

Scientific methods used in problem solving philosophy essay



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Part I: Scientific Method / Scenario 1: You arrive home late at night. You walk up to the front door, unlock it, and reach in to turn on the light switch located just inside the front door. The light does not come on! Now what?

According to Trefil & Hazen (2011), the scientific method is "... a process for conducting an ongoing dialogue with our physical surroundings" (p. 4). The five (5) steps of scientific method are stating the problem, making observations, forming a hypothesis, testing the hypothesis/conducting experiment, and drawing a conclusion based on test results and report (Trefil & Hazen, 2011, p. 4).

In the scenario where a light switch located just inside the front door does not come on, to draw a conclusion on what is causing the light not turning on, scientific steps must be followed. In this scenario, the problem stated is that the light switch does not come on. Why does the light not working? The first observation will be to look around the neighborhood to see if the surrounding houses, light posts and also traffic lights are also out of power (black out). If the whole neighborhood is without power just like the whole house, then it is safe to hypothesize that there is a power outage in the whole neighborhood. At this point, if this were the case, call the power company to double-check about the neighborhood power outage and/or wait until the power comes on.

If there are lights and power in the neighborhood, such as other houses have lights, television running, post lights are on, traffic lights are on, then the go inside the house and check if the other light switches are working or turning on lights, if the television is turning on, etc. If none of the light switches,

appliances, electronics that are plugged in, etc. are working, then get a flashlight and go to the main circuit panel and then reset (if one knows how to do so) the breaker for the area where the problem occurs. If not, call an electrician to check the problem that is causing power outage only effecting one area, or one light switch inside the home.

If all other light switches work and are turning on lights inside the house, except for the one that is having a problem, then the next step is to install (if there is not one already installed), or replace (if there is one already installed), a bulb where the problem is taking place. But first, before installing or replacing a light bulb, make sure that the light switch is set to the “ off” position to avoid electrocution. After the installation of the light bulb, then turn the light switch on. If the light turns on, based on the steps taken (test results), the light bulb was not installed (if there was none before installation) or the light bulb was damaged (if there was one replaced). But if after the light bulb is installed or replaced and still the switch does not work, then check the circuit breaker, if one knows how, and reset the breaker for the area where the problem occurs. If the light still does not turn on, then call the electrician for further investigation. What is causing the problem could be electrical wiring issue, or something else.

In conclusion, the scientific method is used to reasonably, systematically, and logically explain and solve problems in daily life.

Part I: Scientific Method / Scenario 2: You are a current student at Kaplan and were able to login successfully to the Kaplan University Campus online 5 hours ago at URL <http://kucampus.kaplan.edu/Login/Login.aspx>. You logged

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off the Kaplan University Campus online after your session 5 hours ago, but left the computer running. After five hours later, your computer is on, the screensaver is running. When you tried login in to the Kaplan University Campus online, you are unable to successfully login. Now what?

The problem is being unable to successfully login to the Kaplan University Campus online after being able to login successfully a few hours ago.

Observations are the computer is running properly, having all applications running accurately.

The first step to check is to see if the internet browser (Internet Explorer, Mozilla Firefox, etc.) is able to connect to other websites, such as CNN. com, Google. com, etc. If the browser does not connect to any websites, then there is an issue with the internet connection. It is advised by the Internet Service Provider to reset the DSL or Cable Router (whichever you have), by turning it off, then on, and waiting for a minute, then restarting the computer. After the router resets and the computer restarts, then try to run the internet browser and go to any websites to check connection. If the internet browser is able to go to websites including Kaplan University Campus, then it is safe to draw a conclusion that the cause of the problem was the DSL/Cable router needed to be reset, and the computer needed to be restarted (to re-acquire a new IP address from the newly reset router). But, if the internet browser connects to the internet without any problems, then the next step is to check if Kaplan University Campus webpage is running. If the KU Campus login page does not show up, then maybe the website is down. To verify, call the Kaplan Tech Support Team at 866. 522.

