

Chapter 1 : Epistemology: Argument and Evidence (video) | Khan Academy

Arguments are claims backed by reasons that are supported by evidence. Argumentation is a social process of two or more people making arguments, responding to one another--not simply restating the same claims and reasons--and modifying or defending their positions accordingly.

Every day we are subjected to manipulations, the influence of self-interested parties, factual and logical errors, opinion presented as fact, hype, and a variety of distortions. Writing and other communications can be evaluated using the criteria of: Good writing is clear thinking made visible. Learn to evaluate what you see, read, and hear; think critically, ask questions and draw your own conclusions. Describing Uncertainty It is authentic and informative to describe the level of uncertainty when communicating information. Have the courage and authenticity to say: We face measurement uncertainty, estimation error, sampling error, limited evidence, ambiguous evidence, anecdotal evidence, conflicting evidence, non-representative evidence, disputed evidence, misinformation, disinformation, inference, extrapolation, tradition, alternative points of view, the not-yet known, biased information, parochial points of view, taboos, and the unknowable when seeking answers to so many questions. Distinguish between undisputed fact, widely accepted fact, theory, expert opinion, hypothesis, minority opinion, filtered information, assumptions, disingenuous statements, biased information, dogma, faith, propaganda, and speculation when reporting information, engaging in dialogue, or making arguments. Separate anecdotes from systematic studies. Consider how well the evidence represents a larger conclusion. When drawing conclusions from a set of premises, comment on the level of certainty of each premise and the soundness of the logic leading to each conclusion. Use error bars and significant figures to convey the range of uncertainty. Carefully distinguish what you do know from what you do not know. Separate observation from interpretation. Scientific reports properly include error bars, forecasts and estimates include confidence intervals and ranges, and opinions reflect only a personal point of view that may not be widely shared or well considered. Critical Thinking Critical thinking is "thinking directed toward solving problems" involves seeking evidence, closely examining reasoning and assumptions, analyzing basic concepts, and tracing out implications of what is said and what is done. Knowing the rules of logic and being alert to their fallacies is the first step in critical thinking. Critical thinkers consider a variety of questions when evaluating information and drawing conclusions. What problem are we working to solve? What are my goals, objectives, and motives? What question will best advance the dialogue? How can a question be best worded and presented? What are the sources of information and fact? Are the samples and examples representative? What methods were used and what is the quality of information collection? What are the possible sources of error? What is the range of uncertainty and is it accurately described and represented? What modes of judgment and reasoning are used? What concepts make the reasoning possible? What assumptions underlie the concepts in use? What alternative interpretations and explanations fit the facts? Are these assumptions valid? What implications follow from the concepts and assumptions used? What is the point of view or frame of reference for this reasoning? Is the point of view one-sided or balanced? These considerations suggest specific questions such as: What is the most fundamental issue here? From what point of view can this problem best be approached? What assumptions are being made here? Do these assumptions make sense? What alternatives are sensible? What conclusion can best be inferred from the data? What alternative conclusions does it also support? What is the fundamental concept being presented? How could I check the accuracy of these data? What alternative sources exist? Is this data reproducible? Is the data systematic and representative? Is this a credible source of information? Critical thinking is not negative thinking. It is careful thinking directed toward deep understanding and insight. It recognizes that the obvious is not always true, and many things that are true are not at all obvious. Evaluating Evidence Evidence is often ambiguous or conflicting and always has to be evaluated, analyzed, and interpreted. Evidence is most reliable when: Evidence is more complete and convincing when the way something feels is consistent with the way it looks. For example, after seeing a rock, you might pick it up to examine more closely. If the texture feels like a rock and the weight is what you expect, then you have additional evidence that what you are observing is a rock. However if the surface

