The Scientific Basis of Nursing

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About the Instructor

Dr. Schell completed her BSN degree at Indiana University of Pennsylvania in 1981, her MS in Nursing at University of Delaware in 1987, and her Doctorate in Nursing Science (Nursing Education focus) at Widener University in 2001. She worked as a staff nurse and educator in the critical care settings of a large Mid-Atlantic hospital system from 1981 through 1992. Since 1992, Dr. Schell has taught at the University of Delaware, teaching primarily undergraduate pathophysiology, medical-surgical nursing, and critical care nursing in the classroom and clinical settings. Her scholarly endeavors have focused on innovative teaching strategies and blood pressure measurement. She is a member of the Honor Society of Phi Kappa Phi, Beta Xi Chapter of Sigma Theta Tau International, Delaware Nurses Association, American Nurses Association, and Southeastern Pennsylvania Chapter of the American Association of Critical Care Nurses.

Part I: Introductory Information

A. Institutional

1. Name of college/university:	University of Delaware
2. Total enrollment:	Over 16,000 undergraduates and nearly 3,000 graduate students
3. Public or Private:	State assisted, private controlled
4. Carnegie Classification:	Doctoral/Research Universities-Extensive

B. Individual

1. School:	College of Health & Nursing Sciences
2. Department:	Nursing
3. Faculty Rank:	Assistant Professor
4. Highest Degree Earned:	Doctorate in Nursing Science
5. Number of years teaching at college level:	10
6. Awards received for excellence in teaching:	1996: Department of Nursing Teaching Award 1998: Mortar Board Outstanding Professor Award of Distinction 1999: Department of Nursing Most Inspiring Teacher 2000: Department of Nursing Excellence in Advising Award

C. Course

1. Course Name:	The Scientific Basis of Nursing
2. Course Abbreviation & Number:	NURS 240
3. Number of Semester Credit Hours:	5 credits
4. Catalog Description: Examines pathophysiological concepts can prototype diseases. Laboratory practicum to provide practice of psychomotor skills.	
5. Number of students typically enrolled:	100-140

6. In what year do students typically enroll in this course:	sophomore
7. This course is best described as:	Required course for majors

D. Problem-Based Learning

1. What percent of this course uses PBL?	15
2. How long have you been teaching the course using Problem-Based Learning?	Once – (5 sections of students) in spring 2002; teaching again in spring 2003
3. Is the course designated as Problem-Based Learning in any official way?	Approved by Department Curriculum Committee with inclusion of Problem-Based Learning in the course description and syllabus

Part II: Course Design

A. Rationale

In the late 1990s, the University of Delaware nursing faculty committed to the development of a new undergraduate nursing curriculum. One of the many goals of this curriculum was to incorporate more active learning strategies. Experts in a variety of disciplines claim that educational strategies which stimulate outcomes such as critical and creative thinking, problem-solving, and dedication to life-long learning are needed in higher education (AACN, 1998; Foote, 1994; Jones & Brown, 1991; Sullivan, 1997; Swenson, 1998; Woods 1998). Because similar outcomes are associated with problem-based learning (PBL) (Amos & White, 1998; Cooke & Moyle, 2002) and a campus-wide incentive to use PBL was already in place, a few nursing faculty were interested in threading Problem-Based Learning (PBL) throughout the curriculum.

NURS 240, The Scientific Basis of Nursing, was a spring semester sophomore course that focused on pathophysiology and relevant, basic nursing interventions. Concurrently, students were enrolled in a Pharmacology course and a Foundations of Nursing course that had a heavy emphasis on health assessment. The new curriculum places these core nursing courses earlier in the progression sequence spurring faculty concern that students would neither be ready to handle the intensity of these courses nor be able to apply their content effectively later in the curriculum. Use of Problem-Based Learning would provide opportunities for students to synthesize knowledge and skills from these courses that form the basis of nursing practice. It was also hypothesized that presenting problems that encourage students to analyze "real life" patient care scenarios would better prepare them for their clinical rotations in acute and chronic client care. Nurse educators have suggested that PBL links theory with practice (Creedy, Horsfall, & Hand, 1992; Frost, 1996). Relating knowledge of pathophysiology, pharmacology, and health assessment with basic nursing interventions should promote critical thinking and realization that patient care is not compartmentalized. Furthermore, complexity of the PBL problems should help students appreciate the many sociocultural, ethical, and legal aspects of healthcare (King, Sebastian, Stanhope, & Hickman, 1997). Another benefit of problem-based learning is the development of group skills and teamwork (Amos & White, 1998; Cooke & Moyle, 2002). Nurses collaborate with clients, families, physicians, and a variety of other healthcare workers when providing care. PBL offers an opportunity to develop relevant skills such as communication, collaboration, and appreciation of others' points of view. Although working in small groups was included in several courses in the old curriculum, education on how to work in a group was minimal.

