DOWNLOAD PDF APPENDIX: CLIMATE MYTHS, HALF-TRUTHS AND MISCONCEPTIONS.

Chapter 1 : HVAC Myths, half truths and explained. Fact versus fiction.

An appendix outlines climate myths, half-truths, and misconceptions about global warming. A glossary is included. An excellent and highly recommended addition to high school, public, and university library science collections.

This industry has been hit hard with a lot of complaints about inept contractors right up to outright fraudulent contractors. Myths and misconceptions have been created and even perpetuated by these very same contractors. Not necessarily so â€¦ internally the unit may not be functioning properly. But be sure of one thing â€¦ get the back-up information behind why the repair is necessary. If they are in a position to recommend a repair, it should be based on data not gut feel. A qualified technician will measure the level of refrigerant and only add when needed. It could be each year indicating a different problem! The need to replace refrigerant would be in the event of a leak in a sealed system â€¦ so there is need to consider the cause and repair of that problem. Maintenance plans are not worth the money. A qualified technician will look to pro-actively inform you of potential problems before they occur. Not only will this save you from needing emergency service typically more expensive than planned repairs , it will allow you to budget for the repair. People that say maintenance plans are not worth it probably had one and never had an expensive repair. Blocking off air vents will save money in the long term. Blocking off vents will make the unit work harder, using up more energy and creating more wear and tear on the equipment. Someone actually said this â€¦ If your thermostat is located in an area that for instance is in direct sunlight and you are trying to cool or heat, it will record a bogus temperature, and will not allow for consistent heating or cooling. Gee â€” it works great on cloudy days! HVAC systems are inexpensive to operate. Yeah â€¦ and the check is in the mail. A properly sized energy efficient system if installing new or having a maintenance plan for an existing system will help save on energy usage â€” but anyone trying to sell you a system that is telling you they are inexpensive to operate â€” well, buyer beware! What you are doing is wasting energy. You should turn the AC off all day if you are not at home. For faster cooling, set the temperature below what you want it to be. Sounds logical, but AC systems cool at a set rate. This one is just soooo wrong! Be sure your contractor performs a Manual-J Load Calculation that considers all of the variables to properly size your AC system! It could be something small, such as replacing a thermostat, or taking measures to improve the air flow so the unit can cool rooms evenly. Not to sound like a broken record, but our experience is that the great majority of existing systems have over sized units with undersized duct work. Some less costly options might be sealing the ducts or adding returns. See above â€¦ a properly trained technician can measure loss in your duct system and provide options to correct any issues. You might also be able to get better performance if the unit is in need of maintenance. Price is the most important factor when making a purchase. Not to sound harsh, but who wants to talk to a price shopper? The most important factor is who you choose for the installation. A dirty filter constricts air flow making your system work harder. If there is a common theme here, it is that regular maintenance will improve system performance and extend the life of your system. Need I say again? HVAC units need to be maintained regularly. Annual, semi-annual, or even more frequent maintenance depending on the amount of use will keep it in top running condition. Buying an efficient air conditioner or furnace will automatically reduce my utility bill. Heat pumps do not have a long life expectancy because they operate 12 months of the year. Not so â€¦ Dirt, improper application, poor service and lack of preventative maintenance tops the list for heat pump failures. What is the bottom line here? Our goal is to be that contractor â€¦ but we also say to check around and get to know the people you are doing business with.

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Chapter 2 : Busting the Life Insurance Lies | Truth Concepts

