Chapter 3 : You've got the job, now what?

Figure 3-1: A pre-service teacher teaching and realizing the importance of planning!

ELEMENTS OF THIS CHAPTER

- ✓ Planning: Year, Unit and Daily Plans along with Personal Growth Plans.
- ✓ Classroom and Science room supplies: Everything you ever wanted to know.
- ✓ How to organize your classroom
- ✓ Safety in a science room.
- ✓ Summary
- ✓ Questions to Consider
- ✓ References

You've got the teaching job. It could be that you are heading out on your first practicum or that this is your first real paying teaching job. Now what? What can you expect? What is the reality of teaching? The first reality of teaching, especially if this is a practicum experience is that no matter what percentage of your associate teacher's teaching load you are carrying, even 100%, you are still not doing the entire teacher's job. When you are teaching 100% load, you are doing about 2/3 of the teacher's job. This is because being a teacher is about teaching plus a lot more. For various reasons, you will not be able or allowed to do the other 1/3 of the job. The main underlying reasons for you not being able to do the 'entire' job are:

(a) You do not have a teaching license and,

(b) You are not an employee of that particular board.

This remainder which you will not be allowed to do may include phone calls and other forms of communication to parents about their child, discussions at meetings dealing with special needs students, completing report cards, attending/participating in staff meetings that deal with confidential issues, hiring committee meetings, and participating in various other administrative duties that your associate teacher may have. Each of these extras can take hours out of the school day for the associate teacher and it is these types of items that make up the remainder of the teacher's job. Sometimes, it is not the teaching or the behaviour of students that will make a teacher upset or frustrated with their job but rather all of these extras which are part of teaching but not necessarily seen by the public or part of your 'teacher training' program.

3.1 PLANNING

One of the important aspects of teaching is learning how to plan, but why is planning important? As a teacher, it is our job to construct interesting and varied learning opportunities to our students so that they may learn the required contents of the curriculum. To do this, in the

most time effect manner possible, you will need to plan **what you teach**, **how you will teach** it and in **what order you will teach** the concepts so that the students will have the easiest time understanding the content. You will also have to incorporate into those plans ways that you intend on **assessing and evaluating your students** since you will, at some point, be asked to produce marks for each of the students. Finally, by planning, you will be able to look back at the end of the day, month or year and see what worked and what didn't work, making changes to better improve both your delivery of the content as well as the student's experiences with the concepts.

3.1.1 Year Plans

A year plan is when you, as the teacher, determine what the overall year of school curriculum will look like for the courses that you teach. As a pre-service teacher, you may not see the need to make year plans since your practica may only been a few weeks long. Yet, once you have your real job and you realize that you will be teaching your students from September until June and you have so many units to cover, creating a year plan at the beginning of the year will be useful. As you move through the year, you will have a map to guide you with what topic is coming up next and when you should be moving on to the next topic so that you will be able to cover all the material without panicking and without going off topic.

To create a year plan, it is best to begin with the school calendar. This will give you a sense of the number of teaching days you have per month as well as when holidays and professional development days are scheduled. The next step is to go through the curriculum, for example your science curriculum, and perhaps the student's textbook and ask the following questions:

- ✓ What topics would be best to teach first, second, third, etc.
- ✓ Should I plan a few days for opening exercises in your classroom, should I do a review, what unit should I begin with and why?
- ✓ How many days do I think it will take to cover each unit?
- ✓ Does the weather play a part of my planning? Would it be best to plan a biology unit in the fall or spring when I can take students outside?
- ✓ Are their fieldtrips that I would like to plan? When would they occur and is that space available to me when I will want it?
- ✓ Will I need to schedule a final exam or a provincial exam and review time to help prepare my students?
- ✓ How much time and how with this affect my number of teaching days?

These are all questions that will need to be addressed as you prepare a year plan. The following is an example of a year plan. It's important to note that some school boards and divisions require teachers to submit their year plans **before** the beginning of the school year. You should ask your principal if this is part of their procedure once you are hired so that you can begin the task.

The following is an example of a year plan created for a grade 9 Science class using the Alberta curriculum. It was used during the 2000-2001 school year.

Table 3-1: Year plan for grade 9 Science using the Alberta curriculum.

Science 9
St. Joe's
Miss Baskin

Course Description: Grade 9 Science (Alberta Curriculum)

Objectives and Timeline
August 28 – October 10
Unit 1: Diversity of Living Things

- Living things show a diversity of structural and behavioral adaptations.
- Artificial selection provides a basis for the enhancement of desired characteristics of domesticated plants and animals.
- The concept of natural selection provides a basis for interpreting the evolution and extinction of species.
- Classification of living things is based on similarities and differences among organisms.
- Individual living things can be interpreted as members of groups of organisms that share common features.