B. Reflective Essay as to the Course Content

Several factors, including those described in the rationale section, influenced the selection of course content. Participation in the week-long Institute for Transforming Undergraduate Education at the University of Delaware, which focuses on PBL, and observation of and consultation with on-campus PBL experts, provided direction for creation of content. My doctoral education at Widener University in

Chester, PA, allowed me to explore areas of interest, particularly group learning strategies and innovative teaching via coursework, a concept analysis paper, and my dissertation. One factor that promotes successful implementation of PBL is adequate teacher preparation (Creedy, et al., 1992; Doring, Bramwell-Vial & Bingham, 1994).

Discussion with the nursing faculty assigned to co-teach the course was also vital. The intent was to use PBL to either address major health problems that would only be superficially included in the lecture portion of the course or to provide more depth and consideration of complications of major diseases that were included in the lecture. I attempted to minimize simple repetition of class concepts. Faculty from the three spring sophomore courses met several times in attempts to synchronize course content as closely as possible.

Five problems, focusing on major diseases typically included in our curriculum, were created for the course. Professional experiences, news headlines and current topics in healthcare made problems more realistic (Duch, 2001: Hafler, 1997). A series of questions associated with each problem required students to use knowledge of pathophysiology, health assessment, pharmacology, and common medical and nursing interventions for that particular health problem. At least one sociocultural, ethical or legal aspect of patient care was included in each problem. For instance, students explored workmen's compensation issues related to a client who contracted Hepatitis C during his firefighter experience. They discussed feelings, professional and legal obligations when a problem included a nurse who refused to care for HIV positive clients. Patient education was also threaded through each problem. Additionally, questions that prompted students to look at the problem from various points of view and to use a variety of resources, e.g. textbooks, position statements, newspapers, healthcare Websites, and legislation, were included. Complex, ill-structured problems are challenging to solve and lend themselves to both content and process learning (Duch, 2001).

During course planning, lab skills relevant to particular problem topics were identified. For example, blood glucose monitoring was taught during a problem on diabetes. Opportunities for laboratory experiences can augment learning in PBL (Bignell, Groves, & Bayley, 2001; Williams, 2001). Because there were certain skills that students were required to learn in this semester, direct links between some skills and the problems were lacking. **See Appendix A** for an overview of course organization.

Another major focus of PBL was the development of group skills among students. Two lab sessions were devoted to discussion of group skills, analysis of simulated group functioning using White and Allen's (2000) CD-ROM entitled "Working in Groups," and analysis of students' own groups. Weekly interactions with students allowed me to encourage appropriate group functioning and formative group evaluation.

C. Reflective Essay as to the Instructional Practice

Five years prior to entering academia, I had a variety of teaching experiences in the classroom and clinical setting as a staff nurse preceptor, a staff development nurse, and director of new graduate nurse internships at a large community hospital. I had spent years deepening my knowledge base and perfecting my lecture skills. I moved easily into the undergraduate setting, formulating objectives and strictly adhering to lecture format in large classrooms. Test questions were linked directly to these objectives and outlines. Students praised my clarity in content delivery.

However, in my experience as an undergraduate student as well as a university instructor, I found that students did not consistently retain the information relayed to them through lecture. Many students memorized the information for exams but did not necessarily understand the concepts and did not attempt to relate concepts from one lecture to the next or from one course to the other. Tanner (1998) suggests that coverage of enormous amounts of information through lecture yields passive and surface learning rather than deep understanding. Although evaluations validated the effectiveness of my lecture skills, I was dissatisfied with the level of student learning.

