

Are we using the best instructional strategies to promote critical-thinking skills in our graduates? An evaluation of the critical-thinking skills components in a 2-Year State College nursing program.

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Introduction

The ability of graduates from nursing education programs to think critically in the clinical setting is an important role of a registered nurse (Oermann, 2000). In studies of nursing graduate preparedness, Del Bueno (2005) and Flores, Matkin, Burbach, Quinn, and Harding (2012) found that less than half of nursing graduates think critically.

Background

If nursing graduates are expected to demonstrate the ability to think critically and made decisions quickly in the clinical setting as reported by Oermann (2000), how best can the failure of graduates to demonstrate critical-thinking skills be addressed? Oermann suggested the inclusion of instructional strategies to develop critical-thinking skills would address the deficiencies reported by employers; however, faculty who claimed to have implemented instructional components within the curriculum to promote development of critical-thinking skills did not observe improved demonstration of these skills in their students. The employers in the study by Oermann reported the same deficiencies as those employers reported in the Del Bueno study.

Statement of the Problem

Local nursing employers reported to Palm Beach State College nursing program administrators not all graduates from the nursing program were able to use critical thinking skills to reach sound clinical judgments in the health care setting. To assess the instructional strategies (critical-thinking skills components) used to promote critical-thinking skills in nursing students at the college, a program evaluation was conducted to produce and analyze data for improvement of the critical thinking skills of graduates from the 2-year nursing program.

Purpose of the Study

The purpose of this study was to evaluate the critical-thinking skills components currently used in a 2-year state college nursing program. Through data-gathering tools, the study incorporated feedback from nursing alumni, nursing graduate employers, and directors of successful nursing programs on their perceptions regarding the criteria of preferred practices of critical-thinking skills components to be included in a nursing program. The findings from this study were expected to be used to develop a plan to improve the existing critical-thinking skills components in the nursing program.

Methodology

Once evaluation research methodology was selected for this study, a review of related literature was conducted to explore the design models appropriate for evaluation studies. Three design models were identified: (a) the context-input-process-product (CIPP) model described by Stufflebeam (2007); (b) the Rossett (2009) model, which examines performance drivers and obstacles; and (c) the Varcoe (2003) model, which evaluates programs targeted for improvement. The evaluation methodology described by Varcoe (2003) was identified as appropriate for this study as it would provide a

gap analysis and the best action plan for improvement in the instructional strategies used in the nursing program.

A series of procedures was used to collect, analyze and compare data from the nursing program. The procedures used in the program evaluation identified (a) the list of best practices of instructional strategies (critical-thinking skills components) found in the review of literature, (b) the perceptions of nursing alumni and employers of nursing graduates regarding the preferred practices of instructional strategies (critical-thinking skills components), and (c) the perceptions of directors of successful nursing programs regarding the preferred practices of instructional strategies (critical-thinking skills components) used in their programs. The final procedures produced a gap analysis and the plan to improve the existing instructional strategies (critical-thinking skills components) in the nursing program.

Research Questions

Six research questions were proposed as the focus of this evaluation study:

1. What are the critical-thinking skills components that are included in the curriculum that is currently offered in the nursing program at the college?
2. What do researchers and authors indicate as preferred practices for critical-thinking skills components in nursing program curricula?
3. What are the perceptions of the nursing school alumni regarding the criteria of preferred practices of critical-thinking skills in a nursing program curriculum?
4. What are the perceptions of employers regarding the criteria of preferred practices of critical-thinking skills in a nursing program curriculum?
5. What are the perceptions of directors of successful nursing programs regarding the criteria of preferred practices for the integration of critical-thinking skills components in the curricula at their organizations?
6. What criteria of preferred practices could be included in a plan to improve the critical-thinking skills components of the nursing program?

Participants

The participants for this study were alumni of the nursing program at the college, employers of graduates of the nursing school, and directors of nursing schools who successfully integrated critical-thinking skills components in their curriculum. The inclusion criteria for the nursing alumni sample were 150 nursing school alumni from the 2011 and 2012 graduating classes identified through information provided by the college registrar who is the custodian of student records. The inclusion criteria for the employer sample were 12 employers of graduates of the nursing school identified through information provided by the college nursing program director as the custodian of the school of nursing business partnership council database. The inclusion criteria for the nursing director sample were 10 directors of nursing schools with 2-year registered nursing programs approved by the state and with demonstrated success in the critical-thinking skills of their graduates through observed scores at or above the state pass rate on the NCLEX RN. Directors of nursing schools were identified from the report published by the Office of Program Policy Analysis and Government Accountability, an arm of the state legislature listing the NCLEX–RN scores for graduates from nursing schools in the state.

The exclusion criteria for participants were identified as nursing alumni who were not part of the graduating classes from 2011 and 2012, employers who did not employ graduates from the nursing school at the college, and directors whose students did not demonstrate success on the NCLEX–RN scores at or above the state level as

published in the report of the Office of Program Policy Analysis and Government Accountability.

Data-Gathering Tools

Data collection, according to O’Leary (2009), involves seeking feedback from stakeholders on their perceptions of the process or program being evaluated. These stakeholders include program graduates and employers of the graduates. O’Leary found that surveys are the form of data-gathering tools most frequently used in evaluative research. A preliminary review of various websites was conducted to obtain predeveloped data-gathering tools pretested for validity and reliability appropriate for this study; however, no appropriate data-gathering tools were found. Therefore, three data-gathering tools were developed by the original project steering committee. The three data-gathering tools used in this study included (a) nursing alumni survey, (b) nursing graduate employer survey, and (c) nursing director survey.

The data-gathering tools examined (a) perceptions of graduates on the criteria of preferred practices of critical-thinking skills in a nursing program curriculum through a nursing alumni survey (see Figure 1), (b) perceptions of employers regarding the criteria of preferred practices of critical-thinking skills in a nursing program curriculum through a nursing graduate employer survey (see Figure 1), and (c) perceptions of directors of successful nursing programs regarding the criteria of preferred practices for the integration of critical-thinking skills components in the curricula at their organizations through a nursing director survey (see Figure 1).

Procedures

Varcoe (2003) recommended a designated set of procedures to be conducted to complete an evaluation study. The following 11 procedures were designed and implemented to answer the six research questions. Each procedure includes the activity, outcome, and rationale for conducting the procedure.

Procedure 1. The curriculum currently used at the nursing school was assessed to determine the criteria of critical-thinking skills components used to instruct nursing students. This examination of the instructional strategies used in the nursing curriculum yielded a list of current practices examined in the final evaluation process of this study (Table 1). The rationale for conducting Procedure 1 was to answer Research Question 1 (What are the critical-thinking skills components that are included in the curriculum that is currently offered in the nursing program at the college?).

