

	Project Based Learning Protocols <h1 style="margin: 0;">Initial Project Design: Overview Document</h1> <h2 style="margin: 0;">Integrated Science PBL</h2>	
--	---	--

Name of Project:				Duration: Semester Long			
Subject/Course: Integrated Science			Teacher(s):		Grade Level: 9		
Other subject areas to be included, if any:							
Significant Content & Standards: (KY Core and/or others) (SWBAT/I Can/Outcomes)							
“STEM” Habits (to be taught & Assessed)	Engaged Learner	Intentional Collaborator	Active & Responsible Decision-maker	Effective Communicator	Creative & Critical Thinker	Altruistic Leader	Other
	X	X	X	X	X	X	X

Project Summary/Description (include student role, issue, problem/challenge, action taken, purpose/beneficiary)			
Driving Question Develop the seminal question for your students. The question should be open-ended, discipline centered and provocative.			
Entry Event To launch inquiry and engage students.			
Individual Product:		Group Product:	
Need to Knows:			

Students will know:

Students will understand:

Students will be able to:

**Individual
Competencies:**

**Group
Competencies:**

Benchmarks

(Student work):

Anticipate the ideal student work that would represent a thorough understanding, application of the core knowledge and skills (both content & 21st Century Skills) you expect at the end of the project. Write down your thoughts here.

(During Project)	Journal/Learning Logs?	Notes?
	Preliminary Plans/Outlines/Prototypes?	Checklists?
	Rough Drafts?	Concept Maps?
	Online Tests/Exams?	Other:
Summative Assessments (End of Project)	Written Product(s), with rubric?	Other Product(s) or Performance(s), with rubric?
	Oral Presentation, with rubric?	Peer Evaluation?
	Multiple Choice/ Short Answer Test	Self-Evaluation

Supplemental File 1

	Essay Test?			Other:		
Reflection Methods: (individual, team, or whole class)	Journal/ Learning Log	Whole Class Discussion	Survey	Focus Group	Fishbowl	Other
	X	X	X	X	X	X
Public Audience (experts, audiences, or product users students will engage with during/at end of project)						
Resources Needed:	People	Facilities	Equipment	Materials	Community	Other
Notes:						

"STEM" - Survey 2017-18

Block 3

Q20 To [REDACTED] Student: We would like to know about your perceptions of geosciences as a career option. Although you will not get personal benefit from taking part in this research study, your responses may help us understand more about why students choose geosciences as a career. We hope to receive completed questionnaires from about 600 people, so your answers are important to us. Of course, you have a choice about whether or not to complete the survey/questionnaire, but if you do participate, you are free to skip any questions or discontinue at any time. The survey/questionnaire will take about 5 minutes to complete. There are no known risks to participating in this study. Your response to the survey is anonymous which means no names will appear or be used on research documents, or be used in presentations or publications. The research team will not know that any information you provided came from you, nor even whether you participated in the study. If you have questions about the study, please feel free to ask; my contact information is given below. If you have complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the University of Kentucky Office of Research Integrity at 859-257-9428 or toll-free at 1-866-400-9428. Thank you in advance for your assistance with this important project. Sincerely, Rebecca Freeman Earth & Environmental Sciences, College of Arts & Sciences, University of Kentucky PHONE: 859-257-6376 E-MAIL: rebecca.freeman@uky.edu PLEASE CONTINUE TO THE NEXT PAGE

Q1 1. Please enter your survey ID number:

End of Block

Please indicate your level of agreement with the following statements

Supplemental File 2

Q2 2. I would consider being a science major

☐ Yes (1)

☐ No (2)

Q3 3. I have decided on a college major

☐ Yes (1)

☐ No (2)

Skip To: Q7 If Q3 = No (2)

Page Break

Q4 4. What will your future major be?

- ☐ Biology (1)
 - ☐ Chemistry (2)
 - ☐ Environmental Sciences (3)
 - ☐ Geology (4)
 - ☐ Physics (5)
 - ☐ STEM field not listed (8)
 - ☐ Other (9)
-

Q5 5. Please indicate your level of agreement with the following statements regarding the effect of required classes on your choice of major:

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
Two required semesters of chemistry makes me less likely to choose a STEM major (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Two required semesters of physics makes me less likely to choose a STEM major (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Two required semesters of calculus makes me less likely to choose a STEM major (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q6 6. Please indicate your level of agreement with the following statements regarding who and/or what influenced your choice of major:

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (13)
My choice of major was influenced by a friend or family member (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My choice of major was influenced by a teacher in high school or middle school (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My choice of major was influenced by a "STEM" teacher (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My choice of major was influenced by a "STEM" advisor (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My choice of major was based on interests developed prior to attending "STEM" (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My choice of major was influenced by a class taken prior to attending "STEM" (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 7. Please indicate your level of agreement with the following statements regarding what is important to you about your future major:

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
It is important to me that my major be in a prestigious department (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to me that my major leads to environmentally friendly employment (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to me that my major involves working outdoors (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My choice of major depends on salaries in the field (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My choice of major depends on ease of obtaining a job in that field (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to me that courses in my major use up-to-date technology (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to me that courses in my major take place in new and modern classrooms (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block

-

Q8 8. Please indicate your level of agreement with the following statements regarding activities you enjoy:

	Strongly Disagree (1)	Disagree (2)	Agree (4)	Strongly Agree (5)
I enjoy outdoor activities: camping, hiking, biking, etc. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy traveling to different places (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy observing nature (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9 9. Please indicate you level of agreement with the following statements about becoming a geologist:

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
My friends would support me becoming a geologist (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My family would support me becoming a geologist (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel proud of my career if I became a geologist (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Supplemental File 2

Q10 10. Please rate the prestige of each occupation

	Not at all Prestigious (1)	Not Very Prestigious (2)	Somewhat Prestigious (3)	Very Prestigious (4)
Biology occupation (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemistry occupation (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental science occupation (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geology occupation (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physics Occupation (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11 11. Select which income range you think represents the average entry level salary for a graduate with a bachelor's degree in each field:

	less than \$30,000 (1)	\$30,000- 39,999 (2)	\$40,000- 49,999 (3)	\$50,000- 59,999 (4)	\$60,000- 69,999 (5)	\$70,000- 79,999 (6)	more than \$80,000 (7)
Biology (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemistry (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental Science (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geology (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physics (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Carry Forward All Choices - Displayed & Hidden from "11. Select which income range you think represents the average entry level salary for a graduate with a bachelor's degree in each field:"



Q12 12. Which one of the following describes the minimum entry-level salary you would be satisfied with upon graduating with a bachelor's degree in...

	less than \$30,000 (1)	\$30,000- 39,999 (2)	\$40,000- 49,999 (3)	\$50,000- 59,999 (4)	\$60,000- 69,999 (5)	\$70,000- 79,999 (6)	\$80,000- 89,999 (7)
Biology (x1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemistry (x2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental Science (x3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geology (x4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physics (x5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Q13 13. I think working in a career related to... would be personally fulfilling

	Strongly Disagree (1)	Disagree (2)	Agree (4)	Strongly Agree (5)
Biology (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemistry (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental Science (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geology (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physics (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Carry Forward All Choices - Displayed & Hidden from "13. I think working in a career related to... would be personally fulfilling"



Q14 14. It is easy to get a job with a degree in:

	Strongly Disagree (1)	Disagree (2)	Agree (4)	Strongly Agree (5)
Biology (x1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemistry (x2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental Science (x3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geology (x4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physics (x5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Carry Forward All Choices - Displayed & Hidden from "14. It is easy to get a job with a degree in:"



Q15 15. Rate the difficulty of each type of academic major

	Very Difficult (1)	Somewhat Difficult (2)	Somewhat Easy (3)	Very Easy (4)
Biology (xx1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemistry (xx2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental Science (xx3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geology (xx4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physics (xx5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Carry Forward All Choices - Displayed & Hidden from "15. Rate the difficulty of each type of academic major"



Q16 16. In middle or high school I took a class in:

	Yes (1)	No (2)
Biology (xxx1)	<input type="radio"/>	<input type="radio"/>
Chemistry (xxx2)	<input type="radio"/>	<input type="radio"/>
Environmental Science (xxx3)	<input type="radio"/>	<input type="radio"/>
Geology (xxx4)	<input type="radio"/>	<input type="radio"/>
Physics (xxx5)	<input type="radio"/>	<input type="radio"/>

End of Block

-

Supplemental File 2

Q17 17. Please indicate your level of agreement with the following statements regarding various science fields and the environment:

	Strongly Disagree (1)	Disagree (2)	I Don't Know (4)	Agree (5)	Strongly Agree (6)
Physicists investigate correcting global warming and pollution (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physicists are employed mainly in polluting industries (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geologists investigate correcting global warming and pollution (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Geologists are employed mainly in polluting industries (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental scientists investigate correcting global warming and pollution (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental Scientists are employed mainly in polluting industries (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemists investigate correcting global warming and pollution (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Supplemental File 2

