare the DNP degrees being conferred. Our aim is to introduce a system to clarify how faculty can evaluate the final DNP project to determine if the outcomes described in the EDEAPN (AACN, 2006) have been met by the graduate.

**EC as PIE**

The five criteria that must be fulfilled by the final DNP project are based on the definition of the project put forth and agreed upon by AACN (2006) and NONPF (2007). This definition states that the project should address a complex practice, process, or systems problem in the practice setting, (and) use evidence to improve practice, process, or outcomes. This makes it clear that the DNP graduate must actually complete a project in the practice setting and must evaluate what was implemented to determine the outcomes.

The five criteria that we propose are represented by the acronym EC as PIE (E = Enhances; C = Culmination; P = Partnerships; I = Implements; E = Evaluates). Each criterion must be present and come together to form one complete “pie” representing evidence-based practice that is robust and innovative, culminating in a DNP final project that makes a difference (Figure 1).

The DNP project must do the following:

1. Enhance health outcomes, practice outcomes, or health care policy. The DNP project can be

![Figure 1. EC as PIE: Five criteria for executing a successful DNP final project.](image-url)
patient-centered and validate present health care systems or invalidate them and replace them with newer, more efficient models of care, or may be a project that reflects key provisions in health care policy such as those outlined and mandated in the Affordable Care Act (U.S. Department of Health and Human Services, 2013).

2. Reflect a culmination of practice inquiry. The DNP student must identify and become an expert on a specific problem or topic and use knowledge and competencies gained in the doctoral program to enact change. This change must be pragmatic and practical, likely to be used in the real-world setting in a timely, reproducible, and sustainable fashion. Ideally, changes in the clinical setting should be able to interface with the electronic health record (EHR) and could satisfy the required clinical quality measures from the Centers for Medicare and Medicaid (2013a).

3. Require engagement in partnerships. The DNP student must form partnerships and collaborate on interprofessional and/or interdisciplinary teams, with patients who are consumers of health care, within systems that provide health care, and with policy makers on a state or national level in a leadership position.

4. Implement/Apply/Translate evidence into practice. The DNP student must understand that although finding and evaluating evidence is important, it is just as important to apply the evidence to a specific clinical situation considering each individual’s perspective and on a larger scale societal value when it comes to systems of care and health care policy.

5. Require evaluation of health care, practice, or policy outcomes. The DNP may include outcome measures such as direct patient health care measures, costs, quality improvement and accessibility of care, or outcomes of an existent or newly implemented system of care or health care policy on an individual or population level.

If a DNP student proposes a final project and its successful completion demonstrates all of the five pieces of the pie, then it will be EC as PIE to determine if the project represents work at the practice doctoral level.

Exemplars

Using the five criteria makes evaluating a DNP final project straightforward, but illustration by way of examples can clarify for both students and faculty if EDEAPN (AACN, 2006) are being actualized. The following three projects are presented as examples of how EC as PIE can be applied to any project. The examples are chosen from a spectrum of possibilities of published DNP projects (Table 1), and the settings and populations served are varied. The first project takes place in a small primary care practice for underserved children and families. The second is implemented in critical care units in a major medical center with critically ill patients, and the final project example takes place in a long-term care facility. All reflected collaborative efforts of students at practice sites and addressed current health or health care issues in the various environments. To ensure patient safety and compliance with evidence-based guidelines, the studies received Institutional Review Board (IRB) approval and implemented evidence to make a difference in health outcomes, systems, and quality of care in the real world. They are described briefly to illustrate the criteria in the checklist (as noted in parentheses).