Table 1. Critical-thinking Skills Components Currently in Use

Critical-thinking skills Components	Semester
Reflection paper	1, 2,
Simulations using human patient simulators	1, 2, 3, 4
Case studies (homework)	1, 2, 3, 4
Learning group presentations	1, 2, 3, 4
Discussion questions (online)	1, 2, 3, 4

Daily Holistic Assessment Tool	1, 2, 3, 4
Clinical/situational decision making	1, 2, 3, 4
Concept mapping	3
NCLEX–RN review sessions	4
Reflective writing (journaling)	1, 2
Case study presentations in class	1, 2, 3, 4
Writing assignments with instructor critique/feedback	4

Procedure 2. An exhaustive review of related literature was conducted to develop a list of best practices to integrate critical-thinking skills components in nursing school curriculum (Table 2). The list of criteria was augmented and expanded via data-gathering instruments administered to the participants. The rationale for conducting Procedure 2 was to answer Research Question 2 (What do researchers and authors indicate as preferred practices for critical-thinking skills components in nursing program curricula?).

Table 2. Preferred Practices for Critical-thinking skills Components

Preferred Practices	Authors
Reflection, problem-based learning, human patient simulation	Aari et al. (2008), Applin et al. (2011), Bambini et al. (2009), Behar-Horenstein (2011), Binding et al. (2010); Difederico-Yates (2008), Dillon et al. (2009), Fero et al. (2010), Forneris & Peden-McAlpine (2009), Jones (2008), Kaddoura (2010, 2011), Lauver et al. (2009), Mahoney et al. (2012), Moule (2011), Murray et al. (2008), Niemer et al. (2010), Overstreet (2008), Ozbicakci et al. (2012), Rose et al. (2012), Sole et al. (2012), Staun et al. (2010), Sullivan-Mann et al. (2009), Vittrup & Davey (2010), Yuan et al. (2008), Yuan et al. (2011), and Yoo et al. (2009).
Reflective journaling	Binding et al. (2010), Borglin (2012), Carter & Rukholm (2008), Forneris & Peden-McAlpine (2009), Hendrix et al. (2012), Jones (2008), Karsten (2012), Marchigiano et al. (2011), Newton & Moore (2010), Palese et al. (2008), Powell (2008), and Sadler-Smith & Burke (2009).
Case studies	Haleem et al. (2010), Howard et al. (2010), Kaddoura (2011), Lauver et al. (2009), Lunney (2010), Yildirim & Ozkahraman (2011), and Zimmerman et al. (2011).

Small-group activities, peer mentoring, study groups, and learning partners	Newton & Moore (2010), and Wiggs (2011).
Dialogue, debate, and open-ended questioning	Facione & Facione (2008), Forneris & Peden-McAlpine (2009), Henderson et al. (2012), Hunter (2009), and Jones (2008).
Concept mapping	Chabeli (2010), St. Cyr & All, (2009), and Taylor & Littleton-Kearney (2011).
Writing assignments	Newton & Moore (2010), and Powell (2008).

Procedure 3. The original steering committee was expanded to include one additional internal stakeholder with knowledge and experience of the nursing school curriculum. The members of this executive committee were internal to the nursing school and served in an advisory capacity to develop criteria for this evaluation study. A complete list of the members of the executive committee and their qualifications is shown in Table 3. The executive committee reviewed and discussed the list of current practices of critical-thinking skills components in the nursing school curriculum, the list of best practices developed from the literature review, and the three data-gathering tools developed by the original steering committee in their preliminary work approved by officials at the nursing school. The executive committee reviewed and recommended the two lists of criteria, and the data-gathering tools were appropriate for this study.

Table 3. Executive Committee

Positions	Qualifications
Nursing Program Faculty and Department Chair, Freshman level	Master of Science in Nursing
Nursing Program Faculty and Department Chair, Sophomore level	Master of Science in Nursing
Nursing Program Director	Doctor of Education, Technology and Curriculum; Master of Science in Nursing

Procedure 4. The three data-gathering tools (i.e., nursing alumni survey, nursing graduate employer survey, and nursing director survey) were administered to the appropriate participants, which included (a) 150 nursing school alumni, (b) 12 employers of nursing school graduates, and (c) 10 directors of nursing schools who had successfully incorporated critical-thinking skills components in their academic programs as demonstrated by scores of graduates on the NCLEX–RN at or above the state pass rate. The results of the three data-gathering tools were compiled to determine best practices for the inclusion of critical-thinking skills components in a nursing school curriculum and were integrated with the list of best practices gleaned from the literature review (Figure 1).

The rationale for conducting Procedure 4 was to answer Research Question 3 (What are the perceptions of the nursing school alumni regarding the criteria of preferred practices of critical-thinking skills in a nursing program curriculum?),

Research Question 4 (What are the perceptions of employers regarding the criteria of preferred practices of critical-thinking skills in a nursing program curriculum?), and Research Question 5 (What are the perceptions of directors of successful nursing programs regarding the criteria of preferred practices for the integration of critical-thinking skills components in the curricula at their organizations?).

Figure 1. Data-gathering tools

NURSING SCHOOL DIRECTOR SURVEY
Director Perceptions of Critical Thinking Skills Components in Nursing Programs

Date: _____
Instructions: Do not put your name on this sheet.

Section I. Circle appropriate number for each item. A score of '5' indicates strong agreement with the statement; a score of '1' indicates strong disagreement with the statement.

