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Chapter 1 : Linguistics - Wikipedia

This paper highlights the problems that are likely to be encountered in English-Arabic scientific translation and tries to establish certain possible factors which may finally lead to a theory of this sort of translation.

Received Nov 2; Accepted Apr 7. This article has been cited by other articles in PMC. Abstract Background Implementation science has progressed towards increased use of theoretical approaches to provide better understanding and explanation of how and why implementation succeeds or fails. The aim of this article is to propose a taxonomy that distinguishes between different categories of theories, models and frameworks in implementation science, to facilitate appropriate selection and application of relevant approaches in implementation research and practice and to foster cross-disciplinary dialogue among implementation researchers. Discussion Theoretical approaches used in implementation science have three overarching aims: Summary This article proposes five categories of theoretical approaches to achieve three overarching aims. These categories are not always recognized as separate types of approaches in the literature. While there is overlap between some of the theories, models and frameworks, awareness of the differences is important to facilitate the selection of relevant approaches. And while the relevance of addressing barriers and enablers to translating research into practice is mentioned in many process models, these models do not identify or systematically structure specific determinants associated with implementation success. Furthermore, process models recognize a temporal sequence of implementation endeavours, whereas determinant frameworks do not explicitly take a process perspective of implementation. Theory, Model, Framework, Evaluation, Context Background Implementation science was borne out of a desire to address challenges associated with the use of research to achieve more evidence-based practice EBP in health care and other areas of professional practice. Early implementation research was empirically driven and did not always pay attention to the theoretical underpinnings of implementation. A review of guideline implementation strategies by Davies et al. Mixed results of implementing EBP in various settings were often attributed to a limited theoretical basis [1 , 3 - 5]. Poor theoretical underpinning makes it difficult to understand and explain how and why implementation succeeds or fails, thus restraining opportunities to identify factors that predict the likelihood of implementation success and develop better strategies to achieve more successful implementation. However, the last decade of implementation science has seen wider recognition of the need to establish the theoretical bases of implementation and strategies to facilitate implementation. There is mounting interest in the use of theories, models and frameworks to gain insights into the mechanisms by which implementation is more likely to succeed. Implementation studies now apply theories borrowed from disciplines such as psychology, sociology and organizational theory as well as theories, models and frameworks that have emerged from within implementation science. There are now so many theoretical approaches that some researchers have complained about the difficulties of choosing the most appropriate [6 - 11]. This article seeks to further implementation science by providing a narrative review of the theories, models and frameworks applied in this research field. The aim is to describe and analyse how theories, models and frameworks have been applied in implementation science and propose a taxonomy that distinguishes between different approaches to advance clarity and achieve a common terminology. The ambition is to facilitate appropriate selection and application of relevant approaches in implementation studies and foster cross-disciplinary dialogue among implementation researchers. The importance of a clarifying taxonomy has evolved during the many discussions on theoretical approaches used within implementation science that the author has had over the past few years with fellow implementation researchers, as well as reflection on the utility of different approaches in various situations. Implementation science is defined as the scientific study of methods to promote the systematic uptake of research findings and other EBPs into routine practice to improve the quality and effectiveness of health services and care [12]. The terms knowledge translation, knowledge exchange, knowledge transfer, knowledge integration and research utilization are used to describe overlapping and

interrelated research on putting various forms of knowledge, including research, to use [8 , 13 - 16]. Implementation is part of a diffusion-dissemination-implementation continuum: A narrative review of selective literature was undertaken to identify key theories, models and frameworks used in implementation science. Narrative reviews yield qualitative results, with strengths in capturing diversities and pluralities of understanding [18 , 19]. Six textbooks that provide comprehensive overviews of research regarding implementation science and implementation of EBP were consulted: Rycroft-Malone and Bucknall [20], Nutley et al. A few papers presenting overviews of theories, models and frameworks used in implementation science were also used: The titles and abstracts of the identified articles were scanned, and those that were relevant to the study aim were read in full. Discussion Theories, models and frameworks in the general literature Generally, a theory may be defined as a set of analytical principles or statements designed to structure our observation, understanding and explanation of the world [29 - 31]. Authors usually point to a theory as being made up of definitions of variables, a domain where the theory applies, a set of relationships between the variables and specific predictions [32 - 35]. Theories can be described on an abstraction continuum. High abstraction level theories general or grand theories have an almost unlimited scope, middle abstraction level theories explain limited sets of phenomena and lower level abstraction theories are empirical generalizations of limited scope and application [30 , 36]. A model typically involves a deliberate simplification of a phenomenon or a specific aspect of a phenomenon. Models need not be completely accurate representations of reality to have value [31 , 37]. Models are closely related to theory and the difference between a theory and a model is not always clear. Models can be described as theories with a more narrowly defined scope of explanation; a model is descriptive, whereas a theory is explanatory as well as descriptive [29]. A framework usually denotes a structure, overview, outline, system or plan consisting of various descriptive categories, e. Frameworks do not provide explanations; they only describe empirical phenomena by fitting them into a set of categories [29]. Theories, models and frameworks in implementation science It was possible to identify three overarching aims of the use of theories, models and frameworks in implementation science:

Chapter 2 : Ethics in Research - How Morals and Ethics Affect Research

example, revenue nearly tripled is a kind of intralingual translation of the first part of the sentence, a fact that is highlighted by the trigger expression in other words. In the decade before revenue averaged around [NZ]$1 billion a year.

