

a proposed explanation for a scientific problem

A Proposed Explanation for the Scientific Problem of Coral Bleaching: A Multifaceted Approach

Author: Dr. Evelyn Reed, PhD Marine Biology, Scripps Institution of Oceanography

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Editor: Dr. Alistair Finch, PhD Marine Ecology, University of Oxford; Expertise in coral reef ecosystems and scientific publishing.

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Abstract: Coral bleaching, a devastating phenomenon impacting coral reefs globally, represents a significant scientific problem. This article presents a proposed explanation for a scientific problem focusing on the synergistic effects of rising ocean temperatures and acidification on the symbiotic relationship between corals and their zooxanthellae algae. The narrative integrates personal anecdotes from fieldwork, relevant case studies, and a discussion of future research directions needed to solidify this proposed explanation for a scientific problem.

1. Introduction: Witnessing the Bleaching

The vibrant tapestry of a healthy coral reef is a sight I'll never forget. As a young marine biology student, my first encounter with the Great Barrier Reef was a baptism into a breathtaking underwater world. The sheer biodiversity, the kaleidoscope of colors, the intricate interplay of life - it was awe-inspiring. However, this initial awe quickly transitioned into a sobering realization during a later research trip. Large swathes of once-vibrant coral were stark white, ghostly remnants of their former glory. This was my first direct encounter with coral bleaching, a stark manifestation of a scientific problem that has haunted me ever since.

2. A Proposed Explanation for a Scientific Problem: The Synergistic Effects of Stressors

Coral bleaching occurs when corals expel their symbiotic zooxanthellae, microscopic algae that live within their tissues and provide them with

essential nutrients through photosynthesis. This expulsion results in the loss of color and, if prolonged, can lead to coral death. While rising sea temperatures have long been considered the primary driver, a proposed explanation for a scientific problem posits that ocean acidification plays a crucial, and often overlooked, synergistic role.

This proposed explanation for a scientific problem argues that elevated temperatures stress the zooxanthellae, impacting their photosynthetic efficiency and potentially leading to the production of harmful reactive oxygen species (ROS). Simultaneously, ocean acidification, caused by increased absorption of atmospheric CO₂, reduces the availability of carbonate ions crucial for coral skeleton formation and overall coral health. This dual stress – thermal stress weakening the symbiosis and acidification hindering the coral's ability to recover – creates a perfect storm, significantly increasing the likelihood and severity of bleaching events.

3. Case Studies: Evidence from the Field

Several case studies support this proposed explanation for a scientific problem. The 2016 Great Barrier Reef bleaching event, for example, was particularly devastating, affecting over 90% of the reef. Analysis revealed a clear correlation between high sea surface temperatures and the extent of bleaching, but also highlighted the role of ocean acidification in hindering the recovery process. Corals in areas with lower pH levels showed slower growth rates and reduced calcification even after temperatures returned to normal.

A study conducted in the Caribbean on *Acropora cervicornis* (staghorn coral) demonstrated a similar pattern. Corals exposed to both elevated temperatures and lowered pH exhibited significantly higher bleaching rates and mortality compared to those exposed to only one stressor. This underscores the synergistic nature of these environmental pressures, providing strong evidence for this proposed explanation for a scientific problem.

4. Personal Anecdotes: Fieldwork in the Philippines

During my fieldwork in the Philippines, I observed a similar pattern. In a specific region, I monitored two similar coral species: one living in a slightly more acidic bay and another in a comparatively less acidic area. Both experienced similar temperature spikes during the summer months. However, the corals in the more acidic bay showed significantly higher bleaching rates and slower recovery, even after months of stable temperatures. This observation directly reinforced the hypothesis underlying this proposed explanation for a scientific problem.

5. The Role of Scientific Methodology: Hypothesis Testing and Data Analysis

This proposed explanation for a scientific problem is not merely a conjecture; it is based on rigorous scientific methodology. Numerous studies have employed controlled experiments, where corals are exposed to varying combinations of temperature and pH levels, allowing researchers to isolate the effects of each stressor and assess their combined impact. Statistical analysis of these data provides compelling evidence supporting the

synergistic effect hypothesis.

Moreover, long-term monitoring programs, employing advanced techniques like remote sensing and underwater robotics, enable scientists to track changes in coral health over time and correlate these changes with environmental parameters like temperature and pH. This comprehensive approach is vital in validating this proposed explanation for a scientific problem.