Clinical teaching was more congruent with my philosophy of teaching. I found that if students were challenged to bring forth knowledge from previous and concurrent courses, the relevance of and relationship of major concepts was clearer and more readily retained. Additionally, students began to think more like nurses and were better prepared to "think on their feet." Patient care information and experiences are not neatly compartmentalized and sequenced so that nurses can think only of one topic at a time. Problem-solving, clinical reasoning and synthesis of information are key elements to effective practice and should be initiated in the classroom setting (Bentley & Nugent, 1996).

In the mid 1990s, teaching an elective critical care didactic course to seniors allowed me to further pursue teaching strategies akin to my philosophy of education. Although lecture was a portion of this course, I developed several three-to-four week case studies that were analyzed via cooperative learning. Use of groups, sharing of resources, group grading, and teacher as facilitator were elements of this teaching method that paralleled PBL. Teaching was more satisfactory to me because students learned from each other and were less dependent on me for knowledge attainment. On several occasions, they explored topics in more depth than I intended!

As I matured in my educator role, I strengthened my convictions that students need to be guided to learn, rather than "spoon fed" information. I realized that "covering" everything I think they needed to know and having students actually learn was simply impossible in the lecture time allotted. I made decisions to eliminate some topics and required students do self-learning, using a series of questions or notes, on some simple or less common topics. I now only "lecture" using cases that allow emphasis on major concepts. Like many other faculty, I use Power Point handouts but avoid putting all notes on the handouts. Rather, questions and patient care situations are interspersed that require analysis and fast thinking. I prompt students to identify questions they would ask.

I believe the use of PBL was a natural evolution from my previous teaching methods. Attending the week-long Institute for Transforming Learning at the University of Delaware in the summer of 2001 was essential to building my confidence. Working through PBL problems, learning to write problems, discussing the ins and outs, pros and cons of group work, and holding discussions with faculty from other disciplines and other universities with similar educational philosophies inspired me to include it in my teaching repertoire. Having experts on campus who were willing to share their experiences, their materials (syllabi, evaluation forms, group functioning tools), and who welcomed observers in their classrooms were bonuses. I was encouraged to apply for internal grant monies, originally obtained as Pew funds for PBL, in order to incorporate PBL in the nursing curriculum. Although neither I nor other faculty were willing to commit to using PBL in every course, the use of various active learning methods was supported by me peers and administration. One other faculty member was willing to commit to using PBL in a junior level course. Grant monies were obtained for summer development of PBL problems in these courses as well as for use of teaching assistants during the courses.

D. PBL Context and Application

The problem-based learning portion of the course was integrated with practice of select nursing interventions in the laboratory. The students attended four hours of lecture and two hours of PBL-laboratory weekly. The problems had the heaviest focus on the pathophysiology of complex diseases and their complications. The topics of Human Immunodeficiency Virus (HIV) progressing to Autoimmune Deficiency Syndrome (AIDS); Diabetes Type I progressing to Diabetic Ketoacidosis and then Retinopathy, Nephropathy, and Peripheral Vascular Disease; Hypertension leading to Thrombotic Stroke; Exacerbation of Chronic Obstructive Pulmonary Disease (COPD); and finally, Hepatitis C progressing to Cirrhosis and Liver Cancer were the foci of the five problems. The cultural backgrounds of the clients included African-American, Hispanic, Caucasian, and gay men. Because many of the students had little experience with PBL, the first class was devoted to an explanation of its rationale and process. Responsibilities of students, teaching assistants, and faculty were identified. I created heterogeneous groups through random assignments. Strategies for using groups were derived from Allen, Duch, & Groh (2001). Group roles such as leader, recorder, skeptic and timekeeper were defined. The majority of the groups

consisted of five students with a few groups having only four members or as many as six members. To promote a sense of team, individuals in each group were asked to introduce and share something about them. They selected group names. Students had some fun with this activity; some names were related to pathophysiology, e.g., The Pink Puffers, nursing, e.g., The Nightingales, or personal interests, e.g., The Black Cats. Next, students were required to adopt group rules and consequences. The rules were revisited at midterm if problems arose within groups. The class was asked to share some good and bad experiences with groups. Then we viewed several CD simulations of group problems and discussed how to handle these scenarios. More cases were reviewed around midterm.