	Low Score	High Score
1) Through instructional strategies, nursing students are able to gather information about clinical problems.	1	2 3 4 5
2) Through instructional strategies, nursing students are able to discern relevant information from non-relevant information gathered on clinical problems.	1	2 3 4 5
3) Through instructional strategies, nursing students are able to analyze the gathered information regarding clinical problems.	1	2 3 4 5
4) Through instructional strategies, nursing students are able to develop alternative solutions for the clinical problems.	1	2 3 4 5
5) Through instructional strategies, nursing students are able to offer viewpoints on possible solutions to the clinical problems and are open-minded to the viewpoints of others.	1	2 3 4 5
6) Through instructional strategies, nursing students are able to compare and contrast ideas and beliefs.	1	2 3 4 5
7) Through instructional strategies, nursing students can differentiate between facts and opinions.	1	2 3 4 5
8) Through instructional strategies, nursing students can differentiate between accurate and erroneous information.	1	2 3 4 5
9) Through instructional strategies, nursing students can substantiate and support their conclusions.	1	2 3 4 5
10) Through instructional strategies, nursing students can recall nursing content and apply it during clinical reasoning and to make therapeutic judgments.	1	2 3 4 5
11) Through instructional strategies, nursing students can think within the point of view of the nursing profession.	1	2 3 4 5

	Low Score	High Score
12) Through instructional strategies, nursing students know how to ask questions that experts in the nursing profession routinely ask.	1	2 3 4 5
13) Through instructional strategies, nursing students demonstrate clear thinking.	1	2 3 4 5
14) Through instructional strategies, nursing students demonstrate accurate thinking.	1	2 3 4 5
15) Through instructional strategies, nursing students think deeply.	1	2 3 4 5
16) Through instructional strategies, nursing students think logically.	1	2 3 4 5
17) Through instructional strategies, nursing students think fairly.	1	2 3 4 5
18) Through instructional strategies, nursing students can distinguish what they know from what they don't know.	1	2 3 4 5
19) Through instructional strategies, nursing students can identify themes from the information gathered to solve clinical problems.	1	2 3 4 5
20) Through instructional strategies, nursing students develop and use critical thinking skills in the nursing process.	1	2 3 4 5

Section II. Select the successfully integrated critical thinking components used in your curriculum. Use blank lines to insert additional components.

<input type="checkbox"/> Reflection	<input type="checkbox"/> Small group present
<input type="checkbox"/> Reflective writing (journaling)	<input type="checkbox"/> Peer mentoring
<input type="checkbox"/> Dialogue/Socratic	<input type="checkbox"/> Study groups
<input type="checkbox"/> Questioning/Debate/Argumentation	<input type="checkbox"/> Concept mapping
<input type="checkbox"/> Discussion questions (online)	<input type="checkbox"/> Scaffolding
<input type="checkbox"/> Clinical/situational decision making	<input type="checkbox"/> Learning modules
<input type="checkbox"/> Simulations (high-fidelity simulators)	<input type="checkbox"/> Daily Holistic Tool
<input type="checkbox"/> Role-playing	<input type="checkbox"/> Other
<input type="checkbox"/> Problem-based learning assignments	<input type="checkbox"/> Other
<input type="checkbox"/> Case studies	<input type="checkbox"/> Other
<input type="checkbox"/> Writing assignments with instructor critique/feedback	<input type="checkbox"/> Other

Section III. Please provide any other information regarding student nurses' preparation for professional employment as a Registered Nurse.

Thank you for your feedback. Please return survey in the envelope provided.

NURSING ALUMNI SURVEY
Graduate Perceptions of Critical Thinking in Nursing Education Program

Date: _____
Instructions: Do not put your name on this sheet.

Section I. Circle appropriate number for each item. A score of '5' indicates strong agreement with the statement; a score of '1' indicates strong disagreement with the statement.

	Low Score	High Score
1) I was encouraged to gather information about clinical problems encountered during my RN program.	1	2 3 4 5
2) I was instructed how to discern relevant information from non-relevant information gathered on clinical problems encountered during my RN program.	1	2 3 4 5
3) I was asked to analyze the gathered information regarding clinical problems encountered during my RN program.	1	2 3 4 5
4) I was able to develop alternative solutions for the clinical problems encountered during my RN program.	1	2 3 4 5
5) I was encouraged to offer viewpoints on possible solutions to the clinical problems encountered during my RN program and be open-minded to the viewpoints of others.	1	2 3 4 5
6) I can compare and contrast ideas and beliefs.	1	2 3 4 5
7) I can differentiate between facts and opinions.	1	2 3 4 5
8) I can differentiate between accurate and erroneous information.	1	2 3 4 5
9) I can substantiate and support my conclusions.	1	2 3 4 5
10) I can recall nursing content and apply it during clinical reasoning and to make therapeutic judgments.	1	2 3 4 5
11) My instructors helped me learn how to think within the point of view of the nursing profession.	1	2 3 4 5
12) My instructors helped me learn how to ask questions that experts in the nursing profession routinely ask.	1	2 3 4 5
13) My instructors used teaching strategies that enabled me to think more clearly.	1	2 3 4 5

	Low Score	High Score
14) My instructors used teaching strategies that enabled me to think more accurately.	1	2 3 4 5
15) My instructors used teaching strategies that enabled me to think more deeply.	1	2 3 4 5
16) My instructors used teaching strategies that enabled me to think more logically.	1	2 3 4 5
17) My instructors used teaching strategies that enabled me to think more fairly.	1	2 3 4 5
18) My instructors used teaching strategies that helped me learn how to distinguish what I know from what I don't know.	1	2 3 4 5
19) My instructors used teaching strategies that helped me identify themes from the information I gathered to solve problems.	1	2 3 4 5
20) My instructors used teaching strategies that enabled me to develop and use critical thinking skills in the nursing process.	1	2 3 4 5

Section II. Check all teaching strategies that aided your development of critical thinking skills during your instruction in the nursing education program.

<input type="checkbox"/> Reflection paper	<input type="checkbox"/> Learning group presentations
<input type="checkbox"/> Clinical/situational decision making	<input type="checkbox"/> Daily Holistic Assessment Tool
<input type="checkbox"/> Simulations	<input type="checkbox"/> Concept mapping
<input type="checkbox"/> Case study presentations in class	<input type="checkbox"/> Reflective writing (journaling)
<input type="checkbox"/> Case studies (homework)	<input type="checkbox"/> Writing assignments with instructor critique/feedback
<input type="checkbox"/> Discussion questions (online)	

Section III. Please provide any other information that you feel prepared you for professional employment as a Registered Nurse.

Thank you for your feedback. Please return survey in the envelope provided.