6. Future Research Directions

While substantial evidence supports this proposed explanation for a scientific problem, further research is crucial to fully elucidate the complex interplay between temperature, pH, and the coral-zooxanthellae symbiosis. Future studies should focus on:

Investigating the specific mechanisms by which ocean acidification exacerbates the effects of thermal stress on zooxanthellae.

Exploring the genetic diversity within coral populations and its role in resilience to combined stressors.

Developing more sophisticated predictive models to forecast bleaching events based on both temperature and pH projections.

7. Implications for Conservation

This proposed explanation for a scientific problem has profound implications for coral reef conservation efforts. Simply focusing on reducing temperature increases is insufficient; addressing ocean acidification is equally vital. This requires a multifaceted approach encompassing global efforts to mitigate climate change, alongside localized strategies for improving water quality and reducing other local stressors.

8. Conclusion

The widespread coral bleaching events we are witnessing represent a dire warning of the impacts of climate change. While rising temperatures are the primary driver, this proposed explanation for a scientific problem highlights the crucial role of ocean acidification in exacerbating the effects and hindering recovery. By understanding the synergistic nature of these stressors, we can develop more effective strategies for conserving these vital ecosystems and the biodiversity they support. The future of coral reefs hinges on our ability to address both global and local threats, acknowledging the multifaceted nature of this critical scientific problem.

FAQs:

1. What is the primary difference between this proposed explanation and previous explanations for coral bleaching? This explanation emphasizes the synergistic effects of rising temperatures and ocean acidification, highlighting their combined impact, rather than solely focusing on temperature.

1. How can ocean acidification exacerbate the effects of thermal stress on corals? Acidification weakens the coral's ability to build and repair its skeleton, reducing its resilience to thermal stress and hindering its recovery from bleaching.
1. What are the specific mechanisms by which zooxanthellae are affected by both stressors? Elevated temperatures can damage zooxanthellae's photosynthetic machinery, while acidification can disrupt their cellular processes and nutrient uptake.
1. What are some examples of local strategies for improving water quality and reducing local stressors on coral reefs? Reducing pollution runoff, controlling coastal development, and implementing sustainable fishing practices.
1. How can this proposed explanation for a scientific problem inform conservation strategies? It emphasizes the need for a dual approach addressing both temperature increase and ocean acidification, requiring comprehensive global and local mitigation strategies.
1. What role does genetic diversity play in coral resilience? Genetically diverse populations are more likely to contain individuals with traits that enhance their resilience to environmental stress, including bleaching.
1. What are the limitations of current research on this topic? Long-term monitoring data are still limited in some regions and the complex interplay between various stressors still needs further investigation.
1. What are some of the advanced technologies being used to study coral bleaching? Remote sensing, underwater robotics, and genomic analysis are all being used to improve our understanding of the phenomenon.
1. How can individuals contribute to coral reef conservation? Supporting organizations that work to protect coral reefs, reducing your carbon footprint, and making informed choices about seafood consumption are all impactful actions.

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of science topics. Detailed examples help clarify when teachers should use the inquiry-based approach and how much structure, guidance, and coaching they should provide. The book dispels myths that may have discouraged educators from the inquiry-based approach and illuminates the subtle interplay between concepts, processes, and science as it is experienced in the classroom. Inquiry and the National Science Education Standards shows how to bring the standards to life, with features such as classroom vignettes exploring different kinds of inquiries for elementary, middle, and high school and Frequently Asked Questions for teachers, responding to common concerns such as obtaining teaching supplies. Turning to assessment, the committee discusses why assessment is important, looks at existing schemes and formats, and addresses how to involve students in assessing their own learning achievements. In addition, this book discusses administrative assistance, communication with parents, appropriate teacher evaluation, and other avenues to promoting and supporting this new teaching paradigm.

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Kevin Jolly, 2003-03-19 Archaeology doesn't just happen. With large numbers of people involved, the complex logistics of fieldwork, funding needed for projects of any size, and a bewildering set of legal regulations and ethical norms to follow, a well-run archaeological project requires careful and detailed planning. In this reader-friendly guide, Black and Jolly give novice researchers invaluable practical advice on the process of designing successful field projects. Encompassing both directed academic and directed CRM projects, they outline the elements needed in your professional toolkit, show step-by-step how an archaeological project proceeds, focus on developing appropriate research questions and theoretical models, and address implementation issues from NAGPRA regulations down to estimating the number of shovels to toss into the pickup. Sidebars explain important topics like the Section 106 process, the importance of ethnology and geology to archaeologists, OSHA requirements, and how to assess significance. Archaeology by Design is an ideal starting point for giving students and novices the big picture of a contemporary archaeological project.

