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Arkansas's Outstanding Biology Teacher, 2009
Lessons to Share, National Association of Biology Teachers Conference, November 2009.

I find games to be a very effective way of engaging students, especially for reviews. I have made a number of games for my students to play, some based on game shows or board games. Here are some that go over well with the kids:

Trivial Pursuit™

OK, not really novel, I know. But this is one of my favorites! I collected 400 questions total, approximately 50 per unit, for the game. I divided the questions according to unit of study (photosynthesis and respiration, cell biology, ecology, evolution, etc.) I printed them on the Word template for envelope labels (that divides your paper up nicely) and printed them on colored paper, a different color for each topic.

I created a game board and the "pie pieces" using AutoShapes in Microsoft Word, colored them, cut them out and laminated them. Although I suppose you could use an actual game board. I bought miniature figurines (you can purchase these at Game Stores) and dice for each of the 7 games. I made 7 copies of the game, that way my 28 students per class can play in groups of 4.

My students play trivial pursuit prior to semester exams and our state mandated End of Course Exam to review.

Bubbles and Barracudas (Similar to Chutes and Ladders™)

I made a game similar to "Chutes and Ladders" for my Marine Biology and Oceanography class. The figurines students use to represent themselves on the game board are cartoon fish. To play, they must first answer a quiz question, printed on a card. If they answer the question correctly, they may roll the die to and move the appropriate number of squares on the game board. If they land on a square with a barracuda, they must "swim" away from the barracuda, along the path of the arrow (similar to sliding down a chute) to the square marked by the arrowhead. If they land on a square with bubbles, they can follow the bubbles up to a new square (similar to climbing a ladder). The students continue to answer the quiz questions, roll the die, move about the board until someone gets to the final square.

I created the game board in Microsoft word using the Table feature and shading feature to draw the squares and color them in. My students play this game intermittently throughout the year, whenever we wish to review the diversity of life in the sea. I made 7 copies of the game so that my students can play in small groups.

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Ecosystem Balance Card Game

This game is similar to the children's game, Uno™ and a bit like Go Fish™. It consists of a deck of homemade cards. There are 5 cards in it that form a food web from an ecosystem (desert, tropical rain forest, grassland, deciduous forest, freshwater, etc). You will want enough food chains so that each student in the group can collect a different food chain (I like to use 5 or 6 food chains per deck, or 30 organism cards total). In addition to the organism cards, mix in some "beneficial disruptions" and some "detrimental disruptions". For example, I use one ecosystem specific detrimental disruption for each ecosystem, then a few general ones. A specific one might be "A wildfire burns through the grassland. If you are holding any grassland cards, discard them and draw new cards to replace them from the deck." A general detrimental disruption might be "A power plant in your area dumped wastes illegally, polluting your ecosystem. Lose 2 turns while you wait for waste clean up." You will also want to create some "beneficial disruptions" such as "Your ecosystem was just declared a National Park and the animals within the area are now protected and the populations increase. Ask any other player for a card from your ecosystem, to represent the rebounding population numbers."

[The following is the part similar to Uno™]

To begin play, each student is handed 5 cards from the deck. The top card on the deck is turned over to start the discard pile. Students examine their cards and silently decide which ecosystem they will try to collect. The student to the left of the dealer may either pick up the discarded card (if it is a member of the ecosystem they wish to collect) or draw from the deck. To complete his/her turn, the students must discard a card. Students will always have 5 cards in their hands. If they draw a disruption card, they must do as the card instructs (if they are dealt a disruption card at the beginning of play, they use that their first turn as their discard). Play continues as students attempt to collect the 5 cards representing their ecosystem's food chain. If the deck diminishes, the discard pile is flipped over and becomes the deck from which students draw. In this manner, discarded cards will be available for drawing over and over.

[The following is the part similar to Go Fish™]

When students have collected all 5 cards that create a food web, they lay them down on the table face-up and the group discusses the organisms, and tries to arrange them into a proper food chain (or food web). I have my students record the food chains on paper.