October 11 – November 24
Unit 2: Chemical Properties and Changes

- Materials have observable and measurable properties.
- Changes in materials may be classified by reference to the properties of the materials that are affected.
- Acidity (pH) is a measurable characteristic of liquid solutions.
- Common household substances have physical and chemical properties.
- Rates of reaction are found to vary with the conditions of the reacting materials.
- Oxidation and corrosion reactions can be controlled by the use of chemical and physical means.

November 27 – January 19
Unit 3: Electromagnetic System

- Current electricity is potentially dangerous.

- Specialized technologies for the production of current electricity are based on chemical, photo-electric, or thermo-electric principles.

- Electromagnetic effects provide a means for conversion of mechanical energy to electrical energy or vice versa.

- Electrical devices are based on circuits.

- Electrical resistance can be used to control the flow of electricity in a circuit or to produce heat and light.

- Electromechanical systems can be designed to perform simple or complex functions.

January 22 – March 9
Unit 4: Fluids and Pressure

- Liquids and gases exhibit fluid properties that are significant to their application in technological devices.

- Forces within fluids are transferred in all directions.

- Hydraulic systems provide the basis for the application and transfer of forces.

- Various technologies are used in the movement and control of fluids.

- The study of fluid movement has led to development of aerodynamic and hydrodynamic design.

March 12 – April 20
Unit 5: Heat Energy: Transfer and Conservation

- The term heat is used in reference to energy gained or lost by a material as it interacts with other materials.

- Heat energy moves from hot bodies to cooler ones.

- Heat can be transferred by conduction, convection, and radiation.

- Heat transfer can be controlled through selection of appropriate materials and by use of appropriate design.

- Solar heating involves the absorption and transfer of energy from solar radiation.

April 23 – June 1
Unit 6: Environmental Quality

- Human actions modify environments through direct changes to living things, water, air and land; also through indirect effects.

- Environmental quality is used in reference to the ability of environments to be life supporting. A variety of biotic and abiotic factors are used as indicators of environmental quality.

- Pollutants are materials added to environments that negatively affect the quality of those environments.

- Materials added to an environment remain in that environment until they are moved or until they are converted to another form.

- Scientific knowledge contributes to the environmental decision-making process.

- Decisions at the personal level affect environmental quality.

June 1 – June 25
Review for both final and provincial exams

Table 3-2 A section of a year plan for Physics 12 NS Curriculum 1998.