texture is unusual, or the weight is unexpected, then perhaps you are examining an artificial stone, or a hollow stone, or something quite different made of unexpected materials. As an example, water has very different appearance and properties below freezing and above its boiling point. Careful records such as notes, photographs, audio and video recordings, and diagrams are more reliable and should be used instead of unaided recall when information is required later, after the evidence has been examined first hand. We observe the sunlight appearing in the morning, traversing a path across the sky, and disappearing in the evening. One interpretation is that the earth is the center of the universe and the sun travels across the sky. An alternative interpretation is that the earth rotates on its axis as it revolves around the sun. Systematic information is more reliable than anecdotal information. Data obtained from an independent source is more reliable than data obtained, provided, selected, or interpreted by someone with an interest in the outcome. Also, take care to separate observation from interpretation to avoid drawing unfounded conclusions. Is that clear liquid water or vinegar? Is that attractive woman he is with his wife, daughter, co-worker, assistant, boss, or mistress? Does the sun move across the sky, or does the earth move past the sun? What are alternative explanations for what we are seeing? Consider this amusing story where interpretation gets well ahead of observation. Evaluating Authority Rather than examining evidence first hand, we often rely on secondary information sources. These include gossip, rumor, hearsay, conversation, the Internet, and information provided by various luminaries and authorities available as publications, speeches, presentations, advertisements, endorsements, radio and TV programs, and news items. One meaning describes positional power “such as the right to control, command, or determine” and the other describes expertise “an accepted source of information. Evidence obtained from an authority has to be carefully evaluated based on the expertise of the authority, while respectfully disregarding the power, influence, fame, charisma, attachment, or appeal of the authority. A common and seductive fallacy is an appeal to authority. We are often misled because of a natural tendency to trust some people and distrust others. An authority often presents only a single point-of-view, and too often this point-of-view advances a vested interest. One example of this is an Internet site claiming to provide expert information on sleep problems as a public service. However, the web site is created, paid for, and edited entirely by the manufacturer of a particular prescription drug sleep aid. This is a manipulative marketing tool, disguised as a source of objective information. It uses factual statements to present a false message. Examine a variety of view points and apply critical thinking to help evaluate information provided by an authority, or even by an aligned group of authorities. Take particular care to evaluate the reliability of claims of divine or religious experience, pronouncements by authorities, appeals to common sense, the obvious, and other situations where information or conclusions are claimed to be self-evident, beyond question, or beyond our comprehension. When a person in power responds with a preemptive dismissal “refusing to seriously consider an inquiry, or replying without responding by using power, humiliation, ridicule, insult, intimidation, distraction, obfuscation, condescension, or humor” it is often because the evidence is absent or unsubstantiated. Arrogance, belligerence, shouting, sneering, and repetition do not validate evidence, instead these distractions should raise suspicions. Confident experts typically welcome critical examination and discussion of their findings. Retain a healthy skepticism. Challenge authority as needed to understand and evaluate their claims and assess evidence. Evidence and Power Evidence can lead to dramatic conflicts with power. Consider the disputes astronomer Galileo Galilei had with the Pope over the evidence Galileo gathered to demonstrate that the sun, not the earth, was the center of the solar system. Galileo observed the moons of Jupiter, the phases of Venus, movement of sunspots, and light and shadow on the moon through his telescope. This evidence convinced him that the earth revolved around the sun. In Galileo completed his book Dialogue Concerning the Two Chief World Systems in which the Earth-centered Ptolemaic model and the sun-centered Copernican models are discussed and compared. In Galileo was formally interrogated for 18 days and on April 30 Galileo confessed disingenuously no doubt that he may have made the Copernican case in the Dialogue too strong and he offered to refute it in his next book. The Pope declined this offer and decided that Galileo should be imprisoned indefinitely. Soon after, with a formal threat of torture, Galileo was examined by the Inquisition and sentenced to prison and religious penances, the sentence was signed by 6 of the 10 inquisitors. In a formal ceremony at the church of Santa Maria Sofia Minerva, Galileo renounced his errors under oath. He was then

put in house arrest in Sienna.

In argument, evidence refers to facts, documentation or testimony used to strengthen a claim, support an argument or reach a conclusion. The evidence isn't the same as proof. "Whereas evidence allows for professional judgment, the proof is absolute and incontestable," said Denis Hayes in.