NURSING GRADUATE EMPLOYER SURVEY Employer Perceptions of Critical Thinking in Graduates of Nursing Program		
Date: _____		
Instructions: Do not put your name on this sheet.		
Section I. Circle appropriate number for each item. A score of '5' indicates strong agreement with the statement; a score of '1' indicates strong disagreement with the statement.		
	Low Score	High Score
1) Nursing graduates are able to gather information about clinical problems in the workplace.	1	2 3 4 5
2) Nursing graduates are able to discern relevant information from non-relevant information gathered on clinical problems in the workplace.	1	2 3 4 5
3) Nursing graduates are able to analyze the gathered information regarding clinical problems in the workplace.	1	2 3 4 5
4) Nursing graduates are able to develop alternative solutions for the clinical problems encountered in the workplace.	1	2 3 4 5
5) Nursing graduates are able to offer viewpoints on possible solutions to the clinical problems and are open-minded to the viewpoints of others.	1	2 3 4 5
6) Nursing graduates can compare and contrast ideas and beliefs.	1	2 3 4 5
7) Nursing graduates can differentiate between facts and opinions.	1	2 3 4 5
8) Nursing graduates can differentiate between accurate and erroneous information.	1	2 3 4 5
9) Nursing graduates can substantiate and support their conclusions.	1	2 3 4 5
10) Nursing graduates can recall nursing content and apply it during clinical reasoning and to make therapeutic judgments.	1	2 3 4 5
11) Nursing graduates can think within the point of view of the nursing profession.	1	2 3 4 5
12) Nursing graduates know how to ask questions that experts in the nursing profession routinely ask.	1	2 3 4 5
13) Nursing graduates demonstrate clear thinking.	1	2 3 4 5

14) Nursing graduates demonstrate accurate thinking.	1	2 3 4 5
15) Nursing graduates think deeply.	1	2 3 4 5
16) Nursing graduates think logically.	1	2 3 4 5
17) Nursing graduates think fairly.	1	2 3 4 5
18) Nursing graduates can distinguish what they know from what they don't know.	1	2 3 4 5
19) Nursing graduates can identify themes from the information gathered to solve clinical problems.	1	2 3 4 5
20) Nursing graduates use critical thinking skills in the nursing process.	1	2 3 4 5
Section II. Please provide any other information regarding graduate nurses' preparation for professional employment as a Registered Nurse.		

Thank you for your feedback. Please return survey in the envelope provided.		

Procedure 5. The results of the three data-gathering tools and the list of best practices critical-thinking skills components in a nursing school curriculum were presented to the executive committee. The executive committee reviewed this compiled list of best practices, and consensus was reached the best possible list of best practices had been developed for this study.

Procedure 6. In this procedure, an evaluation tool was developed. This tool is composed of four sections: (a) a list of criteria of current practices to integrate critical-thinking skills components in the nursing school curriculum; (b) a list of criteria of best practices to integrate critical-thinking skills components in a nursing school program, as constructed from the literature review and the three data-gathering tools; (c) a section for a gap analysis identifying which criteria of current practices were compared to the criteria of best practices; and (d) a section for recommendations listing the areas in which the gap analysis indicates that the current process of inclusion of critical-thinking skills in the nursing program has been found lacking. The evaluation tool is included in the report (see Table 4). The rationale for conducting Procedure 6 was to answer Research Question 6 (What criteria of preferred practices could be included in a plan to improve the critical-thinking skills components of the nursing program?).

Table 4. Program Evaluation Tool

Current critical-thinking skills components in the nursing school curriculum	Best practices of critical-thinking skills components in a nursing school program constructed from the literature review and the three data-gathering tools	Gap analysis identifying criteria of current practices compared to the best practices	Recommendations to address the areas in which the gap analysis indicates the current process of inclusion of critical-thinking skills components in the nursing program has been found lacking
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Procedure 7. The evaluation tool created in Procedure 6 was presented to the

executive committee for review and input. The executive committee discussed and reached consensus the best possible evaluation tool had been developed for this study. The rationale for conducting Procedure 7 was to answer Research Question 6 (What criteria of preferred practices could be included in a plan to improve the critical-thinking skills components of the nursing program?).

Procedure 8. An expert evaluation panel was organized. This panel consisted of two persons who are external to the organization and who maintain vast experience in the fields of evaluation research and nursing curriculum. A complete list of the members of this expert evaluation panel and their qualifications is included in the report (see Table 5). The expert evaluation panel used the evaluation tool to conduct the evaluation process via a gap analysis. Item by item, the criteria of current practices were compared to criteria of best practices, and the shortcomings were indicated in the appropriate section of the evaluation tool. In addition, the expert evaluation panel provided recommendations to improve those shortcomings. The researcher of this applied dissertation was present during the evaluation process to answer any questions members of the expert evaluation panel may present. The rationale for conducting Procedure 8 was to answer Research Question 6 (What criteria of preferred practices could be included in a plan to improve the critical-thinking skills components of the nursing program?).

Table 5. Expert Panel

Positions	Qualifications
Assistant Dean, Nursing	Master of Science in Nursing Advanced Registered Nurse Practitioner Doctor of Education Doctor of Nursing Practice in progress
University faculty researcher	Doctor of Education in Nursing Nurse Executive Advanced certificate Fellow American Academy Nursing International Institute for Qualitative Methodology Scholar External curriculum reviewer Academic program consultant

Procedure 9. The results of the evaluation process were utilized to develop a plan to improve the critical-thinking skills components currently used within the nursing program. Inclusion of new critical-thinking skills components within the curriculum was presented in the next step. The rationale for conducting Procedure 9 was to answer Research Question 6 (What criteria of preferred practices could be included in a plan to improve the critical-thinking skills components of the nursing program?).

Procedure 10. The results of the evaluation process, as well as the plan for improvement, were presented to the executive committee for review and input. The executive committee reached consensus the best possible plan for improvement had been developed to improve the nursing school curriculum currently used at the college. The rationale for conducting Procedure 10 was to answer Research Question 6 (What criteria of preferred practices could be included in a plan to improve the critical-thinking skills components of the nursing program?).

Procedure 11. The results of the evaluation process and the plan for improvement were presented to the dean of curriculum and educational technology at

the college and the director of the nursing school. These officials followed the protocol of the nursing school and the college to incorporate the recommendations to improve the critical-thinking skills components in the nursing school curriculum currently offered at the college.

Results

The purpose of this study was to evaluate the critical-thinking skills components currently incorporated in the nursing program and to collect feedback from the data-gathering tools on perceptions of nursing alumni, nursing graduate employers, and directors of successful nursing programs regarding the criteria of preferred practices of critical-thinking skills in a nursing program curriculum. The intent of the evaluation study was to use the procedures to improve existing critical-thinking skills components in the nursing program and subsequently improve the critical-thinking skills of the program graduates. Guided by the appropriate procedure, the findings for each research question are addressed.

Research Question 1. What are the critical-thinking skills components that are included in the curriculum that is currently offered in the nursing program at the college? Using Procedure 1, the instructional strategies used in the delivery of the nursing curriculum were examined. Each of the nursing courses was examined for the types of instructional strategies used. Strategies used in Semesters 1 and 2 courses included written reflection papers, simulations, case studies, learning group presentations, weekly online discussions, and weekly holistic assessments. In Semester 3, strategies included simulation, case studies, weekly online discussions, learning group presentations, weekly holistic assessments, and concept mapping.