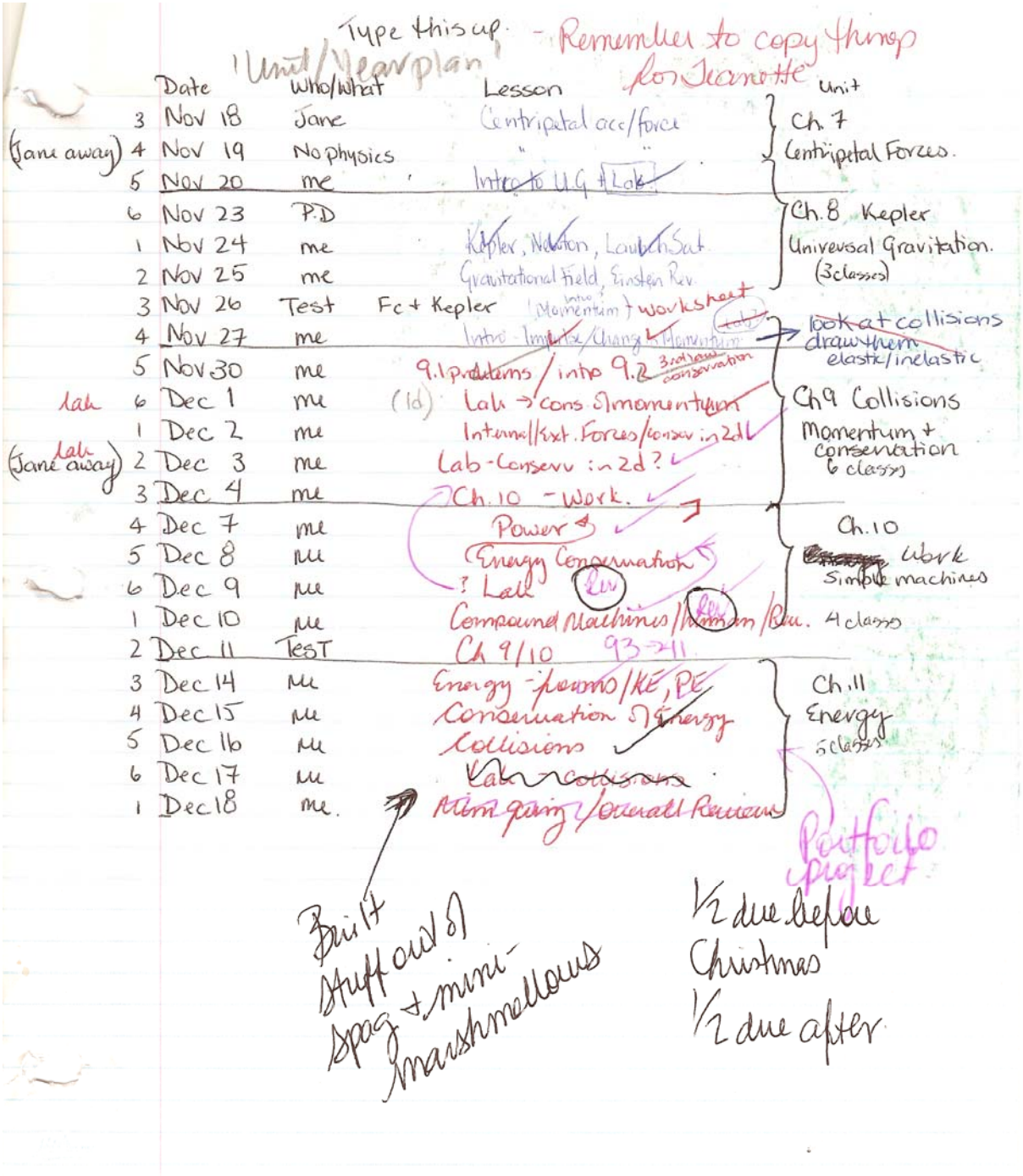

Table 3-3 Year plan for grade 5 science based on Ontario curriculum.

Year Plan (Outline) Grade 5 Science

(based on 2007 curriculum)

Unit	Big Ideas to Cover	Time Needed/Suggested	Calendar Timing
Understanding Earth & Space Systems – Conservation of Energy & Resources	Energy sources are either renewable or non-renewable. Energy can neither be created nor destroyed, but it can be transformed. Choices about using energy and resources have both immediate and long-term impacts. Conservation (reducing our use of energy and resources) is one way of reducing the impacts of using energy and resources.	~ 6 weeks (120 minutes of science a week)	September/October
Understanding Structures & Mechanisms – Forces Acting on Structures & Mechanisms	Structures and mechanisms throughout our environment have forces that act on and within them. We can measure forces in order to determine how they affect structures and mechanisms. This information can be used to guide the design of new structures and mechanisms. Forces that result from natural phenomena have an effect on society and the environment.	~ 8 weeks (120 minutes of science a week)	November/December/January
Understanding Matter & Energy – Properties of and Changes in Matter	There are three states of matter. Matter that changes state is still the same matter. Physical change refers to the fact that a substance can be changed from one form to another. Chemical change implies the formation of a	~ 6 weeks (120 minutes of science a week)	February/March

	new substance. The properties of materials determine their use and may have an effect on society and the environment.		
Understanding Life Systems – Human Organ Systems	Organ systems are components of a large system (the body) and, as such, work together and affect one another. Organ structures are linked to their functions. Systems in the human body work together to meet our basic needs. Choices we make affect our organ systems and, in turn, our overall health.	~ 8 weeks (120 minutes of science a week)	April/May/June

3.1.1 Unit Plans

A unit plan is the bridge between what you have created for a year plan and what you will do each day you teach science. Unit plans can expand on each of the units you have included in the year plan and should give you or anyone who is examining the plan an idea of the topics to be covered, the order of the concepts, assessment techniques and tools, laboratory activities, etc. Creating a unit plan will help you focus on all that can be done with just that unit in that particular time frame which has been dictated by the year plan.

There are many ways to create a unit plan, just as there are many ways to create year and lesson plans. The method presented here is only one suggestion. Also, depending on where you teach, there may be Ministry or Department of Education licensed software which can assist you in creating unit plans, for example the Ontario Unit Planner is available in all school boards in Ontario to help assist teachers in unit planning. Some teachers use this and some do not – it is left to the discretion of the teacher. If there is no software available, you may begin the unit plan by creating a table using a spreadsheet or other software application or by mapping out the plan with paper and pen. Typically, you will need a minimum of four columns and a number of rows (depending on the number of lessons within the unit). These four columns can be labeled 'lesson', 'expectation', 'teaching strategy/lesson strategy,' and 'assessment tools'. Each row of the table will be for each separate lesson. The following is an example of a unit that was originally developed for an Ontario grade 11 physics unit on light but with the recent curriculum changes, this unit will now be part of the grade 10 curriculum.