It goes a little like this: Do you analyze arguments? What exactly is the relationship between evidence and arguments? What is an argument? But what is evidence? There are a lot of really interesting articles on the nature of evidence, but let's just look at 3 sources. In an epistemological sense, evidence is considered to play a role in justification for a particular belief. Evidence can be defined as the available body of facts or information which tends to prove or disprove something, usually associated with the justification for beliefs. That definition of evidence seems to fit well with the three references used above, as well as our everyday understanding of evidence. We could get a lot deeper into this discussion obviously, but it is not necessary for the goal of this post. Argument Now that we know what evidence is, what is an argument? An argument can be defined as a collection of truth-bearing statements, reasons or facts used in support of an idea, theory or belief. Arguments are used to rationally persuade its audience of a particular conclusion. Just like my definition of evidence, the discussion of arguments can go much, much deeper than this. But for the goal of this post, this definition works well. Given the two definitions above, both arguments and evidence deal with coming to conclusions either affirming or denying something. They both also deal with supporting beliefs, and they both deal with reasons and facts. So what is the difference? It looks like the definitions of evidence and arguments overlap in all the important categories, except one. So an argument is a series of truth-bearers that lead to a conclusion. Take the two examples I used above. From those two statements, what conclusion can be reached? All men are mortal. Therefore "Elijah is mortal. We have good evidence to believe the 1st statement. And, considering I am the Elijah spoken of in the 2nd premise, we have good evidence to believe that I am a man. And therefore, following the rules of logical inference, we have evidence to believe the conclusion: An argument is valid only when its form follows the rules of logic does not commit a logical fallacy. An argument is sound when it is valid and all of its premises are true. An argument is a collection of truth-bearers that when taken to their logical conclusion, give evidence for a particular conclusion. If there is good evidence to accept the premises, then there is good evidence to accept the conclusion. Take the syllogism offered earlier. Elijah is a man. Therefore, Elijah is mortal. Or do you still have to kill me or wait for me to die to know that I am mortal? I think you have good evidence to believe that I am mortal, wholly apart from killing me. Evidence can be defined as the available body of facts or information which tends to prove or disprove something. An argument can be defined as a collection of truth-bearing statements, reasons or facts used in support of an idea, theory or belief. Then it seems reasonable to conclude that when an argument is both valid and sound, it becomes evidence for a particular conclusion. So is an argument actually evidence? It would seem that the answer is yes. Evidence is used in justification for certain truth-bearing can be true or false propositions. An argument is a series of truth-bearing propositions, logically leading to a conclusion. If the premises of an argument are justified by evidence, and the argument is both valid and sound, the conclusion logically follows. That logical conclusion from the evidence is also evidence for a certain conclusion. So, an argument is evidence. However, this is not meant to be a bifurcation between the concepts. Arguments and evidence are interdependent upon each other.

Chapter 3 : What is the difference between an argument and evidence? | Yahoo Answers

The first step in finding evidence or data to support any point—even those that disagree with yours—is to wade into the world of people who support the point or position you're studying.