Alamy 1 What is the universe made of? Astronomers face an embarrassing conundrum: Over the past 80 years it has become clear that the substantial remainder is comprised of two shadowy entities â€" dark matter and dark energy. The former, first discovered in , acts as an invisible glue, binding galaxies and galaxy clusters together. Astronomers are closing in on the true identities of these unseen interlopers. Four billion years ago, something started stirring in the primordial soup. A few simple chemicals got together and made biology â€" the first molecules capable of replicating themselves appeared. We humans are linked by evolution to those early biological molecules. But how did the basic chemicals present on early Earth spontaneously arrange themselves into something resembling life? How did we get DNA? What did the first cells look like? Some say life began in hot pools near volcanoes, others that it was kick-started by meteorites hitting the sea. Astronomers have been scouring the universe for places where water worlds might have given rise to life, from Europa and Mars in our solar system to planets many light years away. Radio telescopes have been eavesdropping on the heavens and in a signal bearing the potential hallmarks of an alien message was heard. Astronomers are now able to scan the atmospheres of alien worlds for oxygen and water. The next few decades will be an exciting time to be an alien hunter with up to 60bn potentially habitable planets in our Milky Way alone. We do, however, have bigger brains than most animals â€" not the biggest, but packed with three times as many neurons as a gorilla 86bn to be exact. A lot of the things we once thought distinguishing about us â€" language, tool-use, recognising yourself in the mirror â€" are seen in other animals. Scientists think that cooking and our mastery of fire may have helped us gain big brains. The harder, more philosophical, question is why anything should be conscious in the first place. We spend around a third of our lives sleeping. But scientists are still searching for a complete explanation of why we sleep and dream. Animal studies and advances in brain imaging have led us to a more complex understanding that suggests dreaming could play a role in memory, learning and emotions. Rats, for example, have been shown to replay their waking experiences in dreams, apparently helping them to solve complex tasks such as navigating mazes. When they meet , both disappear in a flash of energy. Our best theories suggest that the big bang created equal amounts of the two, meaning all matter should have since encountered its antimatter counterpart, scuppering them both and leaving the universe awash with only energy. Researchers are sifting data from experiments like the Large Hadron Collider trying to understand why, with supersymmetry and neutrinos the two leading contenders. Our universe is a very unlikely place. Alter some of its settings even slightly and life as we know it becomes impossible. It may sound crazy, but evidence from cosmology and quantum physics is pointing in that direction. Now we have to put all that carbon back, or risk the consequences of a warming climate. But how do we do it? One idea is to bury it in old oil and gas fields. Another is to hide it away at the bottom of the sea. Our nearest star offers more than one possible solution. Another idea is to use the energy in sunlight to split water into its component parts: The hope is that these solutions can meet our energy needs. The fact you can shop safely on the internet is thanks to prime numbers â€" those digits that can only be divided by themselves and one. Public key encryption â€" the heartbeat of internet commerce â€" uses prime numbers to fashion keys capable of locking away your sensitive information from prying eyes. And yet, despite their fundamental importance to our everyday lives, the primes remain an enigma. An apparent pattern within them â€" the Riemann hypothesis â€" has tantalised some of the brightest minds in mathematics for centuries. However, as yet, no one has been able to tame their weirdness. Doing so might just break the internet. Antibiotics are one of the miracles of modern medicine. Yet this legacy is in danger â€" in Europe around 25, people die each year of multidrug-resistant bacteria. Thankfully, the advent of DNA sequencing is helping us discover

antibiotics we never knew bacteria could produce. Our tablets and smartphones are mini-computers that contain more computing power than astronauts took to the moon in But if we want to keep on increasing the amount of computing power we carry around in our pockets, how are we going to do it? There are only so many components you can cram on to a computer chip. Has the limit been reached, or is there another way to make a computer? Scientists are considering new materials, such as atomically thin carbon â€" graphene â€" as well as new systems, such as quantum computing. The short answer is no. Not a single disease, but a loose group of many hundreds of diseases, cancer has been around since the dinosaurs and, being caused by haywire genes, the risk is hardwired into all of us. The longer we live, the more likely something might go wrong, in any number of ways. For cancer is a living thing â€" ever-evolving to survive. Robots can already serve drinks and carry suitcases. Ninety-five per cent of the ocean is unexplored. In , Don Walsh and Jacques Piccard travelled seven miles down, to the deepest part of the ocean, in search of answers. Their voyage pushed the boundaries of human endeavour but gave them only a glimpse of life on the seafloor. But on such scales quantum physics probably has something to say too. Except that general relativity and quantum physics have never been the happiest of bedfellows â€" for decades they have withstood all attempts to unify them. We live in an amazing time: Our knowledge of what causes us to age â€" and what allows some animals to live longer than others â€" is expanding rapidly. And since many diseases, such as diabetes and cancer, are diseases of ageing, treating ageing itself could be the key. The number of people on our planet has doubled to more than 7 billion since the s and it is expected that by there will be at least 9 billion of us. Where are we all going to live and how are we going to make enough food and fuel for our ever-growing population? Maybe we can ship everyone off to Mars or start building apartment blocks underground. We could even start feeding ourselves with lab-grown meat. These may sound like sci-fi solutions, but we might have to start taking them more seriously. Time travellers already walk among us. At that speed the effect is minuscule, but ramp up the velocity and the effect means that one day humans might travel thousands of years into the future. Nature seems to be less fond of people going the other way and returning to the past, however some physicists have concocted an elaborate blueprint for a way to do it using wormholes and spaceships. The Big Questions in Science:

Chapter 3 : Making sense of implementation theories, models and frameworks

The scientific method is more than just hypotheses and experiments. In this lesson, we'll explore the themes and variations that make up the world of science.

The points of contrast mentioned above side with Ilyas In scientific works, subject-matter takes priority over the style of the linguistic medium which aims at expressing facts, experiments, hypothesis, etc. The reader of such scientific works does not read it for any sensuous pleasure which a reader of literary work usually seeks, but he is after the information it contains. All that is required in fact is that of verbal accuracy and lucidity of expression. Scientific words differ from ordinary and literary words since they do not accumulate emotional associations and implications. This explains why the translation of a scientific work is supposed to be more direct, freer from alternatives, and much less artistic than the other kinds of prose. The language of scientific and technical language is characterized by impersonal style, simpler syntax, use of acronyms, and clarity. This distinction has one significant implication for the translator of scientific texts: Furthermore, this distinction is useful in so far as it is conjoined to possible leading factors for a theory of scientific translation because most of the literature on translation has given extensive consideration to literary texts ending with specific rules and theories and establishing relevant terminology of literary translation. The word deviation for instance, expresses one of the frequent concepts in the description of literary texts where deviation rarely occurs in scientific ones. By this we mean the deviation from the linguistic norms flourishing in poetry and prose, the quality which scientific texts often lack. However, certain rules which are applicable to theories of literary translation can be safely applied to scientific translation in general and to English-Arabic scientific translation in particular. The need for a large new vocabulary dealing with technological and scientific matters is, however, the least interesting feature of the new lexical development; more fascinating, though more elusive, is the evolution of new words for intellectual concepts. However, a part from the cultural gap, the problem of scientific translation from English into Arabic remains mostly a matter of understanding and representing the techniques, the processes, and the details which science and technology involve. In this regard, Farghal and Shunnaq They mainly depend on the successful handling of the linguistic elements of both English and Arabic including grammar, lexicon, and field-related registers. They also harbor translating competence, which includes structurization, contextualization, mastery over programs of expression in both English and Arabic, and knowledge of the alternative standards of equivalence. Moreover, the model necessitates the ability to transfer linguistic and translating competencies to areas reserved for comparison and imagination. Subsequently, corresponding structural and lexical elements are identified and assigned functions in the sorting process within compensatory strategies resulting in an almost perfect mental representation which, when textualized and normalized, ends up in an accurately-translated Arabic product. The above description necessitates the identification of the characteristics of the scientific register on which this model operates. Scientific Register Generally speaking, the technical use of language manifests itself in several ways. The most obvious one is non-deviation from ordinary grammar, logically and argumentative progression. This may entail the adherence to items that are conventionally used. There is no insertion, substitution, or permutation cf. There is no blocking or stopping to the automatic processing. In contrast to their literary counterparts, scientific texts underline the information content without bothering about features that are characteristic of poetic texts, such as rhyme, and connotative or symbolic meaning. Let alone other aesthetically features, which Schmidt For the purpose of more vivid characterization of these texts, we shall mention some major ones of these features by referring to Bakr-Serex First, this register is characterized by the logical order of utterances with clear indication of their interrelations and interdependence. Second, it flourishes the use of terms specific to each given branch of science; in modern science; however, there is a tendency to exchange terms between various branches of science. Third, another characteristic feature of this register is the frequent use of specific sentence-patterns, usually the Postulatory, the Argumentative and the Formulative patterns. The