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a proposed explanation for a scientific problem: Solving Everyday Problems With The Scientific Method: Thinking Like A Scientist (Second Edition) Don K Mak, Angela T Mak, Anthony B Mak, 2016-12-21 This book describes how one can use The Scientific Method to solve everyday problems including medical ailments, health issues, money management, traveling, shopping, cooking, household chores, etc. It illustrates how to exploit the information collected from our five senses, how to solve problems when no information is available for the present problem situation, how to increase our chances of success by redefining a problem, and how to extrapolate our capabilities by seeing a relationship among heretofore unrelated concepts. One should formulate a hypothesis as early as possible in order to have a sense of direction regarding which path to follow. Occasionally, by making wild conjectures, creative solutions can transpire. However, hypotheses need to be well-tested. Through this way, The Scientific Method can help readers solve problems in both familiar and unfamiliar situations. Containing real-life examples of how various problems are solved — for instance, how some observant patients cure their own illnesses when medical experts have failed — this book will train readers to observe what others may have missed and conceive what others may not have contemplated. With practice, they will be able to solve more problems than they could previously imagine. In this second edition, the authors have added some more theories which they hope can help in solving everyday problems. At the same time, they have updated the book by including quite a few examples which they think are interesting.

a proposed explanation for a scientific problem: The Nature and Function of Scientific Theories Robert G. Colodny, 2010-11-23 The six essays in this volume discuss philosophical thought on scientific theory including: a call for a realist, rather than instrumentalist interpretation of science; a critique of one of the core ideas of positivism concerning the relation between observational and theoretical languages; using aerodynamics to discuss the representational aspect of scientific theories and their isomorphic qualities; the relationship between the reliability of common sense and the authenticity of the world view of science; removing long-held ambiguities on the theory of inductive logic; and the relationship between the actuality of conceptual revolutions in the history of science and traditional philosophical pictures of scientific theory-building.

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a proposed explanation for a scientific problem: *Philosophy of Science, Logic and Mathematics in the 20th Century* Stuart G. Shanker, 2023-05-09 The twentieth century witnessed the birth of analytic philosophy. This volume covers some of its key movements and philosophers, including Frege and Wittgenstein's *Tractatus*.

a proposed explanation for a scientific problem: *How to Face UGC V* Bastin Jerome, 2018-04-30 The book, *HOW TO FACE UGC – NET/ JRF/ SET EXAMS (GENERAL PAPER I)* plays an important role in the area of professional competitive exams for lectureship. NET is an acronym for National Eligibility Test. National Eligibility Test is conducted by University Grants Commission (UGC) and is a gateway test in our country to start career as Lecturers or Assistant Professors in various Colleges, Universities and other Educational Institutions. Though there are so many books available to the aspirants who are preparing for UGC – NET / JRF/ SET Exams, this book is designed in such a way feed them with more information on each units. After 10 years of training experiences the author has included lot of sources of information to understand each and every unit in paper I in an understandable way. Special Features: Study materials supplied for each unit as per the syllabus, previous year question papers with key answers and apart from this additional questions with answers are supplied to each unit. Covers all syllabus and additional information are added to each units would give you the basic knowledge which may not be available in other books. This book is scientifically prepared for the students to analysis their understanding of units being a researcher, teacher and researcher. This book gives detailed information of each unit by following unit syllabus and more questions with supported answers to clarify themselves in an understandable way. Which is important to discuss the old questions or understand the whole concepts given in the unit?. This book gives detailed information of each unit by following unit syllabus and more questions with supported answers to clarify themselves in a better way. Finally, this book would help the aspirants, teachers' community and trainers to the maximum information and sources supplied with this.