Analyzing Arguments and Evidence Black, white, and shades of gray Real world situations always have an effectively infinite number of details. No understanding we have of them will ever be entirely complete. We should always be careful when any issue seems to line up as having two sides which are extreme opposites - right and wrong, good and bad, for us or against us. From these we might draw other false conclusions without ever considering whether our original assumption was false. It just seemed natural that men should rule. It was also obvious that educated people should know Latin and a dark suntan was an indication of good health. Some of the hardest assumptions to detect are the ones that are so widely held that they seem natural. We assume these "truths" have been proven over the years. This is not a safe assumption. What false cultural assumptions are we making today? Sometimes statements are made that would be very hard to disprove even if they were false. In some cases the statement is so vague that almost anything could happen without our feeling the statement was disproved. Other statements would require impossible effort to prove or disprove. Such statements cannot be considered reliable, since, even if they were wrong, nobody could show it. If people have told us a certain food tastes good or certain music sounds good or certain medicine is effective, our own experiences of these things can be influenced by the expectations we have formed, yet we are likely to think our judgment is unbiased. By the same token, other people who are completely sincere may tell us things they think they have learned by experience when in fact their opinions derive from what other people told them. But proving things is hard. As a result, we often find that people debating an issue say the burden of proof is on their opponent. They want the easy job and they want their opponent to have the hard job. Each wants to claim victory if their opponent cannot accomplish an almost impossible task. Realistically, the burden of proof is on anyone who claims to have certain knowledge one way or the other. Decisions and alternatives To evaluate a course of action, we have to consider what would happen if the action were not taken. Should we close nuclear power plants? It depends on what happens instead. Are they replaced by less polluting forms of energy or more polluting forms of energy, or would people just use less energy? We cannot evaluate a decision without evaluating the alternatives. If we look at the flow of goods and services instead of the flow of money, some economic issues become clearer. Effectively, all mathematics has this property. If Socrates is a man, and all men are mortal, then we can safely conclude that Socrates is mortal. The trouble with this is that outside of mathematics and physics, it is hard to find generalizations like "all men are mortal" that we can count on, so most practical deductions have some chance for error. This type of intuition is the mainstay of most human thinking and action. It even applies to single steps of logic - like recognizing that an equation can be simplified by adding a certain quantity to both sides. Intuition is fast and automatic, but it has weaknesses, like being subject to biases and stereotypes. Much of our concern with responsible thinking is ultimately aimed at avoiding intuition errors. Combining reasoning and intuition For everyday purposes, using logic means we do some deductions based on logical or mathematical rules. It is easy to make mistakes, since sometimes these rules are "unintuitive". We should always check our logic by using intuition. If Tom has 3 apples and Mary has 4 apples, and we deduce that together they have 34 apples, we should stop and wonder if this is reasonable. When logic and intuition come to different conclusions, we should think about both until we find the logical mistake or conclude our intuition was faulty. Sometimes we spend a lot of effort debating what some word really means, when we should be concentrating on what the world is really like. After all, unless we are talking about writing or speaking, the world is the same no matter what words we use to describe it. Since words have multiple definitions, some of which might differ in subtle but important ways, an argument that appears true may actually be false because a statement that is true using one definition may be false using the other. If we are judging the flavor of a wine, we want to judge only on the flavor, not on the knowledge that it was expensive to produce or that other experts consider it to be extremely good. Typically bias is avoided by objective tests such as multiple choice tests , in which there is no opinion involved in doing the

grading, and by blind tests, where the information that might bias us is kept hidden, for example by tasting wine without seeing the bottle or its label. We should watch for rationalizations by both ourselves and others, since they interfere with our getting to the root of problems and solving them. Typically the prediction, such as good luck or bad luck, is very vague. As a result, we can usually find some sort of good luck that we can attribute to the clover. If not, we might assume that finding it prevented bad luck, or worse luck than we already had. As a result we can feel like we are accumulating positive evidence for the belief even though the belief is nonsense. False beliefs like this can be passed from generation to generation because people in each generation feel like they have validated it from their own experience. The same can occur with situations that would not involve any supernatural effect. We might call such beliefs "stitions" - superstitions without the supernatural. A character may quote a "fact" which we think was taken from real life, but there is no guarantee that in fiction this fact is true. We may see aspects of police work that we assume are realistic even if they are not. I suspect that people overestimate the importance of guns for self-defense because gun battles take place so frequently in fictional stories. Most of the time this "magnitude" is determined intuitively, and in some cases this may be extremely unreliable. If we have a way to do an objective measure of how good something is, even a very inaccurate measure may be much better than our intuition. Engineers and physicists, who routinely deal with measured quantities, usually include an estimate of the inaccuracy of their measurements: Such judgments about accuracy are just as important in human affairs, but are rarely stated specifically. Instead, some relatively easy measurement is made that seems to be closely related to the relevant trait. Normally the two things are fairly well related, but if the programmer knows the number of lines is being used as the basis for his evaluation, he can easily find ways of adding nearly useless lines to make his performance look better. People being evaluated will often try to make the quantity being measured look good at the expense of other factors that are not measured but may be more important. Most of the time high quality goods cost more than low quality goods. Sometimes we may choose to buy a more expensive item because we assume it is better quality. In effect, we are measuring its quality by its price. Merchants know this and can easily raise prices on lower quality goods to take advantage of that assumption. Then the buyer not only gets lower quality, but he pays more. Other measurements are even more superficial. We may assume that real estate agent we are about to hire is good because she dresses well or drives an expensive car. Money itself is quite neutral - it just sits there and makes no decisions for good or ill. Realistically, money is very useful - it allows people to trade goods and services much more easily than if they were forced to barter, and generally we spend it in order to make our lives happier. While many important things, like friendship, cannot be exchanged for money, there is a huge variety of goods and services that can, so money is often the best measure of "value" we have available. We cannot compare apples and oranges directly, but comparing the cost of apples and oranges does let us compare how much people value them. Intuition is poor for very large or small quantities. Former Wisconsin senator William Proxmire used to choose a "golden fleece of the month award" to illustrate waste in government spending. One month he talked about the B-1 Bomber, and mentioned a figure of about 5 billion dollars. The next month he chose a research project concerning monkeys clenching their jaws. As far as I could tell, people were about as upset about one as they were about the other. Both numbers are very large compared to what we deal with on an everyday basis, so our intuition is poor about the magnitude of such numbers. One way to improve our perception of large numbers is to translate them to a personal scale. A thousand dollar waste costs about one cent for every 14 people. He started to say yes and then realized what was going on. But if the sizes of things being counted varies greatly we have no idea how important the total is. The fact that this particular product increased by more than the average necessarily implies that other products have increased by less than the average, so the additional news is not necessarily bad. Zero-sum games In most games people play for entertainment, from chess to football to monopoly, there is only one winner, so anything that is good for one player is automatically bad on the average for the others. These are called "zero sum games" because the sum of all the "good news", totaled over all the players, is zero. This is very clear in gambling, where any money somebody wins must be lost by somebody else. It is important to differentiate between the situations in life where overall value is increased, and those where value is increased for one person only because it was decreased for others. Try to figure out if