The instructional strategies used in Semester 4 included simulation, case studies, weekly online discussion, learning group presentations, weekly holistic assessments, weekly NCLEX RN review, and a written research paper. In addition, during Semester 4, a preceptorship course is scheduled as the final 6 weeks of the nursing program. In this course, nursing students are paired with a seasoned registered nurse preceptor in the practice setting most desired by the nursing student. When available, these settings include critical care, mental health, public health, emergency medicine, and medical-surgical nursing.

The nursing student adopts the work schedule of the nurse preceptor and completes 144 hours of direct patient care contact. By the fourth semester preceptorship course, the content used in each of the instructional strategies increases in complexity from the previous semesters. The examination of the instructional strategies used in the nursing curriculum yielded a list of critical-thinking skills components currently offered in the nursing program at the college and answered Research Question 1.

Research Question 2. What do researchers and authors indicate as preferred practices for critical-thinking skills components in nursing program curricula? To answer Research Question 2, an examination of the literature was conducted in Procedure 2 to develop a list of criteria for best practices to integrate critical-thinking skills components in nursing school curriculum. The exhaustive review of the literature yielded the definitions of critical thinking by expert theoreticians and nursing professionals. Both groups similarly defined critical thinking as the use of judgment based on the interpretation and analysis of information used in making

decisions (Facione & Facione, 1996).

The history of inclusion of critical-thinking skills in education was researched from elementary-age students to college-age students. Additionally, a review of the literature conducted for both business education and nursing education found similarities in the types of critical-thinking skills components included in both disciplines. The components used in both business and nursing education reported by Pascarella (1997), Carrithers and Bean (2008), Lauver et al. (2009), Hamilton and Klebba (2011), and Kaddoura (2011) included problem-based learning, case studies, classroom debates, and reflection, and they closely matched the critical-thinking skills components reported by Carter and Rukholm (2008), Eales-Reynolds et al. (2012), Romeo (2010), and Stein and Haynes (2011).

Researchers, including Aari et al. (2008), Applin et al. (2011), and Behar-Horenstein (2011), reported that the advantage of including critical-thinking skills components in nursing education involved the positive influence it has on the development of critical-thinking skills. Related to the problem identified in this study, Rotherham and Willingham (2010) reported that an advantage of including critical-thinking skills components in education programs is the preparation of graduates for the workplace. Another advantage of including critical-thinking skills components in academic programs, as reported by Facione (2011), was the opportunity that it provided students to practice and refine their problem-solving and decision-making skills. Chong et al. (2008) concluded that the inclusion of critical-thinking skills components in academic programs prepares graduates to succeed in the workplace.

To understand the need for critical thinking in the workplace, a review of literature on critical thinking in the business and nursing professions was conducted. Podolny (2009) and Rieke et al. (2009) reported that business success in a complex environment is dependent on business professionals exhibiting the highest level of critical thinking, which leads to good business decisions. Similarly, Huckabay (2009), Hwang, Yen, Lee, Huang, and Tseng (2010), and Mahoney et al. (2012) reported critical thinking is vital to the nursing process, and clinical reasoning from which decisions are made and interventions taken will lead to good patient outcomes. The review of related literature yielded a list of criteria of best practices to integrate critical-thinking skills components in nursing school curriculum. Through Procedure 2, Research Question 2 was answered.

Research Questions 3 Through 5. Two procedures provided the basis to answer Research Questions 3, 4, and 5: Question 3. What are the perceptions of the nursing school alumni regarding the criteria of preferred practices of critical-thinking skills in a nursing program curriculum? Question 4. What are the perceptions of employers regarding the criteria of preferred practices of critical-thinking skills in a nursing program curriculum? Question 5. What are the perceptions of directors of successful nursing programs regarding the criteria of preferred practices for the integration of critical-thinking skills components in the curricula at their organizations?

Procedure 3 guided the expansion of the original steering committee to include one additional internal stakeholder with knowledge and experience of the nursing school curriculum. The members of this committee, internal to the nursing school, served in an advisory capacity to develop criteria for this evaluation study. This committee, referenced as the executive committee (see Appendix E), reviewed and discussed the

following topics: (a) the list of criteria of current practices to include critical-thinking skills in the nursing school curriculum, (b) the list of criteria of best practices developed from the literature review, and (c) the results from the data-gathering tools. The nursing alumni survey, nursing graduate employer survey, and nursing director survey were developed by the original steering committee in their preliminary work approved by officials at the nursing school. The executive committee reviewed and recommended the two lists of criteria, and the nursing alumni survey, nursing graduate employer survey, and nursing director survey were appropriate data-collection tools for this study.

In Procedure 4, the three data-gathering tools (i.e., nursing alumni survey, nursing graduate employer survey, and nursing director survey) were administered to the appropriate participants. Each participant received an introductory e-mail requesting participation in the study. The e-mail contained (a) the participation letter, (b) the appropriate survey for each group, and (c) instructions how to return the completed survey. The return of the completed surveys implied consent to participate as stated in the participation letter.

The nursing alumni survey was provided to 150 nursing school alumni from the 2011 and 2012 graduating classes, the nursing graduate employer survey was administered to 12 employers of nursing school graduates, and the nursing director survey was administered to 10 directors of nursing schools who successfully incorporated critical-thinking skills components in their academic programs demonstrated by the scores of their graduates on the NCLEX–RN at or above the state pass rate.

The results of the three data-gathering tools were compiled to determine criteria of best practices for the inclusion of critical-thinking skills components in a nursing school curriculum and integrated with the list of criteria of best practices gleaned from the literature review. Through Procedures 3 and 4, Research Questions 3, 4, and 5 were answered.

Research Question 6. What criteria of preferred practices could be included in a plan to improve the critical-thinking skills components of the nursing program? Six procedures provided the basis to answer Research Question 6. The results of the three data-gathering tools obtained in Procedure 5 and the list of criteria for best practices for the inclusion of critical-thinking skills components in a nursing school curriculum were presented to the executive committee. The executive committee reviewed this compiled list of criteria for best practices and reached consensus the best possible list of criteria was developed for this study.

An evaluation tool was developed in Procedure 6. This tool was composed of four sections: (a) a list of criteria of current practices to integrate critical-thinking skills components in the nursing school curriculum; (b) a list of criteria of best practices to integrate critical-thinking skills components in a nursing school program, as constructed from the literature review and the three data-gathering tools; (c) a section for a gap analysis identifying which criteria of current practices were compared to the criteria of best practices; and (d) a section for recommendations listing the areas in which the gap analysis indicated that the current process of inclusion of critical-thinking skills in the nursing program was found lacking.