Table 3-4: Example of a unit plan on light for the grade 10 science course created using the grade 10 academic Ontario curriculum.

Curriculum Expectations: by the end of this unit, students will

- *Demonstrate* and understanding of the properties of light and the principles underlying the transmission of light through a medium and from one medium to another

- *Investigate* the properties of light through experimentation and illustrate and predict the behaviour of light through the use of ray diagrams and algebraic equations

- *Evaluate* the contributions to such areas as entertainment, communications, and health made by the development of optical devices and other technologies designed to make use of light

Motivation:

1.Reflecting surfaces, polished metals, quiet pond, reflecting glass

2. How are images in mirrors formed? Why are mirrored images reversed?

3. What causes a section of road look like a puddle of water?

4. How can light rebound off a shiny surface (reflection)?

5. How does light bend when it travels from 1 material to another (refraction)?

6. How changes in surfaces affect magnification, attitude, kind and position of an image?

Lesson#	Expectation			Lesson Strategy	Assessment Tools
	Concepts	Tools	STSE		
1) Characteristics of light/curved mirrors	a) (non)Luminous objects b) Particle model of light c) Rectalinear propagation reflection and rays d) Beams e) Opaque media f) Images (virtual/real) g) Ray Diagrams h) Curved mirror terminology (Convex, concave, radius of curvature, vertex, principle axis, focal length, focal point)	Chalkboard/talk Text book Overhead Picture of the sun, moon Ray box, used 3 types of reflecting surfaces to (Tiny concave/convex mirrors) Large Concave Mirror	Convex mirrors used for security purposes in stores Why light travels in straight lines (Being able to see/shadow formations	Hook using the giant concave mirror, having student participating Examples	Lab next day Homework Test next week
2) Lab on light mirrors and ray diagrams	a)Determine the difference between incident and reflective angles for plain mirrors. And determine the focal length for concave /convex mirrors using ray diagrams	Ray box Ray box slide with single/multiple slits Concave/convex/plain mirror Polar graph paper	Understanding how we view mirrors	Demonstrate how to handle material Working on lab safety Rules of labs Working in groups Instructions given verbally to prepare students to take notes	Formal Lab reports that will be handed in at a later time

3) Plane mirrors, reflection and images	a)Two laws of reflection b)Types of reflection (regular/irregular) c)Drawing Ray Diagrams d)Parallax, zero parallax	Pictures of optical illusions (hook) Chalkboard/talk	Billiards Laser tag How mirrors work Reflection of light	Pictures of optical illusions (hook) Optical Theatre stage effects Examples	Homework Materials will be tested week after
4) Refraction, index of refraction and speed of light	a)Scientific model of light (wave model of light) b)Refraction c)Mirage d)Refraction in media (transparent media, etc..) e)Measure the speed of light(Albert Michelson) f)Index of refraction	Power point slide Digital projector Laptop computer Penny Erlenmeyer Flask Water Beaker	How mirages occur Why light can travel through certain media	Disappearing penny trick for hook using the penny, Erlenmeyer flask, water and beaker Examples	Homework Material will be tested week after
5) Test on above					
6) Snell's Law, Critical angle, total internal reflection	a)Snell's Law b)Ray diagrams for refraction c)Two laws of Refraction d)Critical Angle e)Total internal reflection	Chalkboard/talk Optical trick for hook Circular window effect picture	Fibre Optics Rainbows	Optical trick for hook Examples	Materials will be tested week after Homework
7) Apparent depth, apparent height	a)Apparent depth b)Apparent height c)Sparkling Diamonds	Chalkboard/talk Overhead Overhead Projector	Why your feet look shorter when you sit on the side of the pool with your legs in	Explains the bending effect in water Examples	Homework Material will be tested next week