there is some way the statistic could be true without the thing being implied being true. What does it mean if "9 out of 10 Volvos built in the last 11 years are still on the road? This would be a reasonable assumption if they randomly chose the people from around the country, but it would not be a safe assumption if they did the poll at a Star Trek convention. It is common for a single incident, which is very dramatic on a personal level, to be publicized nationwide. We are likely to react emotionally because we are as familiar with the details as we might be if this happened to somebody we know, but in reality it tells us little about the state of the world, since it is only a single instance in a national population of more than a quarter billion. This distorts our perceptions and makes it difficult to make a fair decision about what is true. Sometimes they will tell us the arguments used by their opponents and why they are wrong. This principle also applies on an individual level when someone passes along gossip or relates events that cast others in a negative light. The idea is that if all sides of an issue are heard, the truth will have an opportunity to be heard. When people become very convinced of a particular belief, they often want to suppress any discussion that calls that belief into question. Unfortunately people who do this are wrong about their position a high percentage of the time, and so the true viewpoint is often suppressed by censorship. It is easy for people to confuse things that happened at one time with things that happened at another, or even to visualize something that someone suggests might have happened and confuse that with an actual memory of it happening.

Chapter 4 : PPT - Arguments: Claims and evidence PowerPoint Presentation - ID

Teaching Argument vs. Evidence by MiddleWeb Â· Published 01/27/ Sarah Tantilto is the author of THE LITERACY COOKBOOK: A Practical Guide to Effective Reading, Writing, Speaking, and Listening Instruction (Jossey-Bass,).

While argumentation tends to focus on logic supported by verifiable examples and facts, persuasion can use unverifiable personal anecdotes and a more apparent emotional appeal to make its case. Additionally, in persuasion, the claim usually comes first; then the persuader builds a case to convince a particular audience to think or feel the same way. Evidence-based argument builds the case for its claim out of available evidence. Solid understanding of the material at hand, therefore, is necessary in order to argue effectively. This printable resource provides further examples of the differences between persuasive and argumentative writing. One way to help students see this distinction is to offer a topic and two stances on it: Trying to convince your friend to see a particular movie with you is likely persuasion. The claim that typically answers the question: Project, for example, this essay on Gertrude in Hamlet and ask students to identify the claim, reasons, and evidence. Ask students to clarify what makes this kind of text an argument as opposed to persuasion. What might a persuasive take on the character of Gertrude sound like? You may also wish to point out the absence of a counterargument in this example. Challenge students to offer one. Point out that even though the claim comes first in the sample essay, the writer of the essay likely did not start there. Rather, he or she arrived at the claim as a result of careful reading of and thinking about the text. Share with students that evidence-based writing about texts always begins with close reading. See Close Reading of Literary Texts strategy guide for additional information. Guide students through the process of generating an evidence-based argument of a text by using the Designing an Evidence-based Argument Handout. Decide on an area of focus such as the development of a particular character and using a short text, jot down details or phrases related to that focus in the first space on the chart. After reading and some time for discussion of the character, have students look at the evidence and notice any patterns. Record these in the second space. Work with the students to narrow the patterns to a manageable list and re-read the text, this time looking for more instances of the pattern that you may have missed before you were looking for it. Add these references to the list. Use the evidence and patterns to formulate a claim in the last box. Claims can also be more or less complex, such as an outright claim The character is X trait as opposed to a complex claim Although the character is X trait, he is also Y trait. For examples of development of a claim a thesis is a type of claim , see the Developing a Thesis Handout for additional guidance on this point. Once students have a claim, they can use the patterns they detected to start formulating reasons and textual references for evidence. Use these ReadWriteThink resources to help students build their plans into a fully developed evidence based argument about text:

Chapter 5 : Taking on creationism. Which arguments and evidence counter pseudoscience?

20 thoughts on " Arguments and Evidence - Should an Argument Be Considered "Evidence"? MeesterGibson August 9, at pm. According to the bible, your argument for your mortality is invalid, because of Enoch and Elijah the prophet.

Claims, Reasons, Evidence Critical thinking means being able to make good arguments. Arguments are claims backed by reasons that are supported by evidence. Argumentation is a social process of two or more people making arguments, responding to one another--not simply restating the same claims and reasons--and modifying or defending their positions accordingly. Claims are statements about what is true or good or about what should be done or believed. Claims are potentially arguable. Reasons are statements of support for claims, making those claims something more than mere assertions. Reasons are statements in an argument that pass two tests: Reasons are answers to the hypothetical challenge to your claim: Everyone should stop wearing seat belts [claim] because it would save lives [reason]. Passing those tests, however, does not insure that arguments are sound and compelling. Evidence serves as support for the reasons offered and helps compel audiences to accept claims. Evidence comes in different sorts, and it tends to vary from one academic field or subject of argument to another. Evidence answers challenges to the reasons given, and it comes in four main types: Specific instances include examples, case studies, and narratives. Each can be an effective mode of building support for a reason or claim. In a public speech, they offer audiences a way to see an idea illustrated in a particular case. To be effective, specific instances need to be representative of the broader trend or idea they are supporting. With an example as evidence, someone arguing against seat belt use might say "Last year my cousin crashed her car off a bridge and would have drowned if she were wearing her seatbelt" as evidence the answer to "Why do you believe that? An opponent might challenge whether this example was a representative one: In public speeches, statistics have the advantage of seeming objective, authoritative, and factual, but critical audiences will want to know about the sources and methods for determining your statistical evidence. Testimony, or appeals to authority, come in two main types, eyewitness and expert. Eyewitness or first-hand testimonies are reports from people who directly experience some phenomenon. If a speaker is arguing about toxic waste dumps, a quotation from someone living next to a dump would fall into this category. First-hand testimony can help give the audience a sense of being there. Experts may also rely on direct experience, but their testimony is also backed by more formal knowledge, methods, and training. When using testimony in arguments, you should always make sure the authority you are appealing to is in fact qualified to speak on the topic being discussed.

Argument and Evidence presents aspects of informal logic and statistical theory in a comprehensible way, enabling students to acquire skills in critical thinking which will outlast their undergraduate studies.