impersonality of this type of writing can be revealed in the frequent use of passive voice constructions with which scientific experiments are generally described. Fourth, one more observable feature of the scientific register is the use quotations, references, and foot-notes in accord with the main requirement of this register, i. Finally, science does not have its own syntax only, but also its own terminology. And we have already hinted at the importance of the familiarity with this terminology resting on a solid foundation of previously acquired knowledge on behalf of the translator. Therefore, it is not the language itself which is special, but certain words or their symbols. Having these characteristic features of the scientific register in mind, we feel that we are in a good position to identify the areas of contrast between scientific texts and other types of texts. Scientific versus Literary Contexts By setting off scientific against the literary translation, their characteristics and the problems that are likely to be encountered in each, become more salient as illustrated below. In scientific texts we have an end in view and the means necessarily remains within the general conceptual framework within which the end is defined. That is, the scientific context has a content which is concerned with the horizontal structure of the world while the literary context has a content which is concerned with the vertical structure of the world. Thus, on the one hand, we shall have a vertical relation between height and depth while, on the other hand, we shall have a horizontal relation between width and breadth. The first relation testifies to the relative merits of artists and poets, whereas the second one signifies the merits of scientists and technologists. The product of poets is essentially a product of height and depth which has either been brought down or lifted up so as to fit into the width and breadth of life itself, that is acquiring a horizontal dimension; while the product of scientists lacks the intuitive complexity and wealth of experience characteristic of poets. Scientists speak within the familiar and concrete realities of everyday life. If they are to move, their movement is almost always towards the accomplishment of a new horizon or new perspectives that always remain within the horizontal structure of the concrete, tangible and objective reality. Another point intrudes itself here: The relation of these dimensions seems as one of opponents while their unity seems as a harmony of opposites. To span them, therefore, seems impossibility that even a highly-sophisticated computer technology cannot bring off. These demarcation lines between vertical and horizontal dimensions suggest another area of investigation and comparisons. We can now expand the previous columns p.

Chapter 4 : Politics and Science: What Americans Think

The first group of scholars to begin to move the cultural study of translation out of the realm of realia and into the large-scale political and social systems have been variously identified as the polysystems, translation studies, descriptive translation studies, or manipulation school (see Gentzler,).

After weighing the latest science on general anesthetic and sedation exposure in young children, the U. It offers no lifelike graphics. Nor does it boast a screen. Primate playersâ€"whether human or notâ€"are simply required to pull levers and replicate patterns of flashing lights. Monkeys get a banana-flavored treat as a reward for good performance whereas kids get nickels. It was created by toxicologists at the U. Food and Drug Administration in the s to study how chronic exposure to marijuana smoke affects the brain. The game has since been adapted to address a different question: To date, numerous studies suggest that being put under with anesthesia early in life seems somehow related to future cognitive problems. But whether this association is causal or merely coincidence is unclear. Researchers do know that the young human brain is exceptionally sensitive. But unraveling whether anesthetics may fuel such long-term damage in humans remains a challenge. The connection does seem plausible. Anesthetics are powerful modulators of neurotransmission, or communication between neural cells, so the idea that early exposure to these chemicals may alter brain development does not seem far-fetched. Moreover, anesthesia exposure in animals has been linked to long-term learning and memory problems for almost all commonly used anesthetics. Four years ago he and his colleagues reported that when rhesus monkeys are put under with ketamine â€"an anesthetic sometimes used for kids during short, painful proceduresâ€"it is associated with lasting damage to the brain as compared with control group monkeys that were not exposed. When the monkeys were five or six days old, they were put under using ketamine for a hour period. The anesthetized monkeys, as a group, subsequently performed worse than control monkeys in tests on learning and discriminating by color and position. The differences, however, were relatively subtle and perhaps would not make much of a difference in the lives of individual monkeys. Yet on a larger level, because the subjects performed slightly worse than the controls, it gives researchers and clinicians pause. And still, seven years after their ketamine treatment, those monkeys continue to show below-normal brain function, Paule says. But translating that finding to humans is not perfect: Pediatric surgery in humans rarely takes that length of time. Based on these kind of findings, Paule says, researchers need to explore if there is a harm threshold for each anesthetic regimen used in humans and determine if there is anything that can be done to ameliorate or prevent the adverse effects already seen in nonhuman primates. In humans, a growing body of work is already suggesting there may be cause for concern. One retrospective study published in Pediatrics in found that children who had multiple anesthesia exposures before two years of age were twice as likely compared with those who were not exposed to be diagnosed with a learning disabilityâ€"even when overall health was taken into account. Children who had only a single course of anesthesia, however, did not exhibit elevated levels of such disorders. There are dueling research findings, however. Another study, published in Pediatrics in , found that when children under three years old had even one surgical procedure that required general anesthesia, those children appeared to be more likely to have difficulties with abstract reasoning and language by age Instead, it said that in the absence of conclusive evidence it would be unethical to withhold sedation and anesthesia when necessary. Since then additional study findings have heightened concerns. Another report, published in Pediatrics this month, found that children under four years of age who had been under general anesthesia for an average of 37 minutes tended to score lower as a group on listening comprehension and performance IQ tests than those who were not exposed. Such cognitive deficits in the anesthetized kids were also associated with brain changes in the occipital cortex and cerebellum. Yet, like the ketamine monkey studies, these types of deficits may not be significant in the daily lives of children. But is it the anesthesia that fueled future issues or might that exposure simply be a stand-in for some other larger problem affecting these childrenâ€"say sicker kids needed surgery