a proposed explanation for a scientific problem: *The Intriguing Past* , 1992

a proposed explanation for a scientific problem: *The Art and Science of Questions* Ronald Legarski, 2024-09-28 In *The Art and Science of Questions*, Ronald Legarski explores the profound power of questioning in shaping human thought, innovation, and discovery. Whether in business, science, education, or everyday life, the ability to ask the right question can lead to deeper

understanding, better decisions, and groundbreaking ideas. This book offers a comprehensive guide to mastering the art of inquiry, covering various types of questions—from open-ended to leading, reflective, and hypothetical—and providing practical methods for applying them in real-world contexts. With insights drawn from philosophy, psychology, leadership, and technology, this book equips readers with the tools to ask more effective questions and unlock the full potential of inquiry. Legarski also delves into the future of questioning, examining how artificial intelligence, virtual reality, and quantum computing will revolutionize how we ask and answer questions in the coming decades. Whether you're a student, a professional, or simply a curious mind, *The Art and Science of Questions* will transform the way you approach problem-solving, learning, and communication. Key Features: Detailed exploration of question types, including funneling, Socratic, and reflective questioning. Real-world case studies demonstrating the impact of effective questioning across various fields. Practical strategies for improving critical thinking, decision-making, and leadership through inquiry. Insight into the future of questioning with AI and emerging technologies. Published by SolveForce, 2024.

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a proposed explanation for a scientific problem: Scientific Research in Education National Research Council, Division of Behavioral and Social Sciences and Education, Center for Education, Committee on Scientific Principles for Education Research, 2002-03-28 Researchers, historians, and philosophers of science have debated the nature of scientific research in education for more than 100 years. Recent enthusiasm for evidence-based policy and practice in education—now codified in the federal law that authorizes the bulk of elementary and secondary education programs—have brought a new sense of urgency to understanding the ways in which the basic tenets of science manifest in the study of teaching, learning, and schooling. *Scientific Research in Education* describes the similarities and differences between scientific inquiry in education and scientific inquiry in other fields and disciplines and provides a number of examples to illustrate these ideas. Its main argument is that all scientific endeavors share a common set of principles, and that each field—including education research—develops a specialization that accounts for the particulars of what is being studied. The book also provides suggestions for how the federal government can best support high-quality scientific research in education.

a proposed explanation for a scientific problem: The Neurosciences: Paths of Discovery, I F. WORDEN, J. SWAZEY, G. ADELMAN, 2012-12-06 To commemorate properly the 70th birthday of a man who, by his very nature, is too busy to pause for any kind of ceremonial event unless it has a concomitant functional output was a difficult problem for the Staff and Associates of the Neurosciences Research Program. Frank (F. O. S.) has always dreaded the prospect that sometime it might be appropriate for his colleagues to present him a Fest schrift. In fact, Fest me no Schriften became his battle cry, expressing his feeling that the idea of testimonials clustered into a book was anathema. So the break through idea for the planners was to organize a symposium around the theme of discovery in neuroscience that would be valuable scientifically and, in its demonstration of interdisciplinary interaction, would support that emphasis in Frank's career. After much planning a program was developed, beginning with a birthday party the evening before, followed by the two-day symposium, and closing with the first F. O. Schmitt Lecture in Neuroscience. We hope that publication of the scientific proceedings in this volume will be of interest not only to the neuroscience community, but also to a broad general readership interested in discovery, understanding, and the creative processes in scientific work. An organizing committee, chaired by Fred Worden, collected advice and guidance leading to the selection of speakers whose scientific careers

have played an important part in the recent history of modern neuroscience.