8) Lab: Refraction, Snell's law, Critical Angle	a)Verifying Snell's law using two different media b)Determining the critical angle from Lucite to air and water to air	Ray box Ray box, single slit Semi circular plastic container Water Lucite Polar graph paper Ruler Calculator	Rainbows Spectrum of light Explore the bending of light through different media	Lab Working in groups Lecture style of instruction giving Safety	Formal lab report write up to be finished and handed in at a later time.
9) Test on above					
10) Fibre Optics and compositio n of light	a)Components of optical fibres (core, cladding, and buffer coating) b)Explain how fibre optics work (total internal refraction) c)Composition of white light d)Spectrum dispersion and recomposition	Projector Laptop Overhead projector Overheads Coil of Lucite/Optical Fibres Handout	Light from sun to bring light inside commercial and residential buildings Transmission of information Understanding why we see rainbows	Coil of Lucite was the hook along with a powerpoint presentation on fibre optics as an alternative light source Examples	Homework Test will be next week Hand out for in class work
11) Lenses	a)Characteristics of images formed by lenses b)Describe the effects of converging and diverging lenses effects on light c)Optical axis d)Lateral displacement e)Thin Lenses f)Images formed by converging lenses g)Images formed by diverging	Chalkboard/talk Lens hand out	Glasses Telescopes Binnoculars	Talking about Galileo for the hook Ray diagrams for lenses Examples	Hand out for class and homework Test will be next week

	lenses				
12) Thin lens Equation	a)Analyse images formed by lenses b)Predict the image position and characteristics of converging and diverging lenses using mathematical equations	Optical bench Meter stick Lenses Screen Converging lens with stands Candle stand Matches Candle	Eye glasses Microscopes	Optical bench demo Derivation of the thin lens equation Magnification derivation Sign conventions table Examples	Homework Test on material next week
13) 3 Day lab: Lens Lab	a)Build Telescope b)Introduced Keplerian and Galilean Telescope c)Determine the focal length of converging and diverging lens using an optical bench d)Construct a telescope of their choice to read a series of letters and number and words of decreasing size from across the classroom	Meter stick Two bench supports Two lens holders Candle Paper Screen 3 converging lenses of different focal length One diverging lens Candle stand	Binnoculars Telescopes Glasses	Group work Safety Lecture style given instructions	Formal Lab write up to be handed in later To assess their quality of their telescope and knowledge of lenses, have students from across the room read decreasing series of words letters and numbers all the way down to size 8 font
14) Chapter test on lenses					

Table 3-5: The assessment table to accompany the unit plan, here students will be assessed and evaluated in 4 different categories with the various weightings. Depending on where you teach, these categories and weightings may differ.

Category	**Knowledge/Understanding**	**Thinking & Inquiry**	**Communication**	**Making Connections**
Percent weighting	**40%**	**15%**	**30%**	**15%**
Homework Checks	• Look for correct equation usage • Methodology		• Explain steps • Punctuality, grammar, spelling, etc...	• How to apply the theory to the real world
Tests	• Correct equations • Methodology	• Reasoning	• Punctuality, grammar, spelling, etc.. • Therefore statements	
Formal Lab Write ups	• Explaining the lab thoroughly and what they are experimenting • Methodology	• Error analysis • Data analysis	• Punctuality, grammar, spelling, etc... • Proper formal lab write up	• Can the student create adequate hypothesis to minimize errors
Telescope project	• Applying theory to practice	• Error analysis	• Explain their reasoning for their choice of telescope	• Can the students use their knowledge learnt in class to minimize error to improve their telescope

Table 3-6: Example of a unit plan on the Human Organ Systems for the grade 5 science course created using the grade 5 Ontario curriculum.

Unit Plan (Outline) Grade 5 Science Human Organ Systems

Enduring Understanding/Key Learning:
Understand the basic structure and function of the five major human organ systems (digestive, circulatory, respiratory, excretory & nervous) and how the systems interact to maintain a healthy body

Unit Assessment & Evaluation:

On-Going Assessment: anecdotal notes during each lesson with regards to on-task behaviour, understanding of concepts, completion of handouts and explorations

Cumulative Project: Students will work in groups (teacher selected) to create life-sized models of the human body. These models will be drawn on sheets of paper, with the body outline represented by tracing a member of the group. Each group will have time during each major lesson to add the organ system being studied to their models. Time will also be given at the end of the unit to complete any unfinished work before handing in for evaluation.

Evaluation will be based on both overall completion and appearance and the accuracy of drawings & labels for each organ system.

Cumulative Unit "Test": Students will complete a cumulative unit test, which may be done with open notebooks under the discretion of the teacher. Basic tests are available from various education resources, however should be altered based on the foci of each lesson and the direction that the classes take.