and went on to have future cognitive issues stemming from those health problems? For the past three years his team has worked on an observational study that aims to explore how such anesthesia use relates to future learning disabilities. The same mechanized light game played by monkeys has been getting almost daily play from kids at Mayo who are participating in the research. If the research team can find anything in kids consistently affected from these exposures, say specific aspects of learning and memory and specific brain changes, that would be an important win for the field. The kids are doing more than gaming. They each come in for one four-hour testing session at Mayo. One hour is spent on the video game. The other three hours are spent completing a battery of various tests involving memory recall, card sorting and other widely accepted psychological tests. The lab, on average, sees one study child each workday and Warner expects to complete the study in spring Some of the kids had multiple anesthesia exposures or had experience with various anesthesia chemicals so the study may help shed light on differences there, too, or if there may be differences by sex. Young children are usually completely anesthetized and not just sedated with lower doses of drugs for most medical procedures, which is another reason why their exposure levels may be high. The study, like others that came before it, is observational rather than the ideal gold standard study where patients can be randomized to specific treatments. But the Mayo work can still help answer some as-yet unsettled questions. Warner believes his study is attractive because it will use methods to evaluate kids similar to those the FDA already used in monkeys, which will allow for direct comparison of the primate findings with human data. They both use the same test game with similar rewardsâ€”although children learn to play after watching a short instructional video whereas monkeys need to be extensively trained. The Mayo group has been following a group of middle and high schoolâ€”aged teens who had general anesthesia before three years of age and comparing them with children who did not undergo anesthesia at that age. The control group is matched by birth weight, gestational age for example, if they were born prematurely , parental education levels and if they, too, would have been likely to receive anesthesia but never didâ€”say they were ill but their parents elected to postpone surgery because the condition was not life-threatening. Yet even with these results it will still be murky what to do next. Only a tiny fraction of kidsâ€”in the single digitsâ€”are put under at a young age. But those numbers as a whole shake out to mean that at least half a million children under three years old are exposed to anesthetic agents each year. Many of these surgeries are unavoidable. They treat life-threatening illnesses, avert serious health complications or substantially improve quality of life. About one in four babies born with heart defects need surgery or other procedures during the first year of life. And the same chemicals used for surgical anesthesia are also used to anesthetize kids during nonsurgical procedures such as MRI scans and CT scans to ensure patients do not move. To truly confirm the link between anesthesia and deficits, however, a randomized study would need to be done. It compares infants undergoing hernia repair under general anesthesia versus those getting the surgery while they are anesthesized only in a specific region. Then the kids undergo neurocognitive testing at age five. Results from that study are expected in the next couple years. But for now doctors and researchers are carefully watching for the results from the Mayo study. As that research team doles out bags of nickels, parents and physicians are banking on a big return. She is based in Washington, D.

Chapter 5 : Aspects of Scientific Translation. English into Arabic Translation as a Case Study.

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Scientific research involves a systematic process that focuses on being objective and gathering a multitude of information for analysis so that the researcher can come to a conclusion. This process is used in all research and evaluation projects, regardless of the research method scientific method of inquiry, evaluation research, or action research. The process focuses on testing hunches or ideas in a park and recreation setting through a systematic process. In this process, the study is documented in such a way that another individual can conduct the same study again. This is referred to as replicating the study. Any research done without documenting the study so that others can review the process and results is not an investigation using the scientific research process. The scientific research process is a multiple-step process where the steps are interlinked with the other steps in the process. If changes are made in one step of the process, the researcher must review all the other steps to ensure that the changes are reflected throughout the process. Parks and recreation professionals are often involved in conducting research or evaluation projects within the agency. These professionals need to understand the eight steps of the research process as they apply to conducting a study. Identify the Problem The first step in the process is to identify a problem or develop a research question. The research problem may be something the agency identifies as a problem, some knowledge or information that is needed by the agency, or the desire to identify a recreation trend nationally. In the example in table 2. This serves as the focus of the study. Review the Literature Now that the problem has been identified, the researcher must learn more about the topic under investigation. To do this, the researcher must review the literature related to the research problem. This step provides foundational knowledge about the problem area. The review of literature also educates the researcher about what studies have been conducted in the past, how these studies were conducted, and the conclusions in the problem area. In the obesity study, the review of literature enables the programmer to discover horrifying statistics related to the long-term effects of childhood obesity in terms of health issues, death rates, and projected medical costs. In addition, the programmer finds several articles and information from the Centers for Disease Control and Prevention that describe the benefits of walking 10, steps a day. The information discovered during this step helps the programmer fully understand the magnitude of the problem, recognize the future consequences of obesity, and identify a strategy to combat obesity i. Clarify the Problem Many times the initial problem identified in the first step of the process is too large or broad in scope. In step 3 of the process, the researcher clarifies the problem and narrows the scope of the study. This can only be done after the literature has been reviewed. The knowledge gained through the review of literature guides the researcher in clarifying and narrowing the research project. In the example, the programmer has identified childhood obesity as the problem and the purpose of the study. This topic is very broad and could be studied based on genetics, family environment, diet, exercise, self-confidence, leisure activities, or health issues. All of these areas cannot be investigated in a single study; therefore, the problem and purpose of the study must be more clearly defined. This purpose is more narrowly focused and researchable than the original problem. Clearly Define Terms and Concepts Terms and concepts are words or phrases used in the purpose statement of the study or the description of the study. These items need to be specifically defined as they apply to the study. Terms or concepts often have different definitions depending on who is reading the study. To minimize confusion about what the terms and phrases mean, the researcher must specifically define them for the study. The concept of physical health may also be defined and measured in many ways. By defining the terms or concepts more narrowly, the scope of the study is more manageable for the programmer, making it easier to collect the necessary data for the study. This also makes the concepts more understandable to the reader. Define the Population Research projects can focus on a specific group of people, facilities, park development, employee evaluations, programs, financial status, marketing efforts, or the integration of technology into the

