Kimberly Barss

Module 5: PBL Lesson Plan

3/21/11

**Lesson Plan Title**

Introduction to the blood, blood components and disorders of the blood.

**Goals**

Students will learn how the blood functions within the body, the components of the blood, and the problems that can arise from imbalances in normal composition.

**Objectives**

After attending lecture students will be able to:

1. Identify the solid and liquid components of the blood and the functions of each.
2. Recall the normal laboratory values associated with the blood: hematocrit, hemoglobin, pH, CBC.
3. Identify the five white blood cell types (neutrophil, eosinophil, basophil, monocyte, lymphocyte) by sight and description.
4. Diagnose anemic disorders of the blood including point mutations (sickle cell), malnutrition (iron deficiency), and pernicious.
5. Analyze a real patient situation (case study) as it pertains to disorders of the blood.

**Discipline and Topic**

This unit will begin the chapter on blood for Anatomy and Physiology students. This is the first of two lectures, and they are supplemented by one experimental laboratory meeting.

**Target Population**

This lesson will be presented to approximately 20 undergraduate students enrolled in pre-health profession majors, mostly practical nursing students.

**Curriculum Alignment**

This lesson is the first half of the unit on the blood and prepares pre-health students for the NCLEX-PN nursing licensure exam as well as other licensing exams as required for the respective profession. According to the National Council of State Boards for Nursing, this lesson plan incorporates the Client Need of Physiological Integrity: Physiological Adaptation for the NCLEX-PN standards.

This lesson also includes the use of technology in the classroom that is intended to enhance learning according to the ISTE National Educational Technology Standards and Performance Indicators for Students #4: Critical Thinking, Problem-Solving, and Decision-Making.

**Underlying Educational Theory**

This lesson draws upon the constructivist theory of learning, providing a foundation of knowledge on which the students will build. The technological component of problem based learning, including a case study, models Jerome Bruner’s constructivist theory of Discovery Learning. Discovery learning involves the student and their current set of knowledge and skills and is an active process in which the learner works through problems “to discover facts and relationships for themselves.” (<http://www.learning-theories.com/category/constructivist-theories>)

**Materials Description and Timing**

The intended time frame for this lesson will be a 3 1/2 hour lecture period and independent study time, designed to take approximately 45 minutes. The materials required are as follows:

1. One computer and projector at the front of the classroom to project the power point slides for the lesson and give demonstration for accessing the online course components.
2. Students will all have paper copies of the lecture to follow along with and take notes on.
3. Multimedia enhanced lecture slides will incorporate videos to visually demonstrate the blood and its function.
4. Human Anatomy and Physiology (textbook), by Marieb and Hoehn, 8th ed: Benjamin Cummings.
5. Anatomy and Physiology Revealed (CD-ROM)
6. A personal computer with internet access that can be accessed outside of class time.

**Supplemental Materials and Links**

* The independent study section of the lesson, which includes a case study as well as a modified mini-web quest, is accessible on the course interactive wiki site (though for this assignment is not being used as a wiki) at <http://barssap2.wetpaint.com>
	+ From the home page, click on the link on the left-hand side labeled “Chapter 17: Blood”
	+ The link for the case study and the mini-web quest are at the bottom above the rubric.
	+ Student discussions will take place under the “Discussion” tab, within their corresponding groups (D1= Day section, E1= Evening section, Group 1, etc.= The student’s group number).
* Students will need to access the course web site for notes, handouts, and assignments. Each student receives an access code with the purchase of their textbook to access the site: [www.connect.micgraw-hill.com](http://www.connect.micgraw-hill.com)
* Course lecture notes and handouts can also be accessed through the school’s student portal, SONIS. ([www.mildred-elley.edu/student-portal](http://www.mildred-elley.edu/student-portal) ) The instructor posts the course materials to the course section and they are available throughout the module for students to access.

**Lesson**

1. The blood chapter opens our course, and therefore must be given on the first day. The first day also includes housekeeping tasks such as distributing and explaining the course syllabus, class policies, class schedule, etc. This portion takes 45 minutes of the 210 minute time slot.
2. Students participate in introductions and an icebreaker activity. Based on student interests and major, the discussion groups will be formed for the wiki site as well as lab. This will take approximately 30 minutes of the 210 minute time slot.
3. Students will first receive the lecture on the blood. This component is the first section of the unit on blood and will take approximately 120 minutes of the 210 minute time slot, including two ten-minute breaks.
4. Then, students will receive the demonstration on accessing, posting, and discussing within the course wiki site. This will take 15 of the 180 minute time slot.

**Evaluation of Students**

* Students are quizzed informally and verbally during the lecture to ensure understanding.
* A formal assessment in the form of a written exam for the unit will include this material with the second half of the lecture on the blood.
* Student discussions of the case study will be graded using the following rubric:

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| **Case Study Discussion** |
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| Teacher Name: **Mrs. Barss** |  |  |  |
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| Student Name:     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
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| CATEGORY | 4 | 3 | 2 | 1 |
| Summary | Summary describes the skills learned, the information learned and some future applications to real life situations. | Summary describes the information learned and a possible application to a real life situation. | Summary describes the information learned. | No summary is written. |
| Analysis | The relationship between the chemical principles and physiology are logically analyzed. Predictions are made about what might happen if part of the lab were changed or how the experimental design could be changed. | The relationship between the chemical principles and physiology is discussed and trends/patterns logically analyzed. | The relationship between the chemical principles and physiology is discussed but no patterns, trends or predictions are made based on the data. | The relationship between the chemical principles and physiology is not discussed. |
| Participation | Posts were timely and well written and contributed to the discussion. | Posts were timely and well written but only minimally contributed to the discussion. | Posts were timely but lacked careful thought in writing and minimally contributed to the discussion. | Participation was minimal OR student was hostile about participating. |
| Spelling, Punctuation and Grammar | One or fewer errors in spelling, punctuation and grammar in the report. | Two or three errors in spelling, punctuation and grammar in the report. | Four errors in spelling, punctuation and grammar in the report. | More than 4 errors in spelling, punctuation and grammar in the report. |
|  |  |  |  |  |
| Date Created: **Feb 22, 2011 05:59 pm (UTC)** |  |  |

**Evaluation of the Lesson**

* This lesson will be considered successful if, during informal in-class quizzing, students are successfully answering questions.
* Formal evaluation will be considered successful if at least 70% of the students score 75% or higher on the exam.
* Students will receive at least a 12/15 on their rubric scores for discussion.
* Students will also have the option to submit their feedback of the case study exercise online on the course wiki site through the polling widget.

**Rationale for Using the Medium**

Given the time constraints on the course, students are given the bulk of the instructional content in a lecture format using power point projections. Case study problem based learning has been proven to be an effective tool in building critical thinking skills and analysis of material.

The task of interacting with the material and one another asynchronously through our course web page extends the classroom into the students home and provides useful applications that force the students to analyze chemical values in the blood, interpret physiological signs and symptoms, and deepens student understanding by allowing for reflective writing with peers. He or she is required to collaborate with group members by posting individual summaries of the reading, discussing and analyzing the case study as it relates to the course material and summarizing the discussions as they pertain to the case study findings.