The Asthma Control and Elimination of Symptoms (ACES) Program

The aim of this project was to improve asthma symptoms in children in a primary care setting (Caruso, Holditch-Davis, Bartlett, & Turner, 2010). A major focus of the project was implementing all recommended evidence-based guidelines from the National Asthma and Education Prevention Program (NAEPP), Expert Panel Report 3 Guidelines (National Heart, Lung, and Blood Institute [NHLBI], 2007). When all components of the guideline are not implemented, health improvements are not consistently realized (Doherty et al., 2007). The success of this program involved participation across professions including the DNP student (a Nurse Practitioner [NP]) staff registered nurse, medical assistant, pediatrician, and school nurses (P = partnerships). The intervention consisted of three office visits, including assessment,

Table 1. Additional Examples of Other Published DNP Projects That Meet the Five Criteria for DNP Projects That Make A Difference

education, and a mutually developed plan of care between the NP and patient/family and a follow-up telephone call over a 3-month period (I = implements). Outcome measures were derived from the clinical tool endorsed by the NAEPP guidelines (NHLBI, 2007), and the Children's Asthma Control Test (Liu et al., 2007) measured before and after the program demonstrated significant clinical improvement on every measure (E = evaluation). Clinical improvement was also noted on measures related to use of prevention medication, asthma severity, completion of an Asthma Action Plan, communication with the school nurse, and keeping follow-up appointments (E = enhances; C = culmination).

This project's sustainability was essential because asthma care measures are tracked by Medicaid and on EHRs as part of meaningful use (CMS, 2013a). To date, the ACES program continues to be successful in reducing morbidity from asthma, and the practice has received meaningful use financial incentives (CMS, 2013b; D. Caruso, personal communication, November 1, 2013).

Prevention and Reduction of Catheter Associated UTIs

The goal of this project was to prevent or reduce hospital-acquired catheter-associated urinary tract infection (HA-CAUTI; Fuchs, Sexton, Thornlow, & Champagne, 2011). Every year in the United States, there are approximately 450,000 HA-CAUTIs with an estimated cost of $1,000 for each of these (CDC, 2009). HA-CAUTIs a publicly reportable measure of hospital quality (CMS, 2013c). A multidisciplinary team of stakeholders was developed including the DNP student, the medical director of the infection control program, staff nurses from the nursing practice council, associate chief nursing officer for practice, assistant director of education services, clinical nurse educator, informatics nurse, and clinical nurse specialist (P = partnerships). The project consisted of three key interventions based on the Institute for Healthcare Improvement's recommendations for reducing HA-CAUTIs Institute for Healthcare Improvement, (2013). These included a best practice algorithm, a checklist to assess the need for continuation of a urinary catheter and procedure-specific guidelines for insertion and removal. This project included having the checklist embedded in the EHR and staff education developed and placed on the hospital systems' learning management system. Face-to-face educational opportunities were also available (C = culmination). The project was implemented across five intensive care units (ICUs; 80–100 beds) and included 408 providers (physicians and NPs; I = implements). Compliance with the three-pronged program averaged 75% (61%–82.9%) across the ICUs. Clinical improvement was seen when urinary catheter days in the neurological and medical ICUs were compared in the 4 months before and 4 months after, falling from 402 to 380. Rates of HA-CAUTIs across all ICU in the same time period fell from 2.88 to 1.46/1000 catheter days (E = enhances; E = evaluation).

Improve Health Care-Associated Infections in a Long-Term Care Facility

The purpose of the last project example was to improve health care-associated infections (HCAIs) in a long-term care facility (Hypes, personal communication). HCAIs are reported to occur in U.S. nursing homes at rates ranging from 1.6 to 32.7 infections per 100 residents per month (Arias, 2010), and treatment of these infections can cost from $4,000 to 6,000 per episode (Strausbaugh & Joseph, 2000). This project required collaboration with and support from the nursing home director, physician and nurse practitioner providers, staff nurses, and certified nursing assistants (CNAs; P = partnerships). The educational intervention targeted the 66 CNAs in this 120-bed nursing home who provide the majority of hands-on patient care. The intervention was based on the World Health Organization (2009), which included questionnaires to measure knowledge and perceptions on hand washing (I = implements). Although the difference in the scores before and after the intervention on these two measures did not change, infection rates did change. The infection prevalence was 20% each month for the 2 months before the intervention. In the month the intervention was implemented and the month after, the rate was 9%; in the next month, the rate was 1% for a decrease of 42% (C = culmination; E = enhances). The cost savings in the month after the intervention was estimated to be at least $48,000 (E = evaluation). Decreased infection rates have been sustained for 12 months and have led to a replication planned in another long-term care facility (Hypes, personal communication, October 18, 2013).

