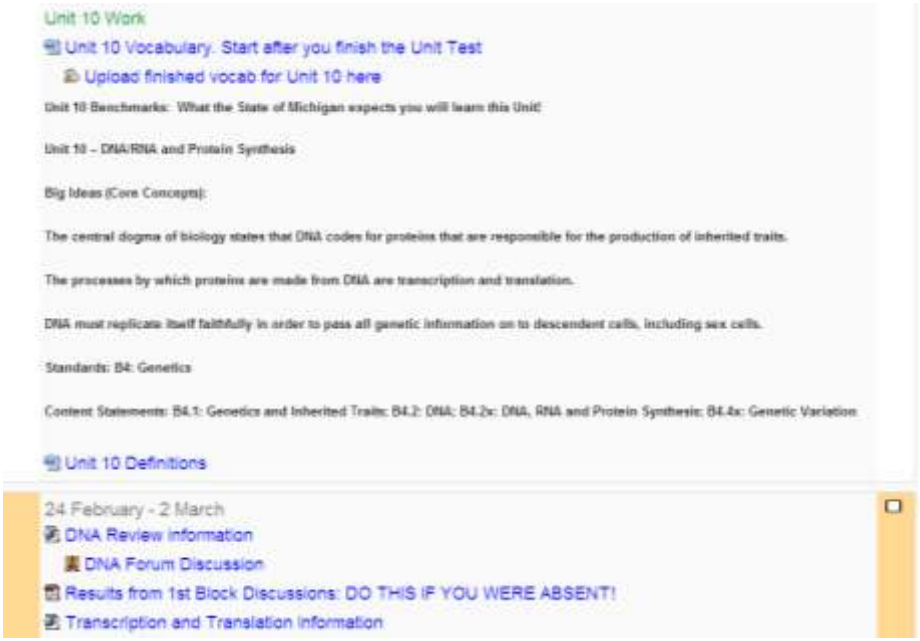
As of this year, I teach "Blended" Biology Classes

This means at Pennfield High School we have the PUL program (Power Up Learning) and my students have laptops and we primarily obtain our materials and information from the laptops in order to meet State of Michigan requirements when assessing proficiency and comprehension of the High School Content Expectations (HSCE) in Biology. We use our 2002 Biology Book as a reference and a resource, not as a guide for the lessons.

This is how my class looks this week…

The following is an example of lessons from ***Unit 10 of DNA for Biology HSCE***. Work on this unit began with the following introduction:



Introduction: Directly from the State of Michigan Standards, Unit 10 is on "DNA/RNA and Protein Synthesis". The Big Ideas or Core Concepts are for the students to learn (and at our school it is with a nod to the old Madeline Hunter Theory that every learner is proficient to at least the 70% level), the central dogma of biology, which states that DNA codes for proteins that are responsible for the production of inherited traits. Students must be familiar and be able to describe the processes by which proteins are made from DNA are transcription and translation. They must also know that DNA must replicate itself faithfully in order to pass all genetic information on to descendent cells, including sex cells.
The State of Michigan Standards for Unit 10 are: B4: Genetics, including B4.1: Genetics and Inherited Traits; B4.2: DNA; B4.2x: DNA, RNA and Protein Synthesis; B4.4x: Genetic Variation. Every student in our class has access to a laptop or classroom computer and we are to provide our lessons using Moodle, so they are given in a "blended" online format during our block (90min).

Transitions: Students begin by defining the Unit 10 vocabulary after they finish the test from the last unit. They are to attempt these first without any resources and show me how many they know (on computer I check it from

LanSchool, on paper, they bring to me). They can complete this by hand, or in a ppt format for flashcards, or in a Word document. They may then define these State of Michigan recommended vocabulary from the Biology book and write it down using paper and pen, or they may use a PPT or Word document saved as "Unit10Vocab" and still use the Book, or http://biology-online.org/dictionary/Main_Page as a resource. They can also use any other website as a resource as long as it is approved by me (.edu preference). The next day we compare it to what others have found and discuss "best definitions" as there will be a vocabulary quiz in a week. This provides a basis for discussing the intent of this unit. Students are encouraged to find a flashcard resource online to review their vocab, such as: http://www.mhcentro.com/rr/319768.html

Activities for the first 2 weeks: In our school, the semester grade is primarily based upon passing the Unit Test, which is worth 50 points. Therefore, the 30+ vocabulary words students need to complete before taking the test, but they are only worth 5-10 points.

For the first official day of the new Unit, students play the Flashcard resource/games at the bell, and while attendance is being taken, but they do not earn points for it. Next, students put in their earbuds or put on their headphones and take approximately 30 minutes to watch the Hippocampus DNA review at http://www.hippocampus.org/hippocampus.php/course_locator.php?course=AP%20Biology%20I&lesson=10&topic=5&width=600&height=350&topicTitle=DNA%20Discovery%20%26%20Structure%3A%20Summary&skinPath=http://www.hippocampus.org/hippocampus.skins/default . If it appears a majority of students are not on-task, then the class watches all the videos/screens together and takes notes using a Word document. This consequence has been enough of a deterrent for students to stay on-task. Following the DNA review, students take 30 minutes to participate in an online directed discussion using a Forum format with a specific question their group must answer on DNA. This is directly from the required State standards and relates to the videos watched. Students must provide a final summary WITH resources!

The next class period is similar, using Hippocampus Protein information http://www.hippocampus.org/hippocampus.php/course_locator.php?course=AP%20Biology%20I&lesson=13&topic=5&width=600&height=350&topicTitle=Translation%3A%20Protein%20Synthesis%3A%20Summary&skinPath=http://www.hippocampus.org/hippocampus.skins/default and viewing it for approximately 20 minutes, with them completing a Codon Bingo activity either online or with printed Bingo Cards (our district is nix-ing the printing, so we are doing it using a Word document and text boxes) from http://www.accessexcellence.org/AE/AEPC/WWC/1994/codon_bingo.php .

The next class is a 45 minute class, and students will complete a quiz over the vocabulary and concepts using a Moodle Quiz (Essay, 3 MC, 3 T/F and Matching, 3F-i-b). This is graded automatically, and again, is only worth 10 points. Moodle automatically scrambles the question so students do not see the same order of questions when a class is taking the quiz. If students do not pass with a 70% or better proficiency, then they retake it during a seminar/study hall time after first remediating. They must show before taking or retaking the quiz that they have their vocabulary completed, or they must do so!

For the next class, students will create DNA models using paper and pencil, or using a sketch program on the computer—either is fine. This will take all block and students must show 12 nucleotides and in the correct "sequence" with a double helix. They must identify the A, T, C, G and the nucleotide and where the 'backbone' is located. They must answer 5 questions directed towards their group on a Wiki on Moodle which 'stamps' their name and time the info was entered.

For the last block this week, they are to complete the lab simulation on DNA and genetics at http://www.phschool.com/science/biology_place/labbench/lab7/intro.html . If they finish early they can review using the online game/resources/flashcards.

Conclusion: Student have a study guide which they must complete online and submit online, by first attempting to answer all questions and showing me, then updating with what they have found as correct and citing resources in the footer. They can then take the practice test/pre-test. Last class on the Unit is for taking the test, and scoring 70%+. If they do not, they must attend Remediation on Monday after school and retake the test during seminar/study hall that Wednesday. They must pass the Unit Test to pass the semester, or pass the final exam with a 70% or better with at least 70% correct for the questions in that section of the final.