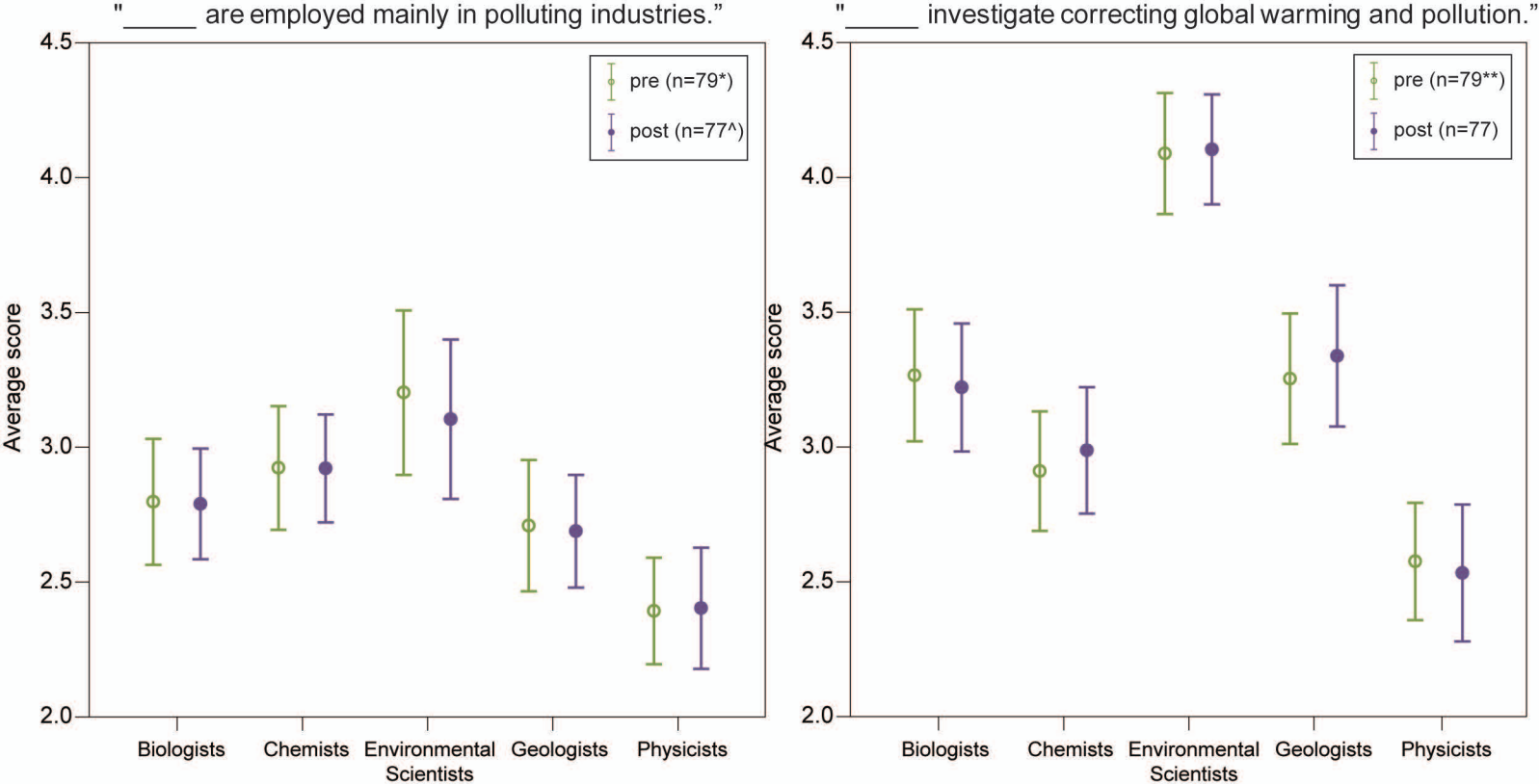
Chemists are employed mainly in polluting industries (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biologists investigate correcting global warming and pollution (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biologists are employed mainly in polluting industries (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q18 18. Please indicate your level of agreement with the following statements regarding geoscience:

	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
I have a great deal of knowledge about geoscience (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe geoscience is important (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to learn more about geoscience (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q19 19. What does geoscience mean to you?

End of Block



Supplemental Figure A) Average scores in terms of agreement with the statement "____ are employed mainly in polluting industries."
B) Average scores in terms of agreement with the statement "____ investigate correcting global warming and pollution." 1 = Strongly disagree, 3 = Don't know, 5 = Strongly agree.

[illegible]

[illegible]