Discussion

DNP program quality is variable, and criteria for evaluating DNP final projects are lacking. Nurse faculty need guidance to develop high-quality programs with rigorous outcomes (Edwardson, 2010; Kirkpatrick & Weaver, 2013). The DNP final project is the demonstration of what the DNP student can achieve with newly acquired knowledge and skills. This must be distinguished from competencies learned at the bachelor's and master's levels (Mundinger et al., 2009). The EC as PIE criteria can be used by nurse educators to ensure fulfillment of the AACN EDEANP (2006) requirements.

Each of the project examples demonstrated measurable quality improvements in health systems as evidenced by direct health measures, economic analysis, sustainability in the health care environment, and interface with the EHR when applicable/possible. Improving a patient's health, a health care system, or larger system of care should be the goal of every DNP final project; however, this does not mean that a project that fails to demonstrate significant change would not meet these criteria. Most of the innovators recognize that every attempt at improvement can be evaluated and lead to improved interventions in the future. What is most essential is that quality improvement measures should focus on what is
important to a patient or patients within a system. When evaluating a clinical practice need, a disease-specific measure should be used when appropriate (such as the Children’s Asthma Control Test tool in asthma outcomes). Cost effectiveness, impact on systems, and healthy policy also need to be measured. This type of data can guide providers, administrators, and other stakeholders on best practice, cost savings, time allocation, policy initiatives, and identification of other relevant but not immediately recognizable gaps in health care on an individual or system level. Compare this concept with the EDEAPN (2006) example of a critical integrative review of the literature that does not have a clearly defined methodology (as opposed to the methodology of a systematic review that maybe undertaken at the doctoral level by PhD candidates) and does not require engaging health systems or practice partners nor demonstrates any change in health systems, policy, or patient outcomes (Table 2).

The results of these projects are presented as making a clinical difference or a difference in practice. This is done to iterate the purpose of the DNP project as practice based and one that produces internal evidence (Melnyk, 2013) that is not held to the standard of generalizability but has the potential for transferability. The DNP student is charged with bringing already-proven evidence to practice and evaluating its impact in the real world of practice not proving the effectiveness of the evidence itself (research has already done that). All of the examples also collected quantitative data. This is not meant to infer that a DNP project could not collect qualitative data. Qualitative information may be very appropriate as a component of evaluation depending on the outcomes being measured.

Another common characteristic of these projects was their use of evidence-based guidelines and tools with proven validity previously developed by researchers, reputable organizations, or experts. This is part of the expected standard of care of using evidence in practice. It significantly strengthens the evaluations and adds to the body of knowledge about the use of these guidelines and tools, increasing the likelihood of transferring these projects to other settings. However, when working in smaller practice settings, the problems identified may not yet have such tools suited to their use. The available data may dictate that the DNP student uses his or her newly acquired skills in innovation and outcome measurement and evaluation to develop something entirely novel for use in these situations. It may also necessitate the need for a student to collect all the facts and record all observations even if it does not appear immediately relevant, so data can be continually and critically appraised for usefulness in the setting.

Another key aspect of these example projects is that they demonstrated the culmination of knowledge and competencies learned in the program. These projects demonstrated the student’s expertise related to the problem and the use of knowledge and skills acquired in the DNP program to try and solve the identified problems. Compare this with a one-time collection of data that might occur with a chart review or a questionnaire. A local review of charts to identify a problem or a questionnaire deployed to a local audience while producing data that can be analyzed does not demonstrate any enhancement in health outcomes, change in systems of care or health care policy, quality improvement, or cost analysis. A final DNP project might make use of these techniques to gather baseline and outcome data, but without implementation of an evidence-based intervention, the AACN EDEAPN or the five criteria for DNP projects that make a difference are not fulfilled (Table 2).