Students were assigned a practice case that addressed Sickle Cell Anemia, Acute Pain, and Genetics. I emphasized that their answers would not be graded, however, I would provide comments so they could have some idea of the caliber of answers I expected. The next class, I distributed an "answer key" with references so they had an example of the depth of answers needed as well as appropriate use of referencing.

The remaining problems were distributed every two or three weeks. I handed out one page at a time and asked the group to agree that they all understood the answers or knew where to look for information prior to moving to the next page. This method corresponds to staging of problems as recommended by Duch (2001). As students worked on problems, I and a teaching assistant (a junior student), circulated from group to group. The TAs were selected on their interest, content knowledge, and experience with PBL. They were given an answer key which provided a general idea of the information that should be included. Specifics were often not included because of the nature of some of the questions. We spent time sitting with students, listening to their exchange and then would interject further questions, challenge their answers, or confirm that they were on the right track. Some students needed guidance in where to find resources. I found that I was constantly interacting with students and worked hard during those sessions!

I was fortunate to be assigned a classroom designed for PBL. It contained five round tables with chairs, access to the Internet and other technology, and a locked cabinet in which I kept over 50 textbooks, articles, and other handouts which I used each week. The laboratory was on a different floor of the building so some class time was lost as we traveled from one place to the other. Typically, lab occurred during the last 40-50 minutes of class. Lab quizzes were intermittently used and were often taken as a group.

Students were required to submit a group paper for each problem. For evaluation, each of the papers was weighted according to the number of class weeks allotted to each problem plus its complexity. Group papers were worth 90% of the PBL grade. Evaluation of peer functioning and group functioning was conducted two times during the semester. Points were assigned for these evaluation methods. Peer and group evaluations were allotted five percent each toward the PBL grade. **See Appendix B** for peer evaluation form and **Appendix C** for the group evaluation form. Laboratory was graded as pass/fail. Content from the problems was included in twenty percent of the final exam questions for the entire NURS 240 course (lecture, PBL, and Lab).

Part III: Student Understanding

A. Evidence of Students Achieving the Learning Objectives

The PBL learning objectives for the students were to: (a) be involved in the process of learning, (b) increase their own responsibility for learning, (c) develop problem identification, reasoning, and critical thinking skills, (d) build on existing knowledge, and (e) develop collaborative skills. Evidence of objective achievement was reflected in several ways.

First, students were involved in the learning process. One student remarked that PBL was "a fun learning experience. Learning this way is better than book work. [I] will remember this for future patient

experience—it's more hands on!" Observation of any class session showed that students were constantly communicating with each other within groups. They were assisting each other to identify learning issues, to determine what information was needed, how to interpret the information, and how best to present this information in the paper. Group-to-group communication was common when identifying appropriate resources. Students used the Internet to search for information during class. Although some students were much better at this objective than others, every student was actively involved to some degree in each class. A student commented that PBL was "much more memorable than listening to lectures." Skills lab also required students read information prior to class, view videos in class, and use lab checklists. They practiced in small groups with me or the TAs circulating to occasionally demonstrate skills, clarify information, and confirm correct performance of skills.

Second, most students were becoming more responsible for their learning. Although they asked questions of the faculty and teaching assistants, these questions were often reflected back to encourage more probing and sharing of ideas within the group. Some of the students were uncomfortable with this practice but resigned themselves to finding out more on their own. Typically, group papers cited at least eight references. They found it was easier to analyze problems if they had completed some reading in their pathophysiology textbook prior to coming to class. They could not merely show up for class and take notes. Their discussions and information seeking were the basis of each session. It was evidence that some students thrived in this type of learning environment and were devoted to exploring learning issues, finding resources, sharing information, and promoting effective group functioning. Other students used time less effectively, would not share information, and did minimal work.

