Improving Athletic Performance

Physical education, Math, Science, Technology

Project Theme/Topic

- Research Question
  - How much can a person improve his/her athletic performance with conditioning and practice over the course of 8 weeks?

Pre-Unit Activities

- Scientific Method
  - Hypothesis
  - Test
  - Conclusion
- Research Skills
  - Library research skills
  - Review Internet research
- Activity List
  - Heredity
  - Genetics
  - Stats
    - Pre & Post Testing
    - Estimation
  - Graphing
  - Technology
    - Excel (review creating charts)
    - PowerPoint (review embedding charts)

Class Work & Homework

- Physical Education
  - Training
    - Bench press
    - Arm curls
    - Running or fast walk
    - Stretching exercises
    - Sit-ups
  - Journal Entries
- Math
  - Skills with data analysis
    - Graphing

        - Mean, median, mode
        - Estimation
        - Box Whisker
    - Journal Entries
- Science
    - Scientific method
        - Hypothesis
        - Measurements
    - Basic genetics & heredity
        - Parental traits
        - Punnett squares
        - Environment
    - Spiritual aspects
    - Journal Entries
- Technology
    - Use of Excel
        - Graphing
    - Importing into PowerPoint
    - Progression of presentation

Group Class/Homework

- Groups research activities
    - Diets
    - Different muscle groups
    - Conditioning exercises
- Groups research what improves the following:
    - Speed
    - Strength
    - Endurance
    - Motivation
- Groups determine hypothesis

Collaboration

- Finalizing Project
    - Gather and record primary data
    - Comparison of research against data
    - Analyze data and make conclusions
    - Developing paper/presentation

Evaluation

- Rubrics
  - One for each student for each department
  - Each student has a responsibility to contribute
  - Summary grade with set points per department
- Assessment
  - Presentation
  - Written paper
  - Journal

Field Trips

- College library
- Body Works
- Boston Museum of Science

Timeline

- Height/Weight recorded at beginning of school
- Pre-test of physical fitness week of Sept. 8 – 12
- *Facing the Giants* Movie (motivation)
- Conditioning program to improve skills during the months of September – November
- Post-testing - November 24 & 25
- Review basic math skills and introduce statistical analysis week of November 24
- Analyze data and create report/presentation week of December 1
- Present to class the week of December 8 during PE, Biology, or Math class.

Syllabus – Math

- Week One
  - Review basic math skills
    - Central tendency
    - Box and whisker plot
    - Bar graphs
  - Introduce statistical analysis of data
    - Normal distribution
    - Significant difference
- Week Two
  - Calculate central tendency

- Set up box and whisker plot
- Construct bar graph of before and after performance
- Set up bell curve for the data
- Run appropriate tests to determine if there was a significant difference between before and after performances

Syllabus – PE

- Week of Sept. 8
  - Pre-testing
- Months of September – November
  - Conditioning/Training
  - Journaling
- November 17
  - Post-testing & Recording Data

Syllabus – Science

- Week One
  - Review of taking measurements
    - Stop watch, meter stick/ruler
  - Review significant figures
    - Homework on significant figures, accuracy and precision
  - Review of scientific methods
    - Parts of the scientific method and what they mean
    - Review of previous science projects
    - Develop the scientific method for project
      - Homework on organizing scientific method
  - Review of genetics
    - Review hereditary
    - Develop how genetics may or may not relate to experiment
      - Homework on basics of genetics
      - Reading on "impossible" tasks that go beyond human
      - Capabilities (with assistance of adrenaline or with prayer)
- Week Two
  - Journaling
    - For all entries, be sure to indicate measurements taken
    - Homework – Direct questions:
      - How is the scientific method important in conducting an experiment?

- How is genetics related to a person's ability to perform certain tasks?
- Is it possible for the implications of genetics to be overcome?
- How can prayer have an impact on a person's abilities to complete tasks?
- How can you relate Philippians 4:13 with a person's ability to complete tasks?

Syllabus – Technology

- Week Two
  - Using data, create graphs in Excel
  - Create PowerPoint presentation
  - See rubric (next slide) for grading
  - Video recording
  - CDs provided for each student's family

Syllabus – Technology Rubric

Rubric for PowerPoint/Excel Project

Student's Name _____

	Criteria	1 pt.	2 pts.	3 pts.	4 pts.	Total Pts
1	Technical	Project does not run satisfactorily. There are too many technical problems to view the project.	Project runs minimally. There are many technical problems when viewing the project.	Project runs adequately with minor technical problems.	Project runs perfectly with no technical problems. For example, there are no error messages, all sound, video, or other files are found.	
2	Navigation	Buttons or navigational tools are absent or confusing. No buttons and navigational tools work.	Minimal difficulty experienced while navigating through project.	Few difficulties experienced while navigating through project.	Users can progress intuitively throughout entire project in a logical path to find information. All buttons and navigational tools work.	
3	Spelling & Grammar	Project has multiple errors in spelling and/or grammar. (Four or more errors)	Project minimally honors rules of spelling and/or grammar. (Three or less errors)	Project adequately honors most rules of spelling and/or grammar. (Two or less errors)	Project honors all rules of spelling and/or grammar.	
4	Completion	Project is incomplete and contains many unfinished elements.	Project is incomplete and contains some unfinished elements.	Project is incomplete and contains several unfinished elements.	Project is completely finished.	
5	Screen Design	Screens are either barren and stark or confusing and cluttered. Exaggerated emphasis on graphics and special effects weakens the message and interferes with the communication of content and ideas.	Multimedia elements accompany content but there is little sign of mutual reinforcement. There is no attention to visual design criteria such as balance, proportion, harmony and restraint. There is some tendency toward random use of graphical elements that do not reinforce message.	Multimedia elements and content combine to adequately deliver a high impact message with the elements and words reinforcing each other.	The combination of multimedia elements and content takes communication to a superior level. There is clear attention given to balance, proportion, harmony, and restraint. The synergy reaches the intended audience with style and pizzazz.	
6	Use of Enhancement	No graphics, video, audio, 3-D, or other enhancements are present or use of these tools is inappropriate.	Limited graphics, video, audio, 3-D, or others enhancements are present but do not always enrich the learning experience. In some instances, use of these enhancements is inappropriate.	Most graphics, video, audio, 3-D, or other enhancements are used appropriately to enrich the experience. For example, clips are either too long or too short to be meaningful.	All graphics, video, audio, 3-D, or other enhancements are used effectively to enrich the learning experience. Enhancements contribute significantly to convey the intended meaning.	
7	Organization	The sequence of information is not logical. Menus and paths to information are not evident	The sequence of information is somewhat logical. Menus and paths are confusing and flawed.	The sequence of information is logical. Menus and paths to most information are clear and direct.	The sequence of information is logical and intuitive. Menus and paths to all information are clear and direct.	
8	Citing Resources	No sources are properly cited within the project according to MLA style. ***	Few sources are properly cited within the project according to MLA style.	Most sources are properly cited within the project according to MLA style.	All sources are properly cited within the project according to MLA style	