Unit Overview:

Lesson #	Time Needed	Topic	Focus, Strategies, Application
Lesson 1	3 class periods (120 minutes)	Introduction to the Human Body	*KWL chart – what do you already know about the human body, what do you want to know/questions you have *introduction to life systems: cells as the basic unit of life, cells → tissues → organs → organ systems * look at slides of onion cells under the microscope, label basic parts of cell

Lesson 2	3 class periods (120 minutes)	Digestive System	*computer exploration to find the structure & function of each organ in the digestive system * group dramatization of how each organ contributes to the process of digestion * begin working on cumulative project: life-sized models of the human body – create the outline of the model, add and label the organs in the digestive system
Lesson 3	2 class periods (80 minutes)	Healthy Eating	*discuss Canada's Food Guide and the importance of balanced meals and healthy eating * art project: sculpt "mini-meals" – balanced meals including the food groups and accurate proportions (using plasticine) * completed mini-meals should fit on a "placemat" that is about half the size of a playing card
Lesson 4	3 class periods (120 minutes)	Circulatory System	*video overview of the circulatory system (e.g. Bill Nye) with fill in the blank questions to complete and keep in notebooks *heart rate exploration – measure resting heart rate, compare to heart rate after a few minutes of vigorous activity * add to cumulative project: draw and label the major organs of the circulatory system on the life-sized model
Lesson 5	3 class periods (120 minutes)	Respiratory System	*video overview of the respiratory system (e.g. Bill Nye) with fill in the blank questions to complete and keep in notebooks *lung capacity exploration – using a straw, a jar containing water and a bowl containing water, measure student's lung capacities *add to cumulative project: draw and label the major organs of the respiratory system on the life-sized model

Lesson 6	3 class periods (120 minutes)	Nervous System	*activity centre rotation in groups * centres (~ 10 minutes at each centre) 1) reading & fill in the blank questions about the structures & functions of parts of the nervous system; 2) reflex test (e.g. catching a ruler dropped by a partner between pinched fingers); 3) optical illusions (e.g. have students study common optical illusions and discuss what they see/don't see; 4) complete & label a diagram of the nervous system; 5) reading & fill in the blank questions about the brain *add to cumulative project: draw and label the major organs of the nervous system on the life-sized model
Lesson 7	2 class periods (80 minutes)	Excretory System	*computer exploration to find the structure & function of major organs in the excretory system (kidneys, ureters, bladder, urethra); record on chart for notebooks *discussion regarding sewage treatment & how human waste is prevented from harming the environment *add to cumulative project: draw and label the major organs of the excretory system on the life-sized model
Lesson 8	1 class period (40 minutes)	Muscles & Bones	*skeletal & muscular systems – reading from textbook to complete fill in the blank handout for notebooks *key: how the skeletal, muscular & nervous systems work together to create movement
Lesson 9	1 class period (40 minutes)	Skin	*computer (or text book) exploration to determine the function of the skin in protecting us against germs, infection and injury.

Lesson 10	2 class periods (80 minutes)	Cumulative Unit "Test"	*students will complete an open book test to consolidate their knowledge of the human body and it's major organ systems *sample test located in Dulson, J., & Roebuck, J. (eds.), *Science & Technology 5, The Human Body*, Pearson Education Canada, Addison Wesley, 2000, pg. 65-66. *test should be modified to reflect the foci of specific teaching
Lesson 11	1 class period (40 minutes)	Cumulative Project (Completion)	*review the 5 systems that are to be present & labelled on the life-sized model (digestive, circulatory, respiratory, nervous, excretory) *provide time for groups to complete their models, including drawings, labels, and colour

3.1.3 Lesson Plans

Lesson planning is the final type of planning that we will discuss. Each faculty of education will have their own 'way' of teaching lesson planning and will have their own type of 'template' which pre-service teachers are expected to use. The reason for learning lesson planning is so that as a new teacher, you will have a plan, a **'to do' list** that you will be able to follow as you are teaching the lesson. Creating a lesson plan, going through the various tedious steps of creating the plan also forces you to think about many of the aspects of the lesson, some of which you may not consider prior to teaching the lesson. For example, you will need to:

- ✓ Consider the materials needed for the lesson,
- ✓ Determine the prior learning of the students so that they can understand the topic of the lesson,
- ✓ Attend to any special needs and/or behaviour needs of students during and after the lesson,
- ✓ Think and write out the questions you want to ask the students when teaching.