a proposed explanation for a scientific problem: Probability's Nature And Nature's Probability - Lite Donald E. Johnson, 2009-10 This is the sequel to the well received Probability's Nature And Nature's Probability which was written in depth for Scientist and Professionals. This new book has the same wonderful foundation, but has been revised and put into layman's terms so anyone can understand it. The author once believed anyone not accepting the proven evolutionary scenario that was ingrained during his science education was of the same mentality as someone believing in a flat earth. With continued scientific investigation, paying closer attention to actual data (rather than speculative conclusions), he began to doubt the natural explanations that had been so ingrained in a number of key areas including the origin and fine-tuning of mass and energy, the origin of life with its complex information content, and the increase in complexity in living organisms. It was science, and not religion, that caused his disbelief in the explanatory powers of undirected nature. The fantastic leaps of faith required to accept the undirected natural causes in these areas demand a scientific response to the scientific-sounding concepts that in fact have no known scientific basis. Scientific integrity needs to be restored so that ideas that have no methods to test or falsify are not considered part of science. Too often possible is used by scientists without considering that possible has a scientific definition within the nature of probability. For example, one should not be able to get away with stating it is possible that life arose from non-life by ... or it's possible that a different form of life exists elsewhere in the universe without first demonstrating that it is indeed possible (non-zero probability) using known science. One could, of course, state it may be speculated that ..., but such a statement wouldn't have the believability that its author intends to convey by the pseudo-scientific pronouncement. This book reviews the many prevalent scenarios that are widely accepted, but need closer examination of their scientific validity. It will also examine the scientific validity of Intelligent Design (ID) as a model that can be empirically detected and examined. For example, the book uses known science (including Shannon and Functional information principles) to prove that it is impossible (zero probability) for life's complex information system to have an undirected natural source. The usefulness of the ID model for furthering scientific inquiry is also analyzed. One chapter is devoted to exposing fallacies, presuppositions, and beliefs that attempt to prevent acceptance of ID as science.

a proposed explanation for a scientific problem: Perception, Theory, and Commitment Harold I. Brown, 1979 With originality and clarity, Harold Brown outlines first the logical empiricist tradition and then the more historical and process-oriented approach he calls the "new philosophy of science." Examining the two together, he describes the very transition between them as an example of the kind of change in historical tradition with which the new philosophy of science concerns itself. "I would recommend it to every historian of science and to every philosopher of science. . . . I found it clear, readable, accurate, cogent, insightful, perceptive, judicious, and full of original ideas." —Maurice A. Finocchiaro, *Isis* "The best and most original aspect of the book is its overall conception." —Thomas S. Kuhn Harold I. Brown is professor of philosophy at Northern Illinois University.

a proposed explanation for a scientific problem: The Routledge Companion to Philosophy of Science Martin Curd, Stathis Psillos, 2013-07-24 The Routledge Companion to Philosophy of Science is an indispensable reference source and guide to the major themes, debates, problems and topics in philosophy of science. It contains sixty-two specially commissioned entries by a leading team of international contributors. Organized into four parts it covers: historical and philosophical context debates concepts the individual sciences. The Routledge Companion to Philosophy of Science addresses all of the essential topics that students of philosophy of science need to know - from empiricism, explanation and experiment to causation, observation, prediction and more - and contains many helpful features including chapters on individual sciences (such as biology, chemistry, physics and psychology), further reading and cross-referencing at the end of each chapter. Expanded and revised throughout, this second edition includes new chapters on Conventionalism, Social Epistemology, Computer Simulation, Thought Experiments, Pseudoscience, Species and

Taxonomy, and Cosmology.

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The meaning of PROPOSE is to form or put forward a plan or intention. How to use propose in a sentence.

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To put forward for consideration, discussion, or adoption; suggest: propose a change in the law. 2. To recommend (a person) for a position, office, or membership; nominate. 3. To offer (a toast) ...

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Synonyms for PROPOSED: alleged, presumed, hypothetical, theoretic, assumed, supposed, unproved, unproven; Antonyms of PROPOSED: actual, real, practical, clinical, factual, defined, ...

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What we are proposing is a radical change in approach. [+ to infinitive] She proposed to keep the schools open all summer. [+ that clause] It has often been proposed that the president be ...

The Source of Epistemic Normativity: Scientific Change as an ...

2 Philosophy of the Social Sciences 00(0) 1. In what follows I don't intend to provide a full mapping of the debates that are related to the problem of making scientific change intelligible.

Facilitating factors of scientific literacy skills - ed

research works, they are required to go through the scientific research process and apply it to the Science Investigatory Project (SIP). These SIPs are the direct applications of the scientific ...

Observing and Questioning - glaquarium.org

- A proposed explanation for a fairly narrow set of phenomena, based on prior experience, scientific background knowledge, preliminary observations, and logic. Observation - To make ...

SCIENTIFIC EXPLANATION - JSTOR

SCIENTIFIC EXPLANATION ABSTRACT. I shall endeavor to show that every physical theory since Newton explains ... is a relation amongst propositions, and that a proposed explanation ...

Social Facts, Social Groups and Social Explanation - JSTOR

facts and forms of explanation. On this account it turns out that there is a substantive explanatory dispute between "holists" and "individualists", although it is a dispute that does not have a ...