To any mainstream biologist, creationism sounds ludicrous and scientists have repeatedly fought attempts to introduce the teaching of creationism generally, and intelligent design particularly, into school curricula. However, like many scientists and commentators, Jerry Coyne, Professor of Ecology and Evolution at the University of Chicago, IL, USA, fears that the social impact of these movements could extend far beyond the purely scientific debate. Therefore, scientists need to counter the claims of the proponents of creationism and determine which arguments best support the case for evolutionary theory and, more generally, support science itself in the public arena. Today, it is clearly more substantial. Biologists have long-debated whether and how to respond to claims that the theory of evolution must be taught together with more or less biblical interpretations of the origins of life on Earth. However, the fervour of the anti-evolutionary lobby means that it is now a question of how, not whether, biologists must educate the public about evolution and natural selection. Yet, scientists face a dilemma. The danger is that if scientists engage the proponents of creationism and intelligent design in direct debate, they risk giving further credence to anti-evolutionary arguments by inferring that the ideas are worthy of discussion. Conversely, a failure to engage in debate could allow creationists to argue that biologists cannot, rather than will not, counter their arguments. Creationism itself is not a unified movement; its various incarnations encompass a gamut of philosophical positions Scott, , including intelligent design. The story of the dust of the earth and the breath of God, which we just heard, does not in fact explain how human persons come to be but rather what they are. It explains their inmost origin and casts light on the project that they are. And, vice versa, the theory of evolution seeks to understand and describe biological developments. Proponents of intelligent design might accept some minor aspects of evolutionary theory. However, intelligent design by definition denies that mutation and natural selection can explain, for example, the evolution of chordates from echinoderms. The English theologian William Paley –” formulated the most famous example: Similarly, because the universe shows order, complexity and purpose, there must be a creator. So, one can see why the idea of an intelligent designer appeals to someone not versed in evolutionary theory. Intelligent design and creationism do not just limit themselves to refuting the theory of evolution; the attack on science extends to other fields including geology, astronomy and even scientific materialism. Many creationists believe that global warming is a hoax, for example. Conway Morris, however, objects to the intellectual arrogance of some biologists. Given the difficulties, what evidence can biologists use to counter creationist dogma? For example, how can biologists counter the creationist argument that there are still many missing links in the fossil record that make evolutionary theory unworkable? Conway Morris noted that an understanding of what those missing links are is a good start. He pointed out that a marked phenotypic change, facilitating rapid evolution, might arise from a single-nucleotide polymorphism. Missing links emerge regularly and it is quite likely that palaeontologists have simply not discovered them all yet. Some biologists find that evolutionary convergence offers a powerful argument against intelligent design and highlights the effectiveness of natural selection. Creationists often cite the eye as a complex organ that could not have evolved without intervention. No design was required, only the natural selection of a series of advantageous mutations. During a debate held in May, three out of the ten Republican candidates for the US presidency said that they did not believe in evolution Other examples of convergent evolution include silk, copper proteins and carbonic anhydrase. Rather than being random, common phenotypes developed to adapt to common pressures. A designer would orient the tips of photoreceptors so that they point towards the light source, and the parts of the retina that carry signal towards the brain should be farther removed. This seems fair enough, and this is how the squid retina is built, but vertebrate examples are assembled the other way around–”perversely, light has to plunge the full depth of the retina to reach the point of reception. There seems to be a widespread fear of treading on toes. It rarely presents the evidence from, for example, the fossil record. Similarly, Conway Morris has built his reputation on another controversy: His research group has

recently submitted two papers that illustrate how body plans as amazingly diverse as those found in the shale might have emerged, and how nature ended up with organisms as different as starfish and fish. However, the basic question of what caused the Cambrian explosion—“why life needed to adapt so quickly”—remains open. But his quip makes a serious point and highlights a key difference between evolutionary theory and creationism: Creationism, on the other hand, rejects scientific theory and new evidence and favours a more or less narrow world-view based on divine intervention. Therefore, until a Precambrian rabbit comes bounding out of the fossil record, the theories of natural selection and evolution remain the only valid explanations of how life on Earth developed. Guardian, Nov 27 [http: National Center for Science Education](http://NationalCenterforScienceEducation.com).

Chapter 7 : ANALYZING ARGUMENTS AND EVIDENCE

Best Answer: An argument is a disagreement between two or more people, but it can also be a statement backed by evidence, like your argument that your school doesn't need a dress code.

Chapter 8 : Emotional Competency - Inquiry, Evidence, and Argument

"Evidence for homology between paired fins and limbs is compelling—“from an evolutionary perspective, vertebrate limbs are best viewed as a specialized subset or kind of paired fins.” Indeed, the pattern of morphological change—the evolutionary sequence of anatomical transformation—is pretty well established.

Chapter 9 : Developing Evidence-Based Arguments from Texts - ReadWriteThink

In fact, making an argument—“expressing a point of view on a subject and supporting it with evidence—is often the aim of academic writing. Your instructors may assume that you know this and thus may not explain the importance of arguments in class.