7747 or email them at TechSupport@Kaplan.edu. If the Tech Support <https://assignbuster.com/scientific-methods-used-in-problem-solving-philosophy-essay/>

reports that the Kaplan University Campus website is down, then it is safe to assume that the website being down was the cause of the failure to login to the Kaplan University Campus. But, if the Tech Support reports that the Kaplan University Campus website is up and running and there is no known issues as far as students unable to login, and because there are currently students logged in also, then the next step is to ask to check the username and password. Based on experience, Tech Support will reset password so that at next attempted login, the student will be asked to change password, and Tech Support will be on the phone until the student is successfully logged in. Therefore, if the password is reset and one is able to login after the reset, then it is safe to hypothesize that the cause of the unsuccessful login was error in password entry.

Now, if after the password has been reset and the student is still unable to login to the Kaplan Campus University, based on past experience, Tech Support will ask the student to use another computer to try to login to investigate further the cause of the issue. If using another computer enables the student to login successfully to the Kaplan University Campus, then it is safe to assume that the first computer has some issues, perhaps in the browser settings. Again, based on past experience, Kaplan Tech Support will walk the student through fixing the internet browser problem by using the “System Check” applet. If Tech Support still does not help solve the login issue, then call a PC repairman to troubleshoot further hardware/software incompatibility issues.

Again, in sum, the scientific method is used to reasonably, systematically, and logically explain and solve problems in daily life.

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Part II: Why I Cannot Live With/Without Science

Science is part of daily life from breathing to turning on the kitchen microwave, and it is an endless evolution. There are several branches of science: Physics, Chemistry, Environment, Geology, Health and Science, Astronomy, Technology, and Biology (Trefil & Hazen, 2011). And science affects everything and everyone throughout the day (and night) from the time one wakes up, until the time one goes to bed. When a person takes a shower, cooks breakfast, washes the dishes, drives a car, for example, he is unconsciously taking advantage of physical laws and affects and influenced by science.

Around the clock, a person takes advantage of the biological system, while sleeping, eating, working, playing. His respiratory system works to breathe in oxygen to exchange it to carbon dioxide. Oxygenated blood passes through the lungs into the heart, which then is pumped through the rest of the body (Trefil & Hazen, 2011). When he eats, what he eats is part of the food chain or food web. For example, eating beef is part of a food chain/web. The sun provides food for the grass (producers), which is eaten by the cow (consumer), which its meat (beef) is eaten by people (consumer). Humans are also part of the food chain. When he dies and is buried in the ground, for example, his body is decomposed and is eating by decomposers, such as bacteria, maggots, etc.

As soon as he turns off the alarm, science is there. It may not be vital for the person to know how the deep workings of an alarm clock is, but an alarm clock is a science of logic, reason, information, numbers, calculations,

energy, time zone, etc..., and one requires a certain amount of knowledge on how to setup the alarm clock such as electrical (plugging in the alarm to the wall outlet or installing a battery), and some mechanical, such as setting up the time and alarm time. Other examples of technology that a person is affected with are the use of computers, cell phones, the technology of a hybrid car and the power that supplies it, etc.

Health and science affects a person with regards to his diet and lifestyle. When he shops, he shops for nutrition. Nutritional value, warning labels about health and safety, etc. are all around the grocery store. He picks, buys, cooks and eats foods according to his diet and lifestyle. Making food and making choices and decisions on what is nutritional or not nutritional to eat, or what to put in the mouth or not put in the mouth is part of the nutritional/health science.

As far as environmental science, which is the “ the branch of science concerned with the physical, chemical, and biological conditions of the environment and their effect on organisms” (Dictionary. com, 2010), one is affected atmospherically, such as noise pollution and air pollution, for example. Pollutions may also affect humans biologically, such as getting asthma attacks from the air pollution, headaches from the noise pollution, etc. Other examples of environmental science that affect humans are soil contamination, water pollution, affected animals due to contamination of soil/water, soil erosion, the loss of fisheries, oceanography, accelerated damage to the coral reefs, deforestation, etc. (Pardieck, 2005).

Geology, which is the “ study of the origin, evolution, and present state of our home, planet, Earth” (Trefil & Hazen, 2011, p. 15), affects humans in many ways. Obvious affects are the origin and evolution of humans. Also, the earth, as a whole, humans are affected because humans live on earth. Natural hazards, such as earthquakes, volcanic eruptions, floods, sinkholes, etc., hit and affect humans in many areas of the world. There’s also the study of minerals, rocks, fossils, mountains, plate tectonics, etc. Coal is another example of how humans are affected by geology/science because coal generates 54% of electricity and is the biggest air polluter in the United States. It provides power and it also provides harm (Union of Concerned Scientists, 2009).