The evaluation tool created in Procedure 6 was presented to the executive committee

for review and input in Procedure 7. The executive committee discussed and reached consensus the best possible evaluation tool had been developed for this study.

Following review by the executive committee, an expert evaluation panel was organized (Procedure 8). This panel consisted of two persons who were external to the organization and who maintained vast experience in the fields of evaluation research and nursing curriculum. The expert evaluation panel used the evaluation tool to conduct the evaluation process via a gap analysis. Item by item, the criteria of current practices were compared to criteria of best practices, and the shortcomings were indicated in the appropriate section of the evaluation tool. In addition, the expert evaluation panel provided recommendations to improve those shortcomings.

In Procedure 9, the results of the evaluation process were utilized to develop a plan to improve the critical-thinking skills components currently used in the nursing program. The results of the evaluation process and the plan for improvement for the inclusion of new critical-thinking skills components in the curriculum were presented to the executive committee for review and input in Procedure 10. The executive committee reached consensus the best possible plan had been developed to improve the nursing school curriculum currently used at the college. The results of the evaluation process and the plan for improvement were presented to the dean of curriculum at the college and the director of the nursing school in Procedure 11. These officials followed the protocol of the college and nursing school to incorporate the recommendations to improve the critical-thinking skills components in the nursing school curriculum currently offered at the college. The activities in Procedures 6, 7, 8, 9, 10, and 11 answered Research Question 6.

Findings

The critical-thinking skills components identified in the nursing program curriculum were also found listed as preferred practices of critical-thinking skills components in the review of related literature. The preferred practices of critical-thinking skills components for inclusion in a nursing program found in the review of related literature included reflection, problem-based learning, human patient simulators, reflective journaling, case studies, small-group activities, peer mentoring, study groups, learning partners, dialogue, debate, open-ended questioning, concept mapping, and writing assignments.

The responses to the surveys provided to the nursing alumni, the nursing graduate employers, and the directors of successful nursing programs were analyzed by individual participant groups, and differences in responses to the statements were compared among the groups. The observed scores in Section 1 in each survey were analyzed by group and reported in a descriptive format. The instructional strategies perceived to develop critical-thinking skills are reported in a descriptive narrative format.

Nursing alumni survey. The first section of the nursing alumni survey contained 20 statements to which participants responded using a 5-point Likert-type scale, with 5 indicating strong agreement with the statement and 1 indicating strong disagreement with the statement. The statements were created to gain nursing alumni perceptions regarding the criteria of preferred practices in a nursing program. The scores in Section 1 of the nursing alumni survey indicated a stronger than average agreement with the statements regarding their perceptions of the preferred practices

of critical-thinking skills in a nursing program curriculum. The average score for the responses in Section 1 was 4.01 on the 5-point Likert-type scale. The results of Section 1 of the nursing alumni survey are shown in Table 6.

Table 6. Results of Nursing Alumni Survey Section 1

Statement	Score
1) I was encouraged to gather information about clinical problems encountered during my RN program.	4.28
2) I was instructed how to discern relevant information from non-relevant information gathered on clinical problems encountered during my RN program.	3.61
3) I was asked to analyze the gathered information regarding clinical problems encountered during my RN program.	4.11
4) I was able to develop alternative solutions for the clinical problems encountered during my RN program.	3.83
5) I was encouraged to offer viewpoints on possible solutions to the clinical problems encountered during my RN program and be open-minded to the viewpoints of others.	3.72
6) I can compare and contrast ideas and beliefs.	4.44
7) I can differentiate between facts and opinions.	4.67
8) I can differentiate between accurate and erroneous information.	4.33
9) I can substantiate and support my conclusions.	4.44
10) I can recall nursing content and apply it during clinical reasoning and to make therapeutic judgments.	4.39
11) My instructors helped me learn how to think within the point of view of the nursing profession.	4.33
12) My instructors helped me learn how to ask questions that experts in the nursing profession routinely ask.	3.66
13) My instructors used teaching strategies that enabled me to think more clearly.	3.89
14) My instructors used teaching strategies that enabled me to think more accurately.	3.94

15) My instructors used teaching strategies that enabled me to think more deeply.	3.78
16) My instructors used teaching strategies that enabled me to think more logically.	3.94
17) My instructors used teaching strategies that enabled me to think more fairly.	3.72
18) My instructors used teaching strategies that helped me learn how to distinguish what I know from what I don't know.	3.39
19) My instructors used teaching strategies that helped me identify themes from the information I gathered to solve problems.	3.83
20) My instructors used teaching strategies that enabled me to develop and use critical-thinking skills in the nursing process.	3.89

In Section 2 of the nursing alumni survey, participants were instructed to select the strategies they perceived important in the development of critical-thinking skills during instruction in a nursing program from a list of strategies. The strategies in the list included a reflection paper, clinical or situational decision making, simulations, case study presentations in class, case studies as homework, online discussion questions, learning group presentations, daily holistic assessment tools, concept mapping, reflective writing (i.e., journaling), writing assignments with instructor critique and feedback.

The perceptions of nursing alumni of the criteria of preferred practices of critical-thinking skills in a nursing program curriculum included simulations selected by 89% of respondents, clinical or situational decision making selected by 83%, case studies (i.e., homework) selected by 72%, case study presentations in class selected by 61%, online discussion question selected by 56%, daily holistic assessment tool selected by 50%, writing assignments with instructor critique or feedback selected by 50%, learning group presentations selected by 44%, concept mapping selected by 33%, reflection paper selected by 22%, and reflective writing (i.e., journaling) selected by 17%. The responses from Section 2 of the nursing alumni survey are shown in order of preference in Table 7.

Table 7. Results of Nursing Alumni Survey Section 2

Teaching strategies	No. responses	%
Simulations	16	89%
Clinical/situational decision making	15	83%
Case studies (homework)	13	72%
Case study presentations in class	11	61%
Discussion questions (online)	10	56%
Daily Holistic Assessment Tool	9	50%
Writing assignments with instructor critique/feedback	9	50%
Learning group presentations	8	44%
Concept mapping	6	33%
Reflection paper	3	22%
Reflective writing (journaling)	4	16.67%

In Section 3 of the nursing alumni survey, participants were asked to provide any other information they perceived prepared the graduate for professional employment as a registered nurse. The responses by nursing alumni in Section 3 identified additional preferred practices of critical-thinking skills components in a nursing program. The additional criteria identified by alumni included the use of electronic charting, the use of pretests and posttests, the preparation for case studies outside class, and clinical assignments with complex patients. The responses from Section 3 of the nursing alumni survey are shown in Table 8.