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McComas, William, "Ten myths of science: Reexamining what we think we know This article addresses and attempts to refute several of the most widespread and enduring misconceptions held by students regarding the enterprise of science. The ten myths discussed include the common notions that theories become laws, that hypotheses are best characterized as educated guesses, and that there is a commonly-applied scientific method. In addition, the article includes discussion of other incorrect ideas such as the view that evidence leads to sure knowledge, that science and its methods provide absolute proof, and that science is not a creative endeavor. Finally, the myths that scientists are objective, that experiments are the sole route to scientific knowledge and that scientific conclusions are continually reviewed conclude this presentation. The paper ends with a plea that instruction in and opportunities to experience the nature of science are vital in preservice and inservice teacher education programs to help unseat the myths of science. Myths are typically defined as traditional views, fables, legends or stories. As such, myths can be entertaining and even educational since they help people make sense of the world. In fact, the explanatory role of myths most likely accounts for their development, spread and persistence. However, when fact and fiction blur, myths lose their entertainment value and serve only to block full understanding. Such is the case with the myths of science. Scholar Joseph Campbell has proposed that the similarity among many folk myths worldwide is due to a subconscious link between all peoples, but no such link can explain the myths of science. Misconceptions about science are most likely due to the lack of philosophy of science content in teacher education programs, the failure of such programs to provide and require authentic science experiences for preservice teachers and the generally shallow treatment of the nature of science in the precollege textbooks to which teachers might turn for guidance. As Steven Jay Gould points out in "The Case of the Creeping Fox Terrier Clone" , science textbook writers are among the most egregious purveyors of myth and inaccuracy. The fox terrier mentioned in the title refers to the classic comparison used to express the size of the dawn horse, the tiny precursor to the modem horse. This comparison is unfortunate for two reasons. Not only was this horse ancestor much bigger than a fox terrier, but the fox terrier breed of dog is virtually unknown to American students. The major criticism leveled by Gould is that once this comparison took hold, no one bothered to check its validity or utility. Through time, one author after another simply repeated the inept comparison and continued a tradition that has made many science texts virtual clones of each other on this and countless other points. In an attempt to provide a more realistic view of science and point out issues on which science teachers should focus, this article presents and discusses 10 widely-held, yet incorrect ideas about the nature of science. There is no implication that all students, or most teachers for that matter, hold all of these views to be true, nor is the list meant to be the definitive catolog. Cole and Rothman have suggested additional misconceptions worthy of consideration. However, years of science teaching and the review of countless texts has substantiated the validity of the inventory presented here. Hypotheses Become Theories Which Become Laws This myth deals with the general belief that with increased evidence there is a developmental sequence through which scientific ideas pass on their way to final acceptance. Many believe that scientific ideas pass through the hypothesis and theory stages and finally mature as laws. The problem created by the false hierarchical nature inherent in this myth is that theories and laws are very different kinds of knowledge. Of course there is a relationship between laws and theories, but one simply does not become the other--no matter how much empirical evidence is amassed. For instance, Newton described the relationship of mass and distance to gravitational attraction between objects with such precision that we can use the law of gravity to plan spaceflights. During the Apollo 8 mission, astronaut Bill Anders responded to the question of who was flying the spacecraft by saying, "I think that Issac Newton is doing most of the driving fight now. His response was understood by all to mean that the

capsule was simply following the basic laws of physics described by Isaac Newton years centuries earlier. The more thorny, and many would say more interesting, issue with respect to gravity is the explanation for why the law operates as it does. At this point, there is no well. Some physicists suggest that gravity waves are the correct explanation for the law of gravity, but with clear confirmation and consensus lacking, most feel that the theory of gravity still eludes science. Interestingly, Newton addressed the distinction between law and theory with respect to gravity. Although he had discovered the law of gravity, he refrained from speculating publically about its cause. In Principial, Newton states". I have not been able to discover the cause of those properties of gravity from phenomena, and I frame no hypothesis. A Hypothesis is an Educated Guess The definition of the term hypothesis has taken on an almost mantra- like life of its own in science classes. If a hypothesis is always an educated guess as students typically assert, the question remains, "an educated guess about what? The term hypothesis has at least three definitions, and for that reason, should be abandoned, or at least used with caution. For instance, when Newton said that he framed no hypothesis as to the cause of gravity he was saying that he had no speculation about an explanation of why the law of gravity operates as it does. In this case, Newton used the term hypothesis to represent an immature theory. As a solution to the hypothesis problem, Sonleitner suggested that tentative or trial laws be called generalizing hypotheses with provisional theories referred to as explanatory hypotheses. Another approach would be to abandon the word hypothesis altogether in favor of terms such as speculative law or speculative theory. With evidence, generalizing hypotheses may become laws and speculative theories become theories, but under no circumstances do theories become laws. Finally, when students are asked to propose a hypothesis during a laboratory experience, the term now means a prediction. As for those hypotheses that are really forecasts, perhaps they should simply be called what they are, predictions. A General and Universal Scientific Method Exists The notion that a common series of steps is followed by all research scientists must be among the most pervasive myths of science given the appearance of such a list in the introductory chapters of many precollege science texts. This myth has been part of the folklore of school science ever since its proposal by statistician Karl Pearson The steps listed for the scientific method vary from text to text but usually include, a define the problem, b gather background information, c form a hypothesis, d make observations, e test the hypothesis, and f draw conclusions. Some texts conclude their list of the steps of the scientific method by listing communication of results as the final ingredient. One of the reasons for the widespread belief in a general scientific method may be the way in which results are presented for publication in research journals. The standardized style makes it appear that scientists follow a standard research plan. Medawar reacted to the common style exhibited by research papers by calling the scientific paper a fraud since the final journal report rarely outlines the actual way in which the problem was investigated. The notion of a single scientific method is so pervasive it seems certain that many students must be disappointed when they discover that scientists do not have a framed copy of the steps of the scientific method posted high above each laboratory workbench. Close inspection will reveal that scientists approach and solve problems with imagination, creativity, prior knowledge and perseverance. These, of course, are the same methods used by all problem-solvers. The lesson to be learned is that science is no different from other human endeavors when puzzles are investigated. Fortunately, this is one myth that may eventually be displaced since many newer texts are abandoning or augmenting the list in favor of discussions of methods of science. Evidence Accumulated Carefully Will Result in Sure Knowledge All investigators, including scientists, collect and interpret empirical evidence through the process called induction. This is a technique by which individual pieces of evidence are collected and examined until a law is discovered or a theory is invented. Useful as this technique is, even a preponderance of evidence does not guarantee the production of valid knowledge because of what is called the problem of induction. Induction was first formalized by Frances Bacon in the 17th century. The method of induction he suggested is the principal way in which humans traditionally have produced generalizations that permit predictions. What then is the problem with induction? It is both impossible to make all observations pertaining to a given situation and illogical to secure all relevant facts for all time, past, present and future.