With regards to physics and its affects to daily life. Moving from the bed to the bathroom, showering, exercising, parking the car, walking from the parking lot to work, etc.. are parts of physics. These all involve type of motion related to Newton’s law of motion (Trefil & Hazen, 2011, p. 15). According to the Newton’s law of motion, “ nothing happens without a force.” (Trefil & Hazen, 2011, p. 15). Other examples are when talking, eating, and electric power that is in the house, washing clothes via washing machine, windy day, driving a car, etc.. all work on the principle of Physical. Therefore, affects humans daily.

Astronomy is “ the study of stars, planet, and other objects in space” (Trefil & Hazen, 2011, p. 15). How is one affected by astronomy? A simple answer is the rise and fall of the sun. One is affected because in winter time around the time the sun rises, one must be at work, and an hour after the sun falls, one leaves work to home and tend to dinner and family, for example. Also, if one

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uses a Global Positioning System (GPS) to get directions to a location, he is using the science of astronomy. GPS uses planetary techniques to determine the orientation of the Earth in space (Strobel, 2007).

Chemistry is “ the study of atoms in combination” (Trefil & Hazen, 2011, p. 15). Chemistry is everywhere and one is affected with chemistry from gasoline (providing energy to car to drive one to/from work), pharmaceuticals (from vitamins to medicines to rid of headaches, cough, cold, etc), chemicals used to purify water in plants to provide clean water in homes, etc.

Additionally and lastly, there are other areas in daily life where science is applied directly, such as being a taxpayer. One takes part in an election to vote on matters that affect the public, such as government spending on research, taxes on energy. Taking care of one’s psychological aspect (mental health) too such as taking relaxation and stress management classes is part of science. Also, applied mathematics is part of science, such as using a calculator to determine the 15% tip of the total restaurant fees, calculating the numbers of miles to drive and how much gas one needs to fill out a tank to get from point A to point B.

Science applies to all scientific disciplines and affects everything and everyone round the clock. And it improves one quality of life because of the comforts that it brings, for example, such as the comfort of having an alarm clock so that one doesn’t have to work tardy, because he misses the sun rise and unable to read/follow his sundial, having the weather report broadcasted readily on the television for preparation of proper attire to wear

for the weather reported, instead of wearing a t-shirt not knowing it will be raining the following day, or carrying all sorts of different items of clothing just to adjust as the weather changes, where knowing ahead of time gives one helpful information on what to prepare for, having the proper medication such as antibiotics to treat infections, having clean water, having power supply/lights readily when the sun sets, a vehicle to take one conveniently, the gasoline that is ready to be purchased to fuel a one's vehicle, mobile phones for convenience of communicating with loves ones, etc... It is hard to imagine not having science and what it provides – no use of electricity, no advanced agriculture, no clean water, and no medicine. The convenience that science provides improves the quality of humans' life overall.

Science also creates negatives impacts. An example of its negative impact is air pollution and global warming from coal factories. Science, even though it provides convenience such as energy supply, such as coal producing 54% of energy in the United States, it also provides harm because it coal is also the number one single air polluter in the United States (Union of Concerned Scientists, 2009). Another example of negative impact is genetic engineering. Although genetic engineering provides benefits such as producing crops to attain new forms with improved nutritional values and improved harvest, it may taint some crops that may displace the natural growth and may be harmful for the natural plant life (Trefil & Hazen, 2011, p. 518).

Humans cannot survive without science because human bodies are developed scientifically. All parts of the human body is science, molecules, atoms, energy, chemicals substances and their connections with each other
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to form a living being. And science is learning, understanding, decision making, problem solving, etc. And without science, humans will not survive.

This course has a great impact to a student because of the great knowledge obtained from it that is, will be, and could be applied to daily life. The course is so extensive that it covered great areas of science – Science: A Way of Knowing, The Ordered Universe, Energy, Heat and the Second Law of Thermodynamics, Theory of Relativity, Quantum Mechanics, Ecology, The Living Cell, DNA, Evolution, etc... Science was thought of being only in laboratories. Now, it has opened senses and no longer thinks that science only exists in laboratories and experiments. Science is vital. It is in every move, exists every moment, in everything and everyone, living and non-living, that science is important for the lives of humans, animals and plants on earth and everything in the universe.