Table 8. Results of Nursing Alumni Survey Section 3

Most of the clinical professors act professionally, have admirable qualities and treat their students with respect. This is important to students whereby students want to emulate these professors. You want to look up to them and want to be like them. There are however a few bad apples (professors) that do not treat students with respect and clearly have "burn-out" It is a black eye on the profession and the program.

Attached to our textbooks came educational CDs that had several learning tools within them. The CDs from 2nd semester were the most helpful and I referred back to them often. The case study (lecture) preparatory work assigned to us to go over before class was very helpful. The pre and posttests in the High Acuity text prompted critical thinking. In the first semester the majority of the critical thinking motivation came from the instructors since it was our first exposure to thinking

critically about health issues in multiple areas or holistically; relying more on verbally explanation of the dynamics of concept mapping. In the first three semesters there was one Professor that was exceptional at teaching and critical thinking and in the fourth semester all three instructors were excelled at teaching and critical thinking, which made the faced-paced learning very stimulating. Charting on the patients we helped take care of in the clinical setting helped me think critically as well.

Some instructors were very helpful in using strategies and learning tools to have critical thinking, others did not even try to. Being in the hospital setting and caring for real patients with real problems were the most helpful tools. Rational for questions was another helpful tool. Why is "that" the correct answer and how can I think to get it right next time. ps. Thank you for doing this type of research. As student we encounter many difficulties with great nurses/bad teachers, great teachers/ mediocre tools. We need to improve on that. Thank you again.

I believe that my success in the RN program is completely my own. The ONLY semester where I felt taught was first semester. Even then it was often times taught at a higher level than I was able to understand. My Clinical professors were more instrumental in helping me understand information presented in class than those presenting it.

Clinically we were very prepared to deal with patients and encouraged to get hands on very early in the program.

My clinical experience with clinical instructors that allowed me to actually take on the role of a student nurse by providing me with opportunities to care for nurses while they observed me prepared me more than instructors who simply only made me observe. Also being assigned to more complex patients allowed me to analyze their care, meds and labs as a whole to see how it all interrelated.

The clinical rotations and the simulation labs helped prepare me for preceptorship. The preceptorship helped prepared me for the "real world" of nursing.

These answers reflect my thoughts in hindsight. My answers would have been significantly different during the learning process.

I feel the level of maturity, education, and commitment has more bearing on the readiness to be professionally prepared for the job as RN. The critical-thinking skills/practice enhanced it but this is not solely responsible for the success of an RN graduate.

Nursing graduate employer survey. The first section of the nursing graduate employer survey contained 20 statements to which participants responded using a 5-point Likert-type scale, with 5 indicating strong agreement with the statement and 1 indicating strong disagreement with the statement. The statements were created to gain nursing graduate employer perceptions regarding the criteria of preferred practices in a nursing program. The scores in Section 1 of the nursing graduate employer survey indicated only a slightly stronger than average agreement with the statements regarding their perceptions of the preferred practices of critical-thinking skills in a nursing program curriculum. The average score for the responses in Section 1 was 3.32 on the 5-point Likert-type scale. The results of Section 1 of the nursing graduate employer survey are shown in Table 9.

Table 9. Results of Nursing Graduate Employer Survey Section 1

Statement	Score
1) Nursing graduates are able to gather information about clinical problems in the workplace.	3.75
2) Nursing graduates are able to discern relevant information from non-relevant information gathered on clinical problems in the workplace.	3.38
3) Nursing graduates are able to analyze the gathered information regarding clinical problems in the workplace.	3.00
4) Nursing graduates are able to develop alternative solutions for the clinical problems encountered in the workplace.	3.13
5) Nursing graduates are able to offer viewpoints on possible solutions to the clinical problems and are open-minded to the viewpoints of others.	3.67
6) Nursing graduates can compare and contrast ideas and beliefs.	3.63
7) Nursing graduates can differentiate between facts and opinions.	3.25
8) Nursing graduates can differentiate between accurate and erroneous information.	3.00
9) Nursing graduates can substantiate and support their conclusions.	3.38
10) Nursing graduates can recall nursing content and apply it during clinical reasoning and to make therapeutic judgments.	3.50
11) Nursing graduates can think within the point of view of the nursing profession.	3.25
12) Nursing graduates know how to ask questions that experts in the nursing profession routinely ask.	3.25
13) Nursing graduates demonstrate clear thinking.	3.50
14) Nursing graduates demonstrate accurate thinking.	2.88
15) Nursing graduates think deeply.	3.25
16) Nursing graduates think logically.	3.38
17) Nursing graduates think fairly.	4.00
18) Nursing graduates can distinguish what they know from what	2.88

they don't know.

19) Nursing graduates can identify themes from the information gathered to solve clinical problems. 3.13

20) Nursing graduates use critical-thinking skills in the nursing process. 3.25

In Section 2 of the nursing graduate employer survey, participants were asked to provide any other information regarding graduate nurse preparation for professional employment as a registered nurse. The responses by nursing graduate employers in Section 2 are shown in Table 10.

Table 10. Nursing Graduate Employer Survey Section 2

New graduates demonstrate thinking skills often based on the school from which they graduated, ADN, BSN, MSN program, and their maturity in life. The graduate nurses I have been experienced with are generally very bright and ask great questions and can usually spot a “fake.” If the graduate nurse has had an exceptional senior preceptorship experience prior to graduating, they will score higher on these statements.

Employers of the nursing graduates reported the demonstration of critical-thinking skills is dependent upon (a) the type of program from which the nurses graduated (i.e., associate degree, bachelor's degree, or master's degree), (b) the ability of the graduates to ask questions, and (c) the exposure to clinical or situational decision making in the last semester of their nursing program, referenced as preceptorship.

Nursing director survey. The first section of the nursing director survey contained 20 statements to which participants responded using a 5-point Likert-type scale, with 5 indicating strong agreement with the statement and 1 indicating strong disagreement with the statement. The statements were created to gain nursing director perceptions regarding the criteria of preferred practices for the integration of critical-thinking skills components in the curricula at their organizations. The scores in Section 1 of the nursing director survey indicated a stronger than average agreement with the statements regarding their perceptions of the preferred practices for the integration of critical-thinking skills in the curricula at their organizations. The average score for the responses in Section 1 was 3.76 on the 5-point Likert-type scale. The results of Section 1 of the nursing director survey are shown in Table 11.