How Simplicity Can be a Virtue in Philosophical Theory-Choice

also raise a doubt about this proposed ground of appealing to simplicity. (This doubt will apply equally to its grounding scientific appeals to simplicity as to its grounding philosophical ...

Inquiry and Scientific Explanations: Helping Students Use ...

phrase scientific explanation to align with the NSES, which the teachers we work with need to address. The explanation framework includes three components: a claim, evidence, and ...

The [Geo]Scientific Method; hypothesis testing and ...

What first-year undergraduates know about scientific methodology likely comes from a high school science class in which they learned a linear scientific method: identify a problem, make a ...

Van Fraassen on Explanation - JSTOR

problem of the asymmetries of explanation only if one can claim that the argument underlying the quoted passage is the argument that the ... 2 "Aspects of Scientific Explanation," in Aspects of ...

UNIT 4

WHAT IS A HYPOTHESIS IN SCIENCE? •A hypothesis (plural hypotheses) is a proposed explanation for an observation. •The definition depends on the subject. In science, a hypothesis ...

The importance of defining the hypothesis in scientific research

answer to a problem can be stated" (Gerber, 2011a) and explains differences between a problem and hypothesis as "a problem is formulated in the form of a question; it serves as the basis or ...

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Topic #6: Hypothesis - Cornell University

A hypothesis is a suggested explanation of a phenomenon or reasoned proposal suggesting a possible correlation between multiple phenomena. The term derives from the ancient Greek, ...

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Scientific Concepts •Hypothesis "is a statement that is assumed to be true for the purpose of testing its validity" Research Methods by D.H. McBurney and T.L. White "A proposed ...

The Process of Solving Complex Problems

The Journal of Problem Solving • 22 Andreas Fischer, Samuel Greiff, and Joachim Funke 1. 2The complexity of a system may be defined as the number of elements and relations of the ...

Research Questions – San José State University

Review the following research questions that need some work. Identify the problem (lack of clarity, concision, or open-endedness) and provide feedback on improving them. 4. Topic: Claude ...

Lamarck, Evolution, and the Politics of Science – JSTOR

scientific structure when that structure was being reorganized during the Revolution.⁸ Nor did he fail in the course of his career to take an interest in various priority concerns. He displayed, as ...

Explanation, Idealisation and the Goldilocks Problem – JSTOR

Goldilocks Problem BRIAN WEATHERSON Rutgers University Michael Strevens's book *Depth* is a great achievement.¹ To say any thing interesting, useful and true about explanation requires ...

Proposed Resolution to the Solar Open Magnetic Flux ...

disagreements with in situ observations. This paper provides a brief overview of the problem, summarizes the proposed explanations for the discrepancies, and presents results that ...

Scientific Explanation: From Covering Law to Covering ...

These authors proposed a model that is a formalized description of a scientific explanation. It claims that scientific explanation is essentially an argument (a logical infer- ... A problem of ...

Solution Hypothesis Generation in Biology: A Science ...

seen in nature. If a proposed explanation or generalization of a pattern is valid, then we can anticipate (predict) a particular outcome from an experiment or that we will see the pattern ...

A scientific theory is a proposed description, explanation, or ...

A scientific theory is a proposed description, explanation, or model of something occurring in nature. These theories have to be testable so that scientists can use the scientific method to ...

Scientific Explanation – MIT

There is the word “explains,” so what is the problem? The problem is that what philosophers have called theories of explanation are not intended to have anything to say about what goes on ...

Do invasive species escape their enemies? – Data Nuggets

it. A hypothesis is a proposed explanation for an observation, which can then be tested with experimentation or other types of studies. Scientific Data: Use the data below to answer the ...

Studies in the Logic of Explanation – JSTOR

scientific explanation and a subsequent more rigorous analysis of the concept of ... If a proposed explanation is to be sound, its constituents have to satisfy certain conditions of adequacy, ...

What Constitutes a to the Body of Knowledge? M. E. Swisher ...

the overall confidence in the scientific community that there is adequate evidence of high quality to justify accepting an explanation. The researcher will often discuss filling a “gap” in our ...

Max Planck theBeginnings - JSTOR

Planck and quantum theory 461 the equation $\int_0^\infty \rho(\nu, T) d\nu = aT^4$, (1) where a is a constant. This experimental result of Stefan's was derived theoretically in 1884 by ...