These projects required several months to complete, but time that a project takes should not be the sole criteria for judging culmination. In terms of best approach, a clinician with expertise requires time to analyze risks versus benefits, gaps in care, policy initiatives, or impact on a system before proceeding with a project. Unless a health care provider takes the time and uses skills and past experiences to identify these issues, it would be difficult or nearly impossible to find a starting point at which to apply evidence. In addition, analysis of the

<table>
<thead>
<tr>
<th>Project</th>
<th>E</th>
<th>C</th>
<th>P</th>
<th>I</th>
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</thead>
<tbody>
<tr>
<td>Practice portfolio that documents the final practice synthesis and scholarship</td>
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<td>M</td>
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<td>Program evaluation</td>
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<td>Evaluation of a new practice model</td>
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<tr>
<td>A consulting project</td>
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<td>M</td>
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<td>M</td>
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<tr>
<td>Manuscript submitted for publication</td>
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<td>M</td>
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<tr>
<td>Systematic review</td>
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<td>N</td>
<td>M</td>
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<tr>
<td>Research utilization project</td>
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<td>Y</td>
<td>Y</td>
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<tr>
<td>Practice topic dissemination</td>
<td>N</td>
<td>M</td>
<td>M</td>
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<tr>
<td>Substantive involvement in a larger endeavor</td>
<td>M</td>
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</tbody>
</table>

N = no; M = maybe; Y = yes.
people, including patients, providers, and stakeholders in a system, is essential because each carries a unique expectation, priority, concern, and preference. All of this is brought into the project, and these must be considered and integrated into the decision-making process.

Implementing practice change in the real-world setting cannot be accomplished in isolation. Health care is complex, and often, multiple professions and system must be engaged. The DNP student must demonstrate the ability to lead interprofessionally and interorganizationally to successfully implement the final project. These examples demonstrate varying levels of leadership depending on the setting and the project itself. For the DNP graduate to work jointly with all health-related stakeholders and make an impact on health and health care in our nation after graduation, he or she must be able to actually demonstrate this accomplishment upon the completion of the DNP program (NONPF, 2007).

The complexity and scale of these projects were varied, from a one-time educational intervention with CNAs in a nursing home to multiple interventions across time to one involving multiple ICUs using a multimodal intervention and point-of-care reinforcement in the EHR. DNP projects will vary in scope, depending on the problem, the site, and the culture where they will take place. The authors believe that the standard for success in a doctoral program should be based on individual outcomes where the collaboration for change is demonstrated with the practice partners. However, that does not preclude the possibility of similar interventions occurring at multiple sites with individual student leaders at each site or projects where sustainability issues need to be addressed by subsequent students or an existing project is implemented in another site. No matter what the situation, the EC as PIE criteria should still apply, providing guidelines for successful execution of the DNP final project.

**Conclusion**

Faculty of DNP programs have a responsibility to their profession (AACN, 2004; IOM, 2010; NONPF, 2007) and to students to develop high-quality doctorate of nursing practice programs that produce a doctorally prepared nurse who can bridge the research to practice gap. The five criteria for DNP projects that make a difference are EC as PIE way to determine if the DNP student meets the AACN EDEANP (2006). It can be used to both develop a proposed project and guide the execution of the final project. A DNP final project that meets the five criteria will be one that enhances health outcomes for individual patients or systems of care. It will be a reflection of the culmination of practice inquiry; demonstrating that the student has become an expert on a specific problem and uses knowledge and competencies gained in a program to enact meaningful change. The project will include engagement in partnerships of various types such as inter/intraprofessional or interdisciplinary, consumers or patients, and systems and will implement evidence into practice. Evaluation of the project will focus on the impact the project has on the individual, system or population, or on a particular health care initiative. Finally, we should ask one simple question: Why is this important? The DNP project and terminal degree are useful in illustrating and addressing the paradigm shift in the field of advanced practice nursing today. Nurses are expected to use evidence in practice and are expected to integrate best available research in practice; the DNP project allows for nurses to combine their wealth of clinical expertise with patients’ values and system expectations to impact the present and future complex health care delivery system and health outcomes of the nation.

**References**