Table 11. Results of Nursing Director Survey Section 1

Statement	Score
1) Through instructional strategies, nursing students are able to gather information about clinical problems.	3.90
2) Through instructional strategies, nursing students are able to discern relevant information from non-relevant information gathered on clinical problems.	3.40

3) Through instructional strategies, nursing students are able to analyze the gathered information regarding clinical problems.	3.70
4) Through instructional strategies, nursing students are able to develop alternative solutions for the clinical problems.	3.80
5) Through instructional strategies, nursing students are able to offer viewpoints on possible solutions to the clinical problems and are open-minded to the viewpoints of others.	3.90
6) Through instructional strategies, nursing students are able to compare and contrast ideas and beliefs.	4.11
7) Through instructional strategies, nursing students can differentiate between facts and opinions.	4.22
8) Through instructional strategies, nursing students can differentiate between accurate and erroneous information.	3.89
9) Through instructional strategies, nursing students can substantiate and support their conclusions.	4.22
10) Through instructional strategies, nursing students can recall nursing content and apply it during clinical reasoning and to make therapeutic judgments.	4.00
11) Through instructional strategies, nursing students can think within the point of view of the nursing profession.	4.56
12) Through instructional strategies, nursing students know how to ask questions that experts in the nursing profession routinely ask.	3.13
13) Through instructional strategies, nursing students demonstrate clear thinking.	3.60
14) Through instructional strategies, nursing students demonstrate accurate thinking.	3.22
15) Through instructional strategies, nursing students think deeply.	3.22
16) Through instructional strategies, nursing students think logically.	3.50
17) Through instructional strategies, nursing students think fairly.	2.89
18) Through instructional strategies, nursing students can distinguish what they know from what they don't know.	4.11
19) Through instructional strategies, nursing students can identify	3.67

themes from the information gathered to solve clinical problems.

20) Through instructional strategies, nursing students develop and use critical-thinking skills in the nursing process. 4.22

In Section 2, directors were asked to select the critical-thinking components successfully integrated into his or her curriculum from the list of strategies currently used in the nursing program identified in Procedure 1 and the list of preferred practices identified in the literature review in Procedure 2. The critical-thinking components included reflection, small-group presentations, reflective writing (i.e., journaling), peer mentoring, dialogue or Socratic seminar-type discussion, study groups, online discussion questions, concept mapping, clinical or situational decision making, scaffolding, simulations using high-fidelity simulators, learning modules, role-playing activities, daily holistic assessment tool, problem-based learning assignments, case studies, and writing assignments with instructor critique or feedback. Additionally, the directors were asked to write in other components used in the curriculum not listed.

The perceptions of nursing directors of the criteria of preferred practices for the integration of critical-thinking skills components in the curricula at their organizations included (a) reflection, simulations using high-fidelity simulators, case studies, writing assignments with instructor critique or feedback, and small-group presentations selected by 90% of the respondents; (b) dialogue or Socratic seminar-type discussion and concept mapping selected by 80% of the respondents; (c) reflective writing (i.e., journaling), clinical situational decision making, study groups, learning modules selected by 70% of the respondents; (d) discussion questions online and role-playing activities selected by 60% of the respondents; (e) problem-based learning and peer mentoring selected by 50% of the respondents; (f) the daily holistic assessment tool selected by 40%; and (g) scaffolding selected by 10% of the respondents. The responses from Section 2 of the nursing director survey are shown in order of preference in Table 12.

Table 12. Results of Nursing Director Survey Section 2

Critical thinking components	No. responses	%
Reflection	9	90%
Simulations (high-fidelity simulators)	9	90%
Case studies	9	90%
Writing assignments with instructor critique/feedback	9	90%
Small group presentations	9	90%
Dialogue/Socratic questioning/Debate/Argumentation	8	80%
Concept mapping	8	80%
Reflective writing (journaling)	7	70%
Clinical/situational decision making	7	70%
Study groups	7	70%
Learning modules	7	70%

Discussion questions (online)	6	60%
Role-playing	6	60%
Problem-based learning assignments	5	50%
Peer mentoring	5	50%
Daily Holistic Tool	4	40%
Scaffolding	1	10%

The responses by directors of nursing programs to Section 2 of the nursing director survey provided additional preferred practices for integrating critical-thinking skills components in a nursing program. The additional criteria identified by directors included the use of electronic health record activities, collaborative testing, and performance improvement.

In Section 3, directors were asked to provide any other information regarding student nurse preparation for professional employment as a registered nurse. The responses from directors included (a) professionalization activities, referring to a student nurses association; (b) interprofessional simulation, which was referenced as interdisciplinary activities by Zimmerman et al. (2011); and (c) expressions including “This is wonderful” and “Thank you.”

Implications of the Findings

Implications of the findings in this evaluation study are twofold. The first implication is the acceptance of nursing faculty to include the recommended preferred practices for critical-thinking skills components in the nursing curriculum. The second implication of the findings is the placement of the recommended preferred practices for critical-thinking skills components into the nursing curriculum.

The nursing program faculty is organized into five working committees. One of these committees is the nursing curriculum committee representing key faculty from each of the four nursing semesters, referenced as team leaders. Following approval by the dean of curriculum and educational technology and the director of the nursing program, the nursing curriculum committee will be charged with identifying the nursing courses in which the newly identified critical-thinking skills components would be included. The work of the nursing curriculum committee will be presented at the general nursing faculty meeting to assure all faculty members are aware of the plan and reach consensus the best possible placement of preferred practices for critical-thinking skills components in the nursing program is identified. The work of the team leaders as members of the nursing curriculum committee will address both of the implications presented: (a) faculty acceptance and (b) placement of the preferred critical-thinking skills components in the nursing curriculum.

Limitations

Limitations of this study included responses from individuals who did not use their full expertise when completing the data-collection tools and the response rate by the target audience to the data-collection tools. Of the 150 surveys provided to nursing alumni, 22 responses were received. Of the 12 surveys provided to nursing graduate employers, eight responses were received. Survey responses from nursing directors yielded the highest return rate, with 10 of 10 responses received. Results from this evaluation study may not generalize to other programs; however, this study identified

a comprehensive list of the criteria of the preferred practices for critical-thinking skills components to include in a nursing program.

Recommendations

The program evaluation methodology and set of procedures used in this research project can be replicated in other career and technical education programs. The list of best practices of instructional strategies (critical-thinking skills components) derived from this research study can be incorporated into individual courses in other health care programs and outside the field of health care education.

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