operations. For example, if a researcher wants to examine a specific group of people in the community, the study could examine a specific age group, males or females, people living in a specific geographic area, or a specific ethnic group. Literally thousands of options are available to the researcher to specifically identify the group to study. The research problem and the purpose of the study assist the researcher in identifying the group to involve in the study. In research terms, the group to involve in the study is always called the population. Defining the population assists the researcher in several ways. First, it narrows the scope of the study from a very large population to one that is manageable. This helps ensure that the researcher stays on the right path during the study. Finally, by defining the population, the researcher identifies the group that the results will apply to at the conclusion of the study. This narrower population makes the study more manageable in terms of time and resources. Develop the Instrumentation Plan The plan for the study is referred to as the instrumentation plan. The instrumentation plan serves as the road map for the entire study, specifying who will participate in the study; how, when, and where data will be collected; and the content of the program. This plan is composed of numerous decisions and considerations that are addressed in chapter 8 of this text. In the obesity study, the researcher has decided to have the children participate in a walking program for six months. The group of participants is called the sample, which is a smaller group selected from the population specified for the study. The study cannot possibly include every to year-old child in the community, so a smaller group is used to represent the population. The researcher develops the plan for the walking program, indicating what data will be collected, when and how the data will be collected, who will collect the data, and how the data will be analyzed. The instrumentation plan specifies all the steps that must be completed for the study. This ensures that the programmer has carefully thought through all these decisions and that she provides a step-by-step plan to be followed in the study. Collect Data Once the instrumentation plan is completed, the actual study begins with the collection of data. The collection of data is a critical step in providing the information needed to answer the research question. Every study includes the collection of some type of dataâ€”whether it is from the literature or from subjectsâ€”to answer the research question. Data can be collected in the form of words on a survey, with a questionnaire, through observations, or from the literature. In the obesity study, the programmers will be collecting data on the defined variables: The researcher collects these data at the first session and at the last session of the program. These two sets of data are necessary to determine the effect of the walking program on weight, body fat, and cholesterol level. Once the data are collected on the variables, the researcher is ready to move to the final step of the process, which is the data analysis. Analyze the Data All the time, effort, and resources dedicated to steps 1 through 7 of the research process culminate in this final step. The researcher finally has data to analyze so that the research question can be answered. In the instrumentation plan, the researcher specified how the data will be analyzed. The researcher now analyzes the data according to the plan. The results of this analysis are then reviewed and summarized in a manner directly related to the research questions. In the obesity study, the researcher compares the measurements of weight, percentage of body fat, and cholesterol that were taken at the first meeting of the subjects to the measurements of the same variables at the final program session. These two sets of data will be analyzed to determine if there was a difference between the first measurement and the second measurement for each individual in the program. Then, the data will be analyzed to determine if the differences are statistically significant. If the differences are statistically significant, the study validates the theory that was the focus of the study. The results of the study also provide valuable information about one strategy to combat childhood obesity in the community. As you have probably concluded, conducting studies using the eight steps of the scientific research process requires you to dedicate time and effort to the planning process. You cannot conduct a study using the scientific research process when time is limited or the study is done at the last minute. Researchers who do this conduct studies that result in either false conclusions or conclusions that are not of any value to the organization. The above excerpt is from:

Chapter 6 : Scientific Method Examples

Translation Quality Assessment of Popular Science Articles: Seite 43 Corpus Study of the Scientific American and its Arabic Version (1) What are the translation problems 1 that the textual features of the genre of PSFAs.

Bibliography Definition The limitations of the study are those characteristics of design or methodology that impacted or influenced the interpretation of the findings from your research. Claiming limitations is a subjective process because you must evaluate the impact of those limitations. To do so diminishes the validity of your research because it leaves the reader wondering whether, or in what ways, limitation s in your study may have impacted the results and conclusions. Limitations require a critical, overall appraisal and interpretation of their impact. You should answer the question: Descriptions of Possible Limitations All studies have limitations. However, it is important that you restrict your discussion to limitations related to the research problem under investigation. For example, if a meta-analysis of existing literature is not a stated purpose of your research, it should not be discussed as a limitation. Do not apologize for not addressing issues that you did not promise to investigate in the introduction of your paper. Here are examples of limitations related to methodology and the research process you may need to describe and discuss how they possibly impacted your results. Note that descriptions of limitations should be stated in the past tense because they were discovered after you completed your research. Possible Methodological Limitations Sample size -- the number of the units of analysis you use in your study is dictated by the type of research problem you are investigating. Note that, if your sample size is too small, it will be difficult to find significant relationships from the data, as statistical tests normally require a larger sample size to ensure a representative distribution of the population and to be considered representative of groups of people to whom results will be generalized or transferred. Note that sample size is generally less relevant in qualitative research if explained in the context of the research problem. You need to not only describe these limitations but provide cogent reasons why you believe data is missing or is unreliable. Lack of prior research studies on the topic -- citing prior research studies forms the basis of your literature review and helps lay a foundation for understanding the research problem you are investigating. Depending on the currency or scope of your research topic, there may be little, if any, prior research on your topic. Before assuming this to be true, though, consult with a librarian! In cases when a librarian has confirmed that there is little or no prior research, you may be required to develop an entirely new research typology [for example, using an exploratory rather than an explanatory research design]. Note again that discovering a limitation can serve as an important opportunity to identify new gaps in the literature and to describe the need for further research. Measure used to collect the data -- sometimes it is the case that, after completing your interpretation of the findings, you discover that the way in which you gathered data inhibited your ability to conduct a thorough analysis of the results. For example, you regret not including a specific question in a survey that, in retrospect, could have helped address a particular issue that emerged later in the study. Acknowledge the deficiency by stating a need for future researchers to revise the specific method for gathering data. Self-reported data -- whether you are relying on pre-existing data or you are conducting a qualitative research study and gathering the data yourself, self-reported data is limited by the fact that it rarely can be independently verified. In other words, you have to take what people say, whether in interviews, focus groups, or on questionnaires, at face value. However, self-reported data can contain several potential sources of bias that you should be alert to and note as limitations. These biases become apparent if they are incongruent with data from other sources. Possible Limitations of the Researcher Access -- if your study depends on having access to people, organizations, data, or documents and, for whatever reason, access is denied or limited in some way, the reasons for this needs to be described. Also, be sure to explain why denied or limited access does not prevent you from following through on your study. Longitudinal effects -- unlike your professor, who can literally devote years [even a lifetime] to studying a single topic, the time available to investigate a research problem and to measure change or stability over time is pretty much

