PIONEER RESA EDUCATIONAL TECHNOLOGY TRAINING CENTER
Georgia Framework for INtegrating TECHnology Phase One: InTech

TECHNOLOGY-CONNECTED LESSON PLAN

Lesson Plan Number	3

(please type)

Name:	James O'Connor	**School:**	None (student at NGCSU)

Lesson Title:	What's Wrong With My Pond?
Grade Level/Subject Area:	HS – Intro to Statistics (11th and 12th grade students)
Student Profile:	**Number of Students:** 9
	Number of Students with Special Needs: 0
	Area of Specialties: N/A
Performance Objectives:	After performing a cooperative learning group activity, the students will be able to use linear regression and correlation coefficients to solve and/or evaluate real-world problems to teacher satisfaction.
Curricular Connections: (QCC/IEP/Local or National Standards)	Topic: Problem Solving, Reasoning Standard: Solve problems throughout this course that involve: -selecting appropriate approaches and tools, -using estimating strategies to predict computational results, and -judging reasonableness of results. Topic: Communication Standard: Communicates mathematical ideas by using language and symbolism: -reflects upon and clarifies thinking about mathematical ideas and relationships. -formulates mathematical definitions and expresses generalizations discovered throughout investigations. -expresses mathematical ideas both orally and in writing. -interprets written presentations of mathematics, and asks clarifying and extending questions related to mathematics about which they have read or heard. Topic: Problem Solving Standard: Uses specific problem-solving strategies such as guess

	and check; drawing a diagram or other representations of the problem; using tables, charts or graphs; working backwards; using problem reduction (converting to a related problem that is easier to solve); breaking the problem into manageable pieces and solving the separate parts individually; and uses estimation and approximation when appropriate. (Correlated to Algebra I standard 1) Topic: Problem Solving Standard: Recognizes and applies the problem-solving process: - Identifies and formulates a problem based on a practical or laboratory situation. - Proposes and evaluates information needed to solve problems based on practical or laboratory situations. - Reaches a valid and supportable conclusion. - Judges the reasonableness of a proposed solution.
Assessment:	Formative: during the activity, the teacher will assess the techniques used to calculate linear regression lines and correlation coefficients, and the accuracy of the results.
Technology Connections:	TI-84 calculators (to perform LinReg calculation) Computers with Internet access (to access linear regression tool)
Materials:	TI-84 calculators Computers with Internet access Computer with projector Powerpoint presentation with instructions and info for the students
Related URLs:	http://illuminations.nctm.org/index_d.aspx?id=454#first http://edtech.kennesaw.edu/intech/javatimer/javatimer.html
Procedures:	**Cooperative Group:** Setup: "I have another problem." I bought the land with the pond. The local high school found out about my fish counting experiment, and asked to observe. The teacher thought it was so cool, she asked if she could bring a group of students out several times a year to count fish, and do other data gathering experiments with the pond. I said it was fine, and didn't think anything of it, until the teacher came to visit me one day. She said: I've been bringing students out here for 3 years now, and every group has done a fish count and recorded their results. I've been saving all of the results, but never really looked at them all at the same

	time. When I was doing my end-of-year filing this year, I flipped through all the results and noticed something disturbing. (display PP chart showing a declining fish count, 12 counts over 4 years) I know you don't do much actual fishing in the pond, so I expected the numbers would be going up. I mentioned this to the Biology teacher (who also serves as the town's environmental issues consultant), and he believes the pond is large enough to support a lot more fish, so he thinks there might be something else going on. We mentioned it to my brother, the mayor, and he wants to set up a study team to try and figure out what's going on. Study teams will be: - Landowner - Environmentalist - Plant rep Team members can choose their own roles, and will be given some background info and the initial data on the fish counts. They will be told that the town has enough money in the budget to collect one set of data, and the group must decide what data to collect. They will get 5 minutes for this. Once they've decided what they want to study, they will get another data set (if what they choose isn't specifically available, then they'll be given the data set that is closest). They will need to perform a linear regression with the data, and after examining the results determine if they have "found the cause" and make a decision on what to do. Will repeat the process at least once if teams haven't come up with a decision they feel strongly about. Maybe even a third. One group will generate their regression line using: http://illuminations.nctm.org/index_d.aspx?id=454#first on the computer connected to the projector. The other groups can use their calculator or other classroom computers. Once the groups have their regression line generated, check the results against the master sheet (see attached) to see if they've done the regression correctly. Then, each group has to decide if they think they've found the cause, or if they want to beg the town for more money to do another study.
Classroom Management:	**Technology Management:** - powerpoint presentation to guide flow of lesson - classroom timer for timing various steps

	Instructional Groups: lesson calls for groups of three, and the cooperating teacher will assist in selecting homogenous groups bases on ability level and typical levels of participation