Environmental Systems and Societies

*Designing a Population Study Internal Assessment*

**Learning Goal:** You will be able to design an investigation, which uses the Gapminder.org software to explore factors related to population growth. The data is already collected and made readily accessible to you. Your job will be to organize an investigation, which utilizes the appropriate data to answer your research question. To accomplish this task, you will need to explain what your research question is, determine what your hypothesis is, choose a factor you will examine as your independent variable and explain why, determine how the dependent variable would be measured, detail the method employed to gather the data and most importantly, how the other variables controlled.

Since you are mining an online resource for data, a significant portion of this assignment requires you to do some detective work. You will need to determine other factors, which could affect population growth and then determine how the collectors of the original data controlled the other variables. That information will compose a significant portion of your paper.

There are several sections of the planning portion of an IA, which may or may not need to be included in this investigation. You will need to determine what sections should be included and which ones should be omitted. You should be prepared to explain your decision.

**Success Criteria:** You will design a plan for an investigation which has clear objectives and rational, detailed methodology and meets the criteria of the International Baccalaureate for Internal Assessments (see below).

**Prompt:** Design an investigation, which examines the affects of one societal factor on population growth.

**Due date:** Friday, March 21st at midnight.

**Grade:** This investigation is worth 40 points towards your class grade. It will be worth 6 points towards your IA grade (out of 42). The investigation will be graded using the following rubric:

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| ASPECTS |
| LEVELS /MARKS  | Defining the problem and selecting variables  | Designing a method for the control of variables  | Describing a method for collection of sufficient relevant data |
| Complete / 2  | States a focused problem/research question and identifies the relevant variables.  | Designs a method for the control of variables. | Describes a method that allows for the collection of sufficient relevant data.  |
| Partial / 1  | States a problem/research question that is incomplete or identifies only some relevant variables.  | Designs a method that makes some attempt to control the variables.  | Describes a method that does not allow for the collection of sufficient relevant data.  |
| Not at all / 0  | Does not state a problem/research question and does not identify any relevant variables.  | Designs a method that does not allow for the control of the variables.  | Describes a method that does not allow for the collection of any relevant data.  |
| Mark: Total: /6  | /2 | /2  | /2 |

To help you meet the objectives of the assignment use this checklist (and the one I gave you on the preceding IA:

CHECKLIST FOR PLANNING LABS

Aspect 1: Defining The Problem And Selecting Variables

* □  I have identified a focused problem or a specific research question. I have done this by stating a clear aim, a clear hypothesis, and clearly defining the variables.
* □  I have identified and stated the independent variable and the dependent variable, and I have listed the controlled variables

Aspect 2: Controlling Variables

* □  I describe a method for the effective control of the variables. In particular, I describe how the independent variable is manipulated and how the controlled variables are maintained at constant values
* □  I list all the apparatus and materials used, including the volumes of tubes and cylinders, the concentrations of solutions, the model and manufacturer of any complex apparatus, etc.
* □  I state the level of precision of the values for the independent variable
* □  Any standard methods that I use are fully referenced in a footnote or in the references

Aspect 3: Developing A Method For The Collection Of Data

* □  I describe a method that allows for the collection of sufficient relevant data
* □  The data gathered enables the aim, the research question or the hypotheses to be adequately

addressed

* □  The data gathered enables an evaluation of the reliability of the data
* □  The sample size should be adequate to allow a reasonable statistical analysis of the data (for

calculating the standard deviation, at least five items per treatment)

* □  An adequately broad data range is considered
* □  An adequate number of data values within this range are considered