Third, students were gradually becoming more adept at identifying important aspects of the problems. One student commented, "It's fun being detectives." Reasoning and critical thinking were reflected in their in-class discussions and in their formal papers. Formal paper grades ranged from 72 to 96% with the majority receiving Bs.

Fourth, students built on existing knowledge. For example, during the HIV and AIDS problem, students who had already completed the required microbiology used their notes to help explain some of the pathophysiology of the virus to their group members. Students used knowledge from previous anatomy and physiology courses, concurrent pathophysiology and pharmacology lectures, and health assessment lab when analyzing disease signs and symptoms. They referred to notes and the textbook from their "Concepts in Nusing" course when discussing nursing diagnosis, standards of care, ethics, and legalities.

Fifth, students collaborated with their peers, faculty, and teaching assistants. Although difficult, group members were required to share "out loud" what they thought were strengths and weaknesses of their groups by midterm. A few groups had to determine how to handle problematic group members. They had to learn to listen to others' opinions and come to a consensus when there was disagreement on an answer. Group evaluation grades for the semester ranged from 3.9 to 5.0% (the maximum possible), whereas peer evaluation grade percentages ranged from 8.0 to 9.9 (out of a maximum of 10%). A student remarked, "I had a clearer understanding of the problems when I had the input of those in my group." Because there was typically only one copy of each type of resource, they shared resources as textbooks and other healthcare literature during class. For the group paper, students volunteered to formally write the answer to specific questions and submit them to the recorder for proofing and consolidation of the information.

Another outcome that I observed and had not consciously considered was the greater interaction between traditional and English as second language (ESL) students than I had experienced in previous teaching situations. Typically, the ESL students act as their own support and learning group during the program. Traditional students do not necessarily seek their expertise or opinions when in class. In PBL, the ESL students were required to offer their input, to explain their points of view, and to function as group leaders and recorders. Both traditional and ESL students learned to explain themselves better and to ask clearer questions. Traditional students learned to wait patiently as answers were sometimes

provided in less than fluent English. As the semester progressed, the ESL students were better assimilated into group functioning.

An average of 74% (range 45-99%) of the students selected the correct answer on the twenty-one final exam questions based on the PBL content. Other data on ninety-eight (98) student evaluations provide further evidence of the effectiveness of PBL in NURS 240. The PBL evaluation form is found in **Appendix E.** Eleven (11) items that asked students to evaluate themselves on leaning concepts, analyzing information, using resources, and working in groups resulted in a range of ratings from 3.96 to 4.22 on a five point Likert scale. Amount of effort required received a rating of 4.19 on a five point Likert scale. Finally, the overall rating of PBL during this course offering was 3.84 on a five point Likert scale. A summary of positive student comments on evaluations of the PBL portion of NURS 240 revealed that students believed they (a) had increased understanding of concepts, (b) conducted deeper analyses of diseases, (c) applied concepts to real life situations, (d) had interesting discussions, (e) developed increased confidence working in groups, and (f) learned from other group members' experiences. Overall, PBL grades (including paper grades, peer evaluations, and group evaluations) ranged from 78% to 90%.

B. Reflection on the Evidence of Student Learning

Group papers were primary evidence of student leaning. Evaluating these papers was a learning process in itself. Overall, accuracy, clarity, completeness, logical arguments, and use of appropriate references were used as standards of judgment. However, I was not always certain of what answers I sought or how in depth I believed they should be. I often read through all group papers in each section and placed point deductions and comments on the papers based on initial critique and then reviewed my grading at least one more time before finalizing it. More specific criteria are needed to focus evaluation of student work.

Additionally, these papers did not consistently reflect group work as intended. Rather than having group answers, in some groups, I found individual students were assigned to each question and then the answers were compiled. Students were confident in the knowledge obtained investigating their own questions but not from questions that others answered.

Improvement is needed in assessing individual performance within groups. There were those students who were "slackers," who depended on others to do most of the work and to even revise their work to bring it to an adequate level. One method to assure individual accountability was to include PBL related questions on the final exam. In the future, PBL related questions will be on every hourly exam. Additionally, more weight will be given to my evaluation of individual student participation. More information about these evaluations will be included in the syllabus so students are clear about my expectations.