However, only by making all relevant observations throughout all time, could one say that a final valid conclusion had been made. This is the problem of induction. On a personal level, this problem is of little consequence, but in science the problem is significant. Scientists formulate laws and theories that are supposed to hold true in all places and for all time but the problem of induction makes such a guarantee impossible. The proposal of anew law begins through induction as facts are heaped upon other relevant facts. Deduction is useful in checking the validity of a law. For example, if we postulate that all swans are white, we can evaluate the law by predicting that the next swan found will also be white. If it is, the law is supported, but not proved as will be seen in the discussion of another science myth. Locating even a single black swan will cause the law to be called into question. The nature of induction itself is another interesting aspect associated with this myth. If we set aside the problem of induction momentarily, there is still the issue of how scientists make the final leap from the mass of evidence to the conclusion. In an idealized view of induction, the accumulated evidence will simply result in the production of a new law or theory in a procedural or mechanical fashion. In reality, there is no such method. The issue is far more complex -- and interesting --than that. The final creative leap from evidence to scientific knowledge is the focus of another myth of science. Science and its Methods Provide Absolute Proof The general success of the scientific endeavor suggests that its products must be valid. However, a hallmark of scientific knowledge is that it is subject to revision when new information is presented. Tentativeness is one of the points that differentiates science from other forms of knowledge. Accumulated evidence can provide support, validation and substantiation for a law or theory, but will never prove those laws and theories to be true. This idea has been addressed by Homer and Rubba and Lopnshinsky The problem of induction argues against proof in science, but there is another element of this myth worth exploring. In actuality, the only truly conclusive knowledge produced by science results when a notion is falsified. What this means is that no matter what scientific idea is considered, once evidence begins to accumulate, at least we know that the notion is untrue. Consider the example of the white swans discussed earlier. One could search the world and see only white swans, and arrive at the generalization that "all swans are white. Science Is Procedural More Than Creative We accept that no single guaranteed method of science can account for the success of science, but realize that induction, the collection and interpretation of individual facts providing the raw materials for laws and theories, is at the foundation of most scientific endeavors. This awareness brings with it a paradox. If induction itself is not a guaranteed method for arriving at conclusions, how do scientists develop useful laws and theories? Induction makes use of individual facts that are collected, analyzed and examined. Some observers may perceive a pattern in these data and propose a law in response, but there is no logical or procedural method by which the pattern is suggested. With a theory, the issue is much the same. Only the creativity of the individual scientist permits the discovery of laws and the invention of theories.

Chapter 3 : Clean Ventures: 'The Hot Topic' review

Myths and misconceptions have been created and even perpetuated by these very same contractors. As a result there is information that's not accurate, there are convenient half-truths, and then there is information that's just plain wrong that has been accepted as fact.

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A brilliant appendix called "Climate Myths, Half-Truths, and Misconceptions" A useful glossary of terms connected to global warming There is only one drawback to this book (and whether you see it as a strength or weakness depends on how much you already know and what more you would like to know): it is short.

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