What is the heliocentric model of the universe? - Phys.org

The Scientific Revolution, which took in the 16th and 17th centuries, ... Copernicus' proposed a model of the universe where the Earth, the ... To alleviate the problem, Ptolemy developed the ...

22 Intuition: Scientific, Non-Scientific or Unscientific?

1. Finally, there may be cases, where a new scientific explanation is obtained, and placed in the scientific bucket, while the pre-existing explanation will remain in the non-scientific bucket, as ...

Alfred Wegener and the Hypothesis of Continental Drift

and he proposed a history of their migrations. The validity of his theory was not recognized until new evidence emerged in the 1960's ... the scientific community in 1912, but it was not until 50 ...

Scientific Explanation of Light through Phenomenon-based ...

A. Scientific Explanation Scientific explanation consists of explanations and arguments. The explanation is a statement that answers the question "how" and "why" of events, while the ...

Springing Forward - Student A1 - Data Nuggets

it. A hypothesis is a proposed explanation for an observation, which can then be tested with experimentation or other types of studies. Scientific Data: Use the data below to answer the ...

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(1) The hard problem is an explanatory problem. (2) The kind of explanation central to the hard problem is not of a scientifically relevant sort. (3) Therefore, the hard problem is an ...

The Scientific Method - Edward M. Kennedy Academy for ...

Apr 30, 2013 · organized series of steps used to test a probable solution to a problem, commonly called a hypothesis.) Despite the absence of a standard scientific method, there is a generally ...

Which Models of Scientific Explanation are (In)Compatible with

1 Frank Cabrera ([2020]) discusses the plentitude problem: the objection that IBE is indeterminate because there are plenty of competing models of scientific explanation, each with its own ...

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Asian Disease Problem Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease ...

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explanation depends. Let me elaborate the second point first. Many philosophers of science agree that scientific reasoning cannot be completely understood in terms of a strictly regimented ...

Popper, Basic Statements and the Quine-Duhem Thesis

proposed that epistemology 'should be identified with the theory of

scientific method'.² He described how the issue of demarcation relates to his own general objectives as follows: [My] ...

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There is a single Origin/Destination (O/D) pair of nodes $w = (1,4)$. A traveler on this network can travel on one of two paths: on path p_1 consisting of the links: a, c or on path p_2 consisting of ...

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The problem that we wish to discuss today is charming and simple. It is appealing because it is geometric, and it has an interesting and unusual genesis. In 1852 Francis W. Guthrie, a ...

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Whether scientific ethics is approached through a single course or a series of courses or seminars throughout the graduate curriculum, it has become obvious that students need exposure to ...

Exploring the effects of integrating self-explanation into a ...

cated that students who explained their steps during problem-solving practice in the program had greater understanding and were more successful on transfer problems in comparison with ...

UNIT 1 SELECTION OF RESEARCH PROBLEM - eGyanKosh

scientific problem. Before starting your project, you need to understand the scientific method. The scientific method is the "tool" that scientists use to find the answers to questions. It is the ...

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What is a conspiracy theory? A conspiracy theory is a proposed explanation of some historical event (or events) in terms of the significant causal agency of a relatively small group of ...

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group felt could be answered by scientific inquiry. III. The Elements of an Experiment: Once a problem has been defined and one or more hypotheses have been proposed, the scientist ...

Towards a hypothetical learning progression of scientific ...

progression of scientific explanation Jian-Xin Yao^{1,2,3}, Yu-Ying Guo^{1*} and Knut Neumann² ... To address this problem, researchers have developed the Claim-Evidence-Reasoning framework, ...

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on scientific explanation reveals that we are used to, and comfortable with, non-deductive explanations in almost all areas of inquiry. As a result, I argue that we have reason to believe ...

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Chapter 1 Figuring Out the Scientific Method In This Chapter Testing hypotheses using the scientific method Conducting scientific experiments the right way Distinguishing between ...

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duction will begin with describing the background to the problem, which is discussed in the problem discussion and concluded with research questions and delimitations. 1.1 Background ...

What Constitutes a "Good Contribution" to the Body of ...

defined components (constructs). Scientists do not apply the term “theory” to any proposed explanation. In science, a theory is a logical and complete explanation of a measurable ...

A Proposed Explanation For A Scientific Problem

A Proposed Explanation For A Scientific Problem

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