Evaluation of overall group functioning was completed by each group member two times during the semester. But I only offered occasional verbal evaluations of group functioning. I will provide more of my own written comments to groups in the future. Evaluation of individual student performance was based primarily on peer evaluation and not always accurate in my eyes. Students used a peer evaluation form two times during the semester to reflect on student reliability, and quality and quantity of work completed. These forms were beneficial because responsibilities of each learner were described. Initially, evaluations were glowing! I summarized the ratings and comments and distributed them to each student at midterm. I found that requiring students to submit meaningful comments to support their ratings were very important. By the end of the semester, students were more willing to honestly share their opinions of their peers, and ratings decreased for some students. I also considered lateness, absences and make-up of work when assigning final grades.

Part IV: Reflective Summary of Course

The purpose of this course portfolio was to provide rationale for using PBL as one of several teaching methods in a sophomore nursing course with a primary focus on pathophysiology. Reflection on course design and student understanding following my initial implementation of this method served to highlight the benefits and challenges of PBL that I have observed and experienced.

The intent of the PBL in this course was to bridge gaps between concepts offered in three concurrent core courses during the sophomore spring semester. Five PBL problems were developed to integrate select course content in pathophysiology, pharmacology, and health assessment courses while considering relevant nursing care and skills. Socio-cultural, ethical, and/or legal aspects were also included. Global outcomes achieved by many of the students were to: (a) actively engage in and be responsible for learning, (b) critically think and problem solve, (c) build on existing knowledge, and (d) develop collaborative skills.

The challenges encountered related to several factors. I was a novice in developing PBL problems and facilitating the actual process. I tried to incorporate too many problems and lab skills in a limited time. Most students were inexperienced with PBL, and some of the students had difficulties with past group projects. Individual accountability was not evaluated as extensively as necessary to inhibit slackers.

Overall, the interaction with and among students during PBL was exciting and rewarding. I believe the outcomes will be even more positive as I revise the course for the upcoming semester. Expanding responsibility for learning from essentially just the teacher to collaborative skills, acceptance of diversity, critical and creative thinking, and decision-making associated with PBL, particularly in nursing, is needed to support the positive anecdotal evidence that exists.

References

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Appendix A

University of Delaware Department of Nursing

NURS 240 Course Schedule – Spring 2002

Week	Lecture Topics	PBL Topic	Lab Skill
1	Pathophysiology Topics	Introduction to PBL: Sample PBL: Sickle Cell, Acute Pain & Genetics	Group Dynamics
2	Genetics & Nursing Injury, Inflammation & Healing	HIV, AIDS, & Opportunistic Infections	Path Charting
3	Injury, Inflammation & Healing	HIV, AIDS & Opportunistic Infections	Standard & Isolation Precautions; Urine & Sputum Specimens
4	Immune Disorders; Infection & Fever	Diabetes Mellitus & Its Complications	Care of Orthopedic Injuries; Care of Pressure Ulcers; Wound cultures
5	Alterations in Fluid & Electrolytes	Diabetes Mellitus & its Complications	Accuchecks
6	Alterations in Fluid & Electrolytes; Renal Failure; Cushing Syndrome; Diabetes Mellitus	Diabetes Mellitus and its Complications	Group Dynamics
7	Alterations in Hemostasis; Anemia; Blood Flow and Hemodynamics	Hypertension, TIA, & Stroke	Fluid and Electrolyte Self-Study Guide
8	Alterations in Blood Pressure; Ischemia; Atherosclerosis	Hypertension, TIA, & Stroke	Oxygen Therapy; Pulse Oximetry; Abnormal Heart Sounds
9	Ischemic Heart Disease	COPD, Asthma	Chest Physiotherapy; Pursed Lip Breathing Peak Flow Meters Incentive Spirometer Abnormal Breath Sounds
10	Hypoxia; Obstructed and Restricted Lung Diseases	COPD, Asthma	Principles of Medication Administration; Oral Medications
11	Acid Base Imbalances Neoplasia	Hepatitis, Cirrhosis and Liver Cancer	Topical, Ear, Eye, Rectal Medications
12	Neoplasia, Obstruction, Increased ICP, Pain and Fatigue	Hepatitis, Cirrhosis and Liver Cancer	Injections
13	Immobility, Dementia, Inflammatory Conditions of the GI and Hepatobiliary Systems	Hepatitis, Cirrhosis and Liver Cancer	Injections