HINT: when you create your cards, put abbreviations in the corner (such as DF for deciduous forest and DS for desert) to help students identify which organisms belong to which ecosystem. Use colorful pictures printed on white paper, then mounted on colored index cards. I laminated my cards so they would last longer.

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Unmentionables

This game is similar to the game show \$10,000 Pyramid™ or the game Taboo™

At the top of an index card, record a term. At the bottom of the term, write 2-3 words or phrases that are "unmentionable". Students play in teams of 4. They split into 2 couples. Each couple has a turn to draw a card and the partner that sees the card tries to describe the key term without using the unmentionable terms or the key term. Set a time limit (30 seconds, 60 seconds, depending on the level of student). If the partner guesses the term correctly, that couple gets a point and it is the next couple's turn. If the partner does not guess the term correctly, they do not earn a point, but it is still the next couple's turn. Alternate between couples (and between partners) so that everyone has a chance to try to describe the key term.

The number of cards you create is dependent upon how long you want the kids to play.

Matching

Take a pair of index cards, on one write a vocabulary term and on the other write the definition. Repeat with as many other terms as you need your students to review.

This game can be played similar to the children's game Memory™, where cards are placed face down on the table and students attempt to match the term with the definition, or as a class activity. If playing as Memory™, it works best if you have 10 or fewer terms. In this scenario, I make 7 versions of the game so students can play in small groups. If you have a large number of terms (up to 14 for a class of 28 kids) you can shuffle the cards, and pass them out to students. Have them stand, and silently move around the room reading cards until they find their match. When they find their match, they line up along the walls of the classroom with their partner. Once everyone has found their partner, go around the room and have couples explain their term and its meaning.

Crossword Puzzles

I create crossword puzzles to accompany readings (the students fill them out as they read) or as review prior to unit exams. I use the puzzle maker at Discoveryschool.com. It is easy to use. You can copy/paste the puzzle and clues from the website into a word document to save for your files.

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Vocab Bingo

Open a Word Document and create a large 5 x 5 table. Print about 30 copies. On each paper, fill in 24 vocabulary terms from the unit, being sure to place the terms in different orders on each card, and a free space in the center most square. This is most successful in units where you have more than 24 terms, so that you have greater flexibility in choosing what terms to put on the card. Each student is given a paper and small pieces of construction paper to cover their squares with when one of their terms is used. Instead of simply calling out terms, I read the definition. The kids have to know what word to look for, based on the definition. When a kid calls out "Bingo!" I have them read off the term *and* tell its definition, as a review for the class. This is a good way to review a unit's vocabulary prior to an exam.

Four Corners

In this game, you review with multiple choice questions. Place a piece of paper with "A" on it in one corner, "B" in another corner, "C" in a third corner, and "D" in the fourth corner. You can either play it straight forward, where you pose a question and the kids have to individually select the correct answer and go stand in the appropriate corner, then you can select a student from each group to explain why they think their choice is correct. I find that in some classes, the students just look to where the "smart" kid is going and follow, without thinking for themselves. This is when you add in the twist...

To add in the twist, prior to beginning play, assign each student to be a "truth teller" or "liar". I do this by writing on scraps of paper and giving each student a scrap of paper to read their assigned role. It works best if you make the brightest few students "liars". Then let all the followers who tend not to think for themselves be "truth tellers". The catch is, that the "liars" have to be convincing; they have to act as if they are really thinking about which answer is correct and then, if called on to defend their selection, they will need to give a convincing fib. Also, they mustn't "lie" every time, or the class will figure out that they are a liar. They must alternate between playing the part of a liar and answering the question correctly. When you ask the question, you will see the followers in the class look to the smart kids. They will be confused as to why the smart kids are splitting up and be forced to think for themselves. Don't always call on the smart kids to defend their selection. Mix it up. That way, it is harder for the students to figure out who is a "truth teller" and who is a "liar". All the while, they are reviewing biology concepts. At the end of the game, have the class try to guess who the "liars" were. 😊

Word Searches....with a twist

At discoveryschool.com you can also create word searches. But rather than *provide* the terms to be searched for, I like to give clues (perhaps the definition or a description). That way, the students have to think of the vocabulary word on their own (review terminology!) and then find the term in the word search.

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