Questioning is a very difficult skill to learn as the point is not to just ask surface questions but to get students to think about what is happening, to dissect the content, rephrasing it in their own words to make it part of their own new understanding. When preparing questions, it is good to refer back to Bloom's taxonomy and categorize your questions so that you know you will have a range of questions for the students. Finally, lesson planning will also give you a written record of what was involved with each of the lessons you teach, you can make notes on what worked and what didn't work thereby

preparing for next year this year. The following are examples of two types of lesson planning forms. The first is from Nipissing University's faculty of education and the second is an altered form from St. Francis Xavier University. Both are similar in their focus, the main difference is in style and being teacher friendly. Regardless of the format used, the point of planning remains the same – to know what you want to accomplish by the end of class, to have the materials ready for the lesson, to consider how and what you think is worthy and important to assess so that you can benefit or assist with student learning through assessment. Finally, by having a plan, students will soon come to realize that you have expectations for both yourself and your students.

Table 3-7: A grade 5 lesson plan on the Human Organ System. Ontario Curriculum.

Subject: Science	**Name:**
Grade Level: 5	**Date:** Wed. Mar. 5 2008
Unit & Topic: Human Organ Systems – Digestive System	**Time:** 12:40-1:20p.m. (40 min.) & 2:10-3:30p.m. (80 min.)
Expectations: **The Grade 5 learners will:**	
5s5 Grade 5 PLNR02 Science and Technology Life Systems Understanding Basic Concepts – describe the basic structure and function of the major organs in the digestive system	
Pre-Assessment:	
Learners: - Have completed intro lesson/activities to the Human Body unit - Have at least some common knowledge of the digestive system (i.e. that food travels through our bodies and breaks down...) - Groups will be created strategically so that leaders, as well as students with special needs, are mixed amongst all groups	

Learning Environment: - Classroom #4 - Computer lab (1st period of lesson) - Group exploration & presentations, group model creation (application) - At beginning, and to gain attention during transitions, grade 5 students will be seated in their desks according to the seating plan - Adjustments to learning environment: have all necessary materials pulled out ahead of time, ensure computer lab is booked
Resources: For Group Exploration & Presentations - Computers, internet access - Lined paper, pen/pencil - List of groups (5 groups of approx. 5-6 in each group; created ahead of time) - Foam ball For Model Creation - Large sheets of craft paper from a roll (4 or 5 x "life-size" sheets) - Pencil crayons, markers, crayons (in cupboard above sink at back of room) - List of groups (same as before, or switch to 4 groups - slightly different than original groups) - Human Body student text books (Addison Wesley)

Content:	**Strategies:**
Introduction: Hook	**Teaching Strategies:** **~ 5 minutes** Tell students that we will be incorporating as many interesting things as possible in to our science class today. This might include computers, drama, and art. Put students in to (teacher chosen) groups and tell them that they will need to know the organ that their group is representing (mouth, esophagus, stomach, small intestine, large intestine) Explain process of first portion of class to students: - In the computer lab you will sit with your group - You are responsible for using the internet to find as many important facts about your organ and its role in digestion - You may not print out information, you must write down only important facts that you will need to remember later

	- You don't need pictures or a lot of small details – should know the basic structure and function and anything interesting that you choose to include
Establishing the Learning: Exploration Presentation Preparation	**Teaching Strategies:** ~ **40–50 minutes** Have groups work on the internet to find information for their group. Make sure that at least one person in the group is recording important information. Walk around lab ensuring that students are on task and are finding accurate information. After groups have had sufficient time to find the needed information (judge this by most groups knowing the structure & function & having had the time to explore interesting facts), have students return to the classroom. Tell students what their next job is. Students will be responsible, as a group, for presenting (dramatically) the role that their organ plays in digestion. They need to tell/show the class what their organ looks like, what it does, and other interesting and/or important facts about it. Give students approximately 10-15 minutes to come up with their presentation for the class.

Strategies Cont'd:
Consolidation of Learning: **~ 15 minutes** Have groups present their role in the digestive system. Begin with the mouth and end with the large intestine. Use the foam ball to represent a piece of food on its journey through the digestive system and pause after each group has presented to re-cap important facts and ask questions of either the group or the audience for consolidation.
Application: **~ 50 minutes** Each group will be given a "life-size" sheet of craft paper, pre-cut from a roll. The students will have the use of their text books, pencil crayons, markers, crayons, etc. It is the group's job to trace one of its members in order for them to be the model, and then draw & label the digestive system within that model. Colour should be added.

Assessment:
Make anecdotal notes during computer time and presentations based on on-task work,

positive group interactions, and accuracy of facts. Also make note of creativity and accuracy during presentations.
For life-size model creations, assess the creation of the digestive system based on the following criteria:

- All organs included /5
- All organs labelled & labels spelled correctly /5
- Colour added, neatness /5
- Appropriate size & proportion to body size /5

Reflections:

Note: Sometimes the best reflections are not formally written in the box labeled "reflections" but rather as "notes" along the sides or over top of what you have planned. The idea here is not so much in the lesson plan looking pretty, but in being useful during class time and helping you as a professional grow into your role as "teacher".