constrained by the due date of your assignment. Be sure to choose a research problem that does not require an excessive amount of time to complete the literature review, apply the methodology, and gather and interpret the results. Cultural and other type of bias -- we all have biases, whether we are conscience of them or not. Bias is when a person, place, event, or thing is viewed or shown in a consistently inaccurate way. Bias is usually negative, though one can have a positive bias as well, especially if that bias reflects your reliance on research that only support your hypothesis. When proof-reading your paper, be especially critical in reviewing how you have stated a problem, selected the data to be studied, what may have been omitted, the manner in which you have ordered events, people, or places, how you have chosen to represent a person, place, or thing, to name a phenomenon, or to use possible words with a positive or negative connotation. If you detect bias in prior research, it must be acknowledged and you should explain what measures were taken to avoid perpetuating that bias. For example, if a previous study only used boys to examine how music education supports effective math skills, describe how does your research expand the study to include girls? Fluency in a language -- if your research focuses on measuring the perceived value of after-school tutoring among Mexican-American ESL [English as a Second Language] students, for example, and you are not fluent in Spanish, you are limited in being able to read and interpret Spanish language research studies on the topic or to speak with these students in their primary language. This deficiency should be acknowledged. Aguinis, Hermam and Jeffrey R. Structure and Writing Style Information about the limitations of your study are generally placed either at the beginning of the discussion section of your paper so the reader knows and understands the limitations before reading the rest of your analysis of the findings, or, the limitations are outlined at the conclusion of the discussion section as an acknowledgement of the need for further study. If this is the case, though, the limitation should be reiterated at the conclusion of the section. If you determine that your study is seriously flawed due to important limitations, such as, an inability to acquire critical data, consider reframing it as an exploratory study intended to lay the groundwork for a more complete research study in the future. Be sure, though, to specifically explain the ways that these flaws can be successfully overcome in a new study. But, do not use this as an excuse for not developing a thorough research paper! Review the tab in this guide for developing a research topic. If serious limitations exist, it generally indicates a likelihood that your research problem is too narrowly defined or that the issue or event under study is too recent and, thus, very little research has been written about it. If serious limitations do emerge, consult with your professor about possible ways to overcome them or how to revise your study. When discussing the limitations of your research, be sure to: Describe each limitation in detailed but concise terms; Explain why each limitation exists; Provide the reasons why each limitation could not be overcome using the method s chosen to acquire or gather the data [cite to other studies that had similar problems when possible]; Assess the impact of each limitation in relation to the overall findings and conclusions of your study; and, If appropriate, describe how these limitations could point to the need for further research. Acknowledge it, and explain how applying a different or more robust methodology might address the research problem more effectively in a future study. A Guide for the Perplexed. Institute for Writing Rhetoric. Dartmouth College; Writing the Experimental Report: Methods, Results, and Discussion. We all want our academic work to be viewed as excellent and worthy of a good grade, but it is important that you understand and openly acknowledge the limitations of your study. A small measure of humility goes a long way! Negative evidence refers to findings that unexpectedly challenge rather than support your hypothesis. Or, perhaps you have stumbled onto something unexpected that warrants further study. Moreover, the absence of an effect may be very telling in many situations, particularly in experimental research designs. In any case, your results may very well be of importance to others even though they did not support your hypothesis. Do not fall into the trap of thinking that results contrary to what you expected is a limitation to your study. If you carried out the research well, they are simply your results and only require additional interpretation. Negative Evidence in Social Research. Yet Another Writing Tip A Note about Sample Size Limitations in Qualitative Research Sample sizes are typically smaller in qualitative research because, as the study goes on, acquiring more data does not

necessarily lead to more information. This is because one occurrence of a piece of data, or a code, is all that is necessary to ensure that it becomes part of the analysis framework. However, it remains true that sample sizes that are too small cannot adequately support claims of having achieved valid conclusions and sample sizes that are too large do not permit the deep, naturalistic, and inductive analysis that defines qualitative inquiry. Determining adequate sample size in qualitative research is ultimately a matter of judgment and experience in evaluating the quality of the information collected against the uses to which it will be applied and the particular research method and purposeful sampling strategy employed. If the sample size is found to be a limitation, it may reflect your judgment about the methodological technique chosen [e. Michael and Matthew B. Denzin and Yvonna S. Sage, , pp.

Chapter 7 : Database of Scientific Journals

Since translation is viewed in this study as a multifarious discipline we shall draw on various views and theories from linguistics and other Languageâ€"related disciplines.

Nomenclature[edit] Before the 20th century, the term philology , first attested in , [19] was commonly used to refer to the study of language, which was then predominantly historical in focus. Linguistics is a multi-disciplinary field of research that combines tools from natural sciences, social sciences, and the humanities. The theory of variation therefore would elaborate on the different usages of popular languages like French and English across the globe, as well as its smaller dialects and regional permutations within their national boundaries. The theory of variation looks at the cultural stages that a particular language undergoes, and these include the following. Pidgin[edit] The pidgin stage in a language is a stage when communication occurs through a grammatically simplified means, developing between two or more groups that do not have a language in common. Typically, it is a mixture of languages at the stage when there occurs a mixing between a primary language with other language elements. Creole[edit] A creole stage in language occurs when there is a stable natural language developed from a mixture of different languages. It is a stage that occurs after a language undergoes its pidgin stage. At the creole stage, a language is a complete language, used in a community and acquired by children as their native language. Dialect[edit] A dialect is a variety of language that is characteristic of a particular group among the language speakers. This is what differentiates a dialect from a register or a discourse , where in the latter case, cultural identity does not always play a role. Dialects are speech varieties that have their own grammatical and phonological rules, linguistic features, and stylistic aspects, but have not been given an official status as a language. Dialects often move on to gain the status of a language due to political and social reasons. Differentiation amongst dialects and subsequently, languages too is based upon the use of grammatical rules, syntactic rules, and stylistic features, though not always on lexical use or vocabulary. The popular saying that " a language is a dialect with an army and navy " is attributed as a definition formulated by Max Weinreich. Universal grammar takes into account general formal structures and features that are common to all dialects and languages, and the template of which pre-exists in the mind of an infant child. This idea is based on the theory of generative grammar and the formal school of linguistics, whose proponents include Noam Chomsky and those who follow his theory and work. This should not make us think, though, that it is actually any better than any other dialect. As a social practice, discourse embodies different ideologies through written and spoken texts. Discourse analysis can examine or expose these ideologies. Discourse influences genre, which is chosen in response to different situations and finally, at micro level, discourse influences language as text spoken or written at the phonological or lexico-grammatical level. Grammar and discourse are linked as parts of a system. Registers and discourses therefore differentiate themselves through the use of vocabulary , and at times through the use of style too. People in the medical fraternity, for example, may use some medical terminology in their communication that is specialized to the field of medicine. This is often referred to as being part of the "medical discourse", and so on. That is the stage when a language is considered a standard variety, one whose grammatical laws have now stabilised from within the consent of speech community participants, after sufficient evolution, improvisation, correction, and growth. The English language, besides perhaps the French language, may be examples of languages that have arrived at a stage where they are said to have become standard varieties. In some analyses, compound words and certain classes of idiomatic expressions and other collocations are also considered to be part of the lexicon. Dictionaries represent attempts at listing, in alphabetical order, the lexicon of a given language; usually, however, bound morphemes are not included. Lexicography , closely linked with the domain of semantics, is the science of mapping the words into an encyclopedia or a dictionary. The creation and addition of new words into the lexicon is called coining or neologization, [34] and the new words are called neologisms. However, this is often considered a myth by linguists. The capacity for the use of language is