Appendix B

University of Delaware College of Health & Nursing Sciences
NURS 240 Scientific Basis of Nursing

Group Evaluation

Name:
Group Name:
Date:

Overall, how well did your group function as a group this semester? (circle below)

Very Well 5 4 3 2 1 Very Poorly

Provide information to support your selection.

What could you, your group, the teaching assistant, or the instructor have done to facilitate more effective functioning of the group?

Group Grade += Total number of points designated by peers divided by the number of students in group

Your Group Grade is _____points

Appendix C

University of Delaware College of Health & Nursing Science
Assessment of Individual Peer Performance in Groups

Name of Person you Are Assessing: Date:
Your Name: Group Name:

For each of the assessment categories below, place an "X" in the box that best indicates the extent to which you think that statement describes the person you are assessing. Fill one out for each member of your group and one for yourself. Forms are due at the start of class on the date given in the syllabus.

		Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5
1.	Does miss out on group activities by being absent					
2.	Does not miss out on group activities by being late.					
3.	Finishes all jobs assigned by the group on time.					
4.	Comes to class having read the material necessary for advancing group discussion.					
5.	Listens well to others' presentation of information.					
6.	Contributes to the group's discussion.					
7.	Does not dominate discussions.					
8.	Uses appropriate resources for researching information.					
9.	Brings new and relevant information to the group's discussion					
10.	Presents logical ideas and arguments.					
11.	Asks questions that promote clearer and deeper understanding.					
12.	Communicates ideas and information clearly.					
13.	Helps to identify and implement ways that the group can function better.					

Please circle an overall rating for this individual:

1. Excellent – Exceeds expectations
2. Good – Meets expectations
3. OK – Improvement in some key areas needed
4. Major improvement needed

Please use the space below to respond to the following two statements. Link your responses to the ratings above as appropriate.

1. Describe the ways in which this individual most helps your group's learning.

2. Describe the ways in which a change in this person's behavior could improve your group's learning.

*Form borrowed from Deborah Allen (Biological Sciences) Website for BISC2078 at the University of Delaware.

Earned points = number of points designated by peer divided by maximum number of points (65)

Peer Evaluation Grade = sum of earned points (from each peer) divided by number of peers

Your Peer Evaluation Grade is_____pts

Appendix D

University of Delaware College of Health & Nursing Sciences
NURS 240 Scientific Basis of Nursing

Evaluation of PBL

Use a grid sheet to complete this evaluation. For items 1-11, use the following scale:

A	B	C	C	E
strongly disagree				**strongly agree**

Upon completion of the PBL portion of this course:

1) I think I learned basic concepts of pathophysiology through the selected problems.
2) The course helped me learn how to obtain information from a variety of sources.
3) I feel I can apply the general principles I learned to other pathophysiology problems.
4) I am comfortable working in groups.
5) I feel comfortable asking for help from others in my group.
6) I feel my group members listen to me when I present information.
7) I feel my group members show respect for me and my learning style.
8) I feel comfortable sharing information with others.
9) My ability to find, read and analyze information has improved.
10) Evaluating the individual efforts of me and my group members helped our group function well.
11) I benefit from the group presentations for each problem.
12) Compared to other teaching-learning strategies in my major, I learned:

A	B	C	D	E
much less than usual				**much more than usual**

13) Overall, the amount of effort required in this portion of the course was:

A	B	C	D	E
much less than usual				**much more than usual**

14) Overall, I would rate this PBL:

A	B	C	D	E
very Poor				**excellent**

Use the back of this grid sheet to write any comment/suggestions related to this portion of the NURS 240 course.