Table 3-8 Example Lesson Plan document from the St. Francis Xavier University Field Experience Handbook, Appendix J.

LESSON PLAN FORMAT

DATE:
NAME:
GRADE:
TOPIC/THEME:

A. **LESSON PURPOSE**: What is the overall purpose of the lesson?

B. STUDENT OUTCOMES: What knowledge, skills and attitudes do you want students to develop? What curricular outcomes will be met by this lesson? How will you relate these to students' interests and understanding?

C. PRIOR KNOWLEDGE: What do the students already know about the topic? What skills and attitudes are relevant to the students' topic?

D. LESSON: How will you introduce the lesson to create interest and to link prior knowledge? What instructional strategies will you use in order to address the Principles of Learning? How will you and your students become more actively involved? How will your plan include all learners and contain adaptations and modifications where required?

E. MATERIALS: What materials do you need to do the lesson? Why are these particular materials important in developing the students' understanding? Do your materials reflect cultural diversity?

F. CLOSURE: What will you and/or the students do to finish up or link to new learning?

F. AUTHENTIC STUDENT ASSESSMENT: What will help show you that the students have met the outcomes you have set? Have you provided adaptations and/or modification?

G. PROFESSIONAL GROWTH TARGET: How will you determine how your lessons went? What can you change for the next time?

REFLECTION ON LESSON AND FOLLOW UP:
• Describe the learning event
• Did the students meet the learning outcomes? Why? Why not?
• What are the implications for future lessons?
• What are my new outcomes for the next lesson?
• Have I met my own growth target for this lesson? Why? Why not?
• What am I going to do about it?
• What is my new target and how will I reach it?

Table 3-9 Grade 12 Physics lesson using the St. Francis Xavier University Lesson Plan format from 1998.

Date: November 30, 1998 **Name:** Katarin Baskin
Topic: Rev. 9.1/ 9.2 **Grade:** 12 Physics

Purpose/Outcomes

- To be able to define momentum and impulse and use the momentum-impulse theorem to calculate changes in momentum.
- To understand the relation between average force and time interval for a fixed impulse.
- To begin to recognize the connection between the third law and conservation of momentum.
- Use the definition of a closed, isolated system.
- State the law of conservation of momentum and use it, especially in collision problems.
- Distinguish between internal and external forces.

Prior Knowledge

- velocity (chapter 3)
- mass, force (chapter 5)
- vectors (chapter 6)
- Section 9.1 Momentum/impulse

Lesson

1. Ask if there are any questions on the "Big Bang" reading given on Friday
   - **HWK: Do essay problem #1.**

   Out 10/99 Do not include

2. Ask if there are any questions on the "STM" article.
   - **HWK:**
     1. How fine are the tips used in STMs?
     2. How would one make a tip this fine?
     3. Which is better, constant current or constant voltage and why?
     4. Can the STM be used "under water"? Why? Does this surprise you? What other solutions could be used which you have discussed in Chemistry?
     5. Does the technique which is used by the STM use the idea of momentum and are collisions involved? How?

   Due on Wednesday
3. Place on the board the Momentum and Impulse formulas.
4. Problems with the homework from last day? Do #12 on the board. Do maybe 2-3.

   #1 pp; #10
5. Define system.
6. Define Closed, isolated system.

   Good example is the class or a can of pop

7. Go through Newton/Momentum fig9-5. ← found this confusing

8. Talk about the conservation of momentum and the result of #7 - write definition on the board.

9. Do experiment with a ball/box and masses to determine using the conservation of momentum the velocity of the ball just before impact. ← really liked this experiment many participated

do class exp. today.

10. Define internal and external forces.

11. **Hwk: Practice problems #5, 6 p.185** (opt)
Practice problem #10 p. 188
Read 189-192 + lab.

Materials
- Textbooks, OHP, chalkboard
- ball, box, shreaded paper, tape, spring scale, measuring tape.

Closure
- Assign homework as above
- Question the students as they are completing the mini-lab.
- Describe what will be going on in tomorrow's lab and that hwk is due on Wednesday.

Assessment
- Questioning individuals as well as groups.
- Ability to apply the concepts discussed over the past 2 days to the mini-lab.

Next time: Maybe make a sheet on the Conservation of momentum or do a more detailed problem on the board

lb → pound from Roman Pound called (libra/lat) is equivalent to 5730 grains.

↑ Students wanted to know why this