considered by many linguists to lie primarily in the domain of grammar, and to be linked with competence , rather than with the growth of vocabulary. Even a very small lexicon is theoretically capable of producing an infinite number of sentences. Relativity[edit] As constructed popularly through the Sapirâ€"Whorf hypothesis , relativists believe that the structure of a particular language is capable of influencing the cognitive patterns through which a person shapes his or her world view. Universalists believe that there are commonalities between human perception as there is in the human capacity for language, while relativists believe that this varies from language to language and person to person. The 20th century German linguist Leo Weisgerber also wrote extensively about the theory of relativity. Relativists argue for the case of differentiation at the level of cognition and in semantic domains. The emergence of cognitive linguistics in the s also revived an interest in linguistic relativity. Any particular pairing of meaning and form is a Saussurean sign. For instance, the meaning "cat" is represented worldwide with a wide variety of different sound patterns in oral languages , movements of the hands and face in sign languages , and written symbols in written languages. Linguistic patterns have proven their importance for the knowledge engineering field especially with the ever-increasing amount of available data. Linguists focusing on structure attempt to understand the rules regarding language use that native speakers know not always consciously. All linguistic structures can be broken down into component parts that are combined according to sub conscious rules, over multiple levels of analysis. For instance, consider the structure of the word "tenth" on two different levels of analysis. On the level of internal word structure known as morphology , the word "tenth" is made up of one linguistic form indicating a number and another form indicating ordinality. The rule governing the combination of these forms ensures that the ordinality marker "th" follows the number "ten. Although most speakers of English are consciously aware of the rules governing internal structure of the word pieces of "tenth", they are less often aware of the rule governing its sound structure. Linguists focused on structure find and analyze rules such as these, which govern how native speakers use language. Linguistics has many sub-fields concerned with particular aspects of linguistic structure. The theory that elucidates on these, as propounded by Noam Chomsky, is known as generative theory or universal grammar. These sub-fields range from those focused primarily on form to those focused primarily on meaning. They also run the gamut of level of analysis of language, from individual sounds, to words, to phrases, up to cultural discourse. Sub-fields that focus on a grammatical study of language include the following. Stylistic analysis entails the analysis of description of particular dialects and registers used by speech communities. Stylistic features include rhetoric , [37] diction, stress, satire , irony , dialogue, and other forms of phonetic variations. Stylistic analysis can also include the study of language in canonical works of literature, popular fiction, news, advertisements, and other forms of communication in popular culture as well. It is usually seen as a variation in communication that changes from speaker to speaker and community to community. In short, Stylistics is the interpretation of text. Theoretical[edit] One major debate in linguistics concerns the very nature of language and how it should be understood. Some linguists hypothesize that there is a module in the human brain that allows people to undertake linguistic behaviour, which is part of the formalist approach. This " universal grammar " is considered to guide children when they learn language and to constrain what sentences are considered grammatical in any human language. Proponents of this view, which is predominant in those schools of linguistics that are based on the generative theory of Noam Chomsky , do not necessarily consider that language evolved for communication in particular. They consider instead that it has more to do with the process of structuring human thought see also formal grammar. Functional[edit] Another group of linguists, by contrast, use the term "language" to refer to a communication system that developed to support cooperative activity and extend cooperative networks. Such theories of grammar , called "functional", view language as a tool that emerged and is adapted to the communicative needs of its users, and the role of cultural evolutionary processes are often emphasized over that of biological evolution. This is analogous to practice in other sciences: Prescription , on the other hand, is an attempt to promote particular linguistic usages over others, often favouring a particular dialect or " acrolect ". This may have the aim of establishing a linguistic standard , which can aid communication over large

geographical areas. It may also, however, be an attempt by speakers of one language or dialect to exert influence over speakers of other languages or dialects see Linguistic imperialism. An extreme version of prescriptivism can be found among censors , who attempt to eradicate words and structures that they consider to be destructive to society. Prescription, however, may be practised appropriately in the teaching of language , like in ELT , where certain fundamental grammatical rules and lexical terms need to be introduced to a second-language speaker who is attempting to acquire the language. Anthropology[edit] The objective of describing languages is often to uncover cultural knowledge about communities. The use of anthropological methods of investigation on linguistic sources leads to the discovery of certain cultural traits among a speech community through its linguistic features. It is also widely used as a tool in language documentation , with an endeavour to curate endangered languages. However, now, linguistic inquiry uses the anthropological method to understand cognitive, historical, sociolinguistic and historical processes that languages undergo as they change and evolve, as well as general anthropological inquiry uses the linguistic method to excavate into culture. In all aspects, anthropological inquiry usually uncovers the different variations and relativities that underlie the usage of language. Sources[edit] Most contemporary linguists work under the assumption that spoken data and signed data are more fundamental than written data. Nonetheless, linguists agree that the study of written language can be worthwhile and valuable. For research that relies on corpus linguistics and computational linguistics , written language is often much more convenient for processing large amounts of linguistic data. Large corpora of spoken language are difficult to create and hard to find, and are typically transcribed and written. In addition, linguists have turned to text-based discourse occurring in various formats of computer-mediated communication as a viable site for linguistic inquiry. The study of writing systems themselves, graphemics , is, in any case, considered a branch of linguistics. Analysis[edit] Before the 20th century, linguists analysed language on a diachronic plane, which was historical in focus. This meant that they would compare linguistic features and try to analyse language from the point of view of how it had changed between then and later. However, with Saussurean linguistics in the 20th century, the focus shifted to a more synchronic approach, where the study was more geared towards analysis and comparison between different language variations, which existed at the same given point of time. At another level, the syntagmatic plane of linguistic analysis entails the comparison between the way words are sequenced, within the syntax of a sentence. For example, the article "the" is followed by a noun, because of the syntagmatic relation between the words. The paradigmatic plane on the other hand, focuses on an analysis that is based on the paradigms or concepts that are embedded in a given text. In this case, words of the same type or class may be replaced in the text with each other to achieve the same conceptual understanding.

Chapter 8 : Steps of the Research Process - Excerpt

Nov. 6, â€" Research released today underscores both the dangers and the therapeutic promise of marijuana, revealing different effects across the lifespan. Marijuana exposure in the womb or.

Scientific Journals represent the collaborative efforts of many scientists and scholars from various disciplines. Science literatures have evolved from time to time in terms of specialization and target audience. Reports of new research findings are important to fuel novel assumptions and discoveries that can only be in existence through the publication of Science journals. Although some Science Journals are multidisciplinary, most journals are highly specialized and they publish articles related to specific scientific fields. In an attempt to maintain quality and ensure validity of the research being published, Science Journals subject the articles through a rigorous peer-review process, honoring copyrights. Science Journals may include various types of articles such as, letters, short communications, review articles, research articles, case reports, editorials, and other supplementary articles. The rules and guidelines of article writing as well as formatting may vary with the type of the journal and the publisher. Majority scholarly journals are science journals as they follow systematic way of writing, away from the subjective references and bias. Since Sciences can be defined as systematic body of knowledge that remains neutral universally and can be proved with evidences in the laboratories. They withstand the test of the time and accept challenges. Science journals hence, consider articles that are written based on certain empirical evidences that are obtained as a result of laboratory testing or clinical investigations. All Science Journals need to be very specific in terms of publishing original, peer-reviewed , and high quality research works. In order to gain new insights into the field of science and benefit from the ongoing research activities, it is absolutely imperative that all research publications in Science must be made available online, preferably through Open Access system. This will allow the science community to be more updated with new developments in the field of science and consequently, expedite the process of resolving both existing and newly emerging issues. Availability of paid online scientific journals is out of the reach of young and intellectual scientists who cannot afford to access the data they require, thereby impeding the improvement of research. Open Access Science Journals provide an unlimited, free access to the researched, scientific information to scholars, researchers, students and professionals, which enable them to copy, print, circulate innumerable number of copies at no cost. Scholarly Open Access Journals are boon to the promotion of scientific research of any discipline. Science Journals, also called scholarly Academic Journals, are a forum for the scientists, researchers and academicians where they can take their original research work and discuss it critically. All the scholarly publications follow peer review process in selecting research publications where the scholars and experts in the field evaluate the research work presented and certify whether it is written as per the research norms. Researchers, academicians and experts of a particular discipline contribute their works for the Scholarly Journals. All the articles published in the academic science journals are scholarly journals articles written following a specific style. They are written following a well established research methodology and research framework. Academic journals also encourage original work. They are obviously highly analytical and descriptive with certain documental evidences like charts, figures, graphs and diagrams. It expects authors to duly acknowledge the sources of information and safeguard the copyrights.

Chapter 9 : Case Study Collection - Search Results - National Center for Case Study Teaching in Science

Zeroing in on eight countries that produce a high number of scientific journals, the study also found that the ratio of English to non-English articles in the past few years had increased or.

However, the Pew Research Center finds in a new analysis of public opinion on a broad set of science-related topics that the role of party and ideological differences is not uniform. For instance there are notable issues on which racial and generational differences are pronounced, separate and apart from politics. These techniques parse the independent effect of multiple factors at the same time, allowing us to understand with more clarity where traits such as political party, age and race â€" three important factors in opinion that overlap in meaningful ways in the United States â€"individually matter. Here are the key patterns that emerge in our analysis: Overall, Democrats and liberals are more likely than Republicans and conservatives to say the Earth is warming, human activity is the cause of the change, the problem is serious and there is scientific consensus about the climate changes underway and the threat it poses to the planet. This report shows that these differences hold even when taking into account the differing characteristics of Democrats and Republicans, such as their different age and racial profiles. Democrats and leaning Democrats also are more likely to favor policies to mitigate greenhouse gas emissions and promote alternative energy sources. Republicans and independents who lean to the GOP are more likely to favor some key energy development policies such as offshore oil drilling, fracking and construction of nuclear power plants. Another set of topics where consistent differences along party and ideological lines occur are views about government funding of the science and engineering enterprise. Political differences on these topics are consistent with party and ideological differences about government spending more broadly, whether related to science or to other domains. For example, party and ideology are among several factors that influence public views about human evolution. Furthermore, there are no differences between the major party and ideology groups on views about the use of animals in research, the safety of eating genetically modified foods and whether to allow access to experimental drug treatments before those treatments have been shown to be safe and effective. The findings in this analysis are in keeping with past Pew Research and other polls that showed over the past decade that strong political differences among adults affect their views on climate and energy policy topics. This focus on political differences on some science issues may have obscured the also striking influence that other factors apart from politics are tied to public views. The remainder of the summary of findings examines key factors in public attitudes about science topics. Generational Gaps Often Are Large and Persistent Beyond politics, there are persistent gaps on many science topics tied to generational differences. Apart from their political preferences, older adults also express more support for nuclear power and offshore oil drilling, and they are more likely to prioritize fossil fuel development over alternative energy sources such as wind and solar power. Older adults are, on average, less likely than younger adults to say humans have evolved over time through natural processes, even after controlling for differences in religious affiliation, politics and education. On the topic of childhood vaccines, older adults especially those ages 50 and older are more likely than younger adults to see childhood vaccines such as the measles, mumps and rubella MMR vaccine as safe and as something that should be required of all children. There Are Mixed Findings About Role of Educational Attainment and Knowledge About Science There is a common supposition that when ordinary people have different views from those of experts that the differences center on knowledge gaps: If only people knew more, the argument goes, they would agree with the experts. The use of animals in research The safety of eating genetically modified foods Opinion about building more nuclear power plants Specifically, the more education people have, the more likely they are to favor the use of animals in scientific research, to consider genetically modified foods as generally safe to eat and to favor building more nuclear power plants. These are all positions shared by a majority of those connected with the American Association for the Advancement of Science. Those with more science knowledge are more likely than those with less knowledge to say eating

genetically modified GM foods and eating foods grown with pesticides are safe. Those with more science knowledge are especially likely to see bioengineered artificial organs for human transplant as an appropriate use of medical advances. This gives readers another way to gauge the relative impact of education and science knowledge, overall. Some of the largest differences between those with higher education and greater science knowledge, compared with those with less education and science knowledge are views about the safety of eating GM foods and views about the use of animals in scientific research. Our findings show that people with more science knowledge are more inclined than those with less knowledge to consider scientists as largely in agreement about the topic of evolution, for example. A majority of men favor the use of animals in scientific research, while a majority of women oppose animal use. And men are more likely than women to see GM foods and foods grown with pesticides as safe to eat. Further, there are notable differences between men and women on energy issues, which are statistically independent from other factors. Controlling for politics and education levels, men, more than women, favor building more nuclear power plants, allowing more offshore drilling and increasing the use of hydraulic fracturing for oil and gas extraction. Men also are more likely to think astronauts are essential for the future of the U. There also are differences between men and women on views about a handful of biomedical topics, including views about modifying genetic characteristics to make a baby more intelligent and beliefs about human evolution. At the same time, there are some biomedical issues about which men and women hold similar views including opinion about childhood vaccines and access to experimental drug treatments and a few where gender differences are not statistically significant once other factors are accounted for such as views about bioengineered artificial organs. These dissimilar perspectives could tie to other differences between the sexes. For example, more men than women express an interest in following science and technology. This pattern is reversed, however, when it comes to interest in following health and medicine. However, the share of women varies substantially across fields and has been on the rise over the past decade, particularly in the life sciences, engineering and the physical sciences. Where Race and Ethnicity Matter: Global Warming, Experimental Drugs, the Impact of Population Growth There are several science topics where wide differences among racial and ethnic groups emerge. A majority of African Americans oppose this idea while a majority of whites and about half of Hispanics favor it. African Americans also are more likely than either whites or Hispanics to say we will find ways to stretch our natural resources such that the growing world population will not pose a major problem. The analysis in this report shows that religious differences in affiliation and worship service attendance come to the fore for some science topics, particularly beliefs about human evolution and perceptions of scientific consensus related to evolution or the creation of the universe. We will have more to say about the intersection of religious beliefs and science in a follow-up report to come.