



SCS 3216

Research Methods

Tutorial 12



EFFECTIVE CITATION STYLES AND TECHNIQUES IN ACADEMIC WRITING

How to use normal, possessive, and noun citations effectively to give credit to original sources and maintain academic integrity in research papers and scholarly articles.

Normal Citations:

Normal citations refer to the standard way of citing sources in academic and professional writing. They typically follow a specific citation style such as APA (American Psychological Association), MLA (Modern Language Association), Chicago, or others.

In a normal citation, you include the author's name (or organization), publication year, and page number (if applicable) in the appropriate format specified by the citation style.

For example, *in APA style, a normal citation for a book would look like this:*
(Author's Last Name, Year, p. Page Number)

Possessive Citations:

Possessive citations are used when you are citing a source within a sentence and need to show that the information belongs to a specific source.

Instead of placing the citation at the end of the sentence or paragraph, you incorporate it into the sentence itself.

For example, *"Smith's (2020) study found that..." or "According to Johnson's (2019) research..."*

Noun Citations

When you refer to a specific noun or concept that originates from a particular source, you should attribute that noun or concept to the source in your writing.

For example, *"The theory of relativity, developed by Einstein (1915), revolutionized our understanding of physics."*

Activity 01

1. In the realm of psychology, researchers have delved deeply into the human mind and behavior, uncovering fascinating insights. One noteworthy study by Johnson (2018) presented compelling evidence of the impact of social media on self-esteem. Johnson's research indicated that excessive use of social media can lead to negative self-perception.
2. Moreover, Smith's (2020) exploration of cognitive development during adolescence offered valuable insights into the transformation of young minds. Smith's research emphasized that during this crucial period, individuals experience profound cognitive changes.
3. Additionally, the theory of "emotional intelligence," coined by psychologist Daniel Goleman (1995), has gained substantial recognition in the field. Goleman's groundbreaking concept introduced the idea that one's ability to recognize and manage emotions significantly influences success in various life domains.
4. In the realm of abnormal psychology, Miller (2017) conducted a longitudinal study examining the progression of schizophrenia in young adults. Miller's meticulous observations of symptom manifestation over time have contributed significantly to our understanding of this complex disorder.
5. Furthermore, the case study presented in Johnson's (2019) work on obsessive-compulsive disorder (OCD) is particularly illuminating. Johnson's

in-depth analysis of a specific patient's struggles with OCD shed light on the intricacies of this mental health condition.

6. Turning to the world of neuroscience, the discovery of mirror neurons by Rizzolatti and Craighero (2004) revolutionized our understanding of social cognition. Rizzolatti and Craighero's groundbreaking research demonstrated how these neurons play a pivotal role in empathy and imitative behavior.
7. In the field of educational psychology, Piaget's (1952) theory of cognitive development remains a cornerstone. Piaget's stages of cognitive development, which include sensorimotor, preoperational, concrete operational, and formal operational, offer a comprehensive framework for understanding how children's thinking evolves.
8. Furthermore, Vygotsky's (1978) socio-cultural theory has left an indelible mark on our understanding of how social interactions shape cognitive growth. Vygotsky's theory underscores the importance of the social environment in nurturing cognitive development.

SUMMARIZATION AND PARAPHRASING

Summarization means making a shorter version of a big text that keeps the main points so people can understand it quickly without reading the whole thing. It's like a shortcut to get the main ideas. Summarization techniques can be applied to a wide range of content, including news articles, research papers, documents, and even spoken language. It has applications in various fields, such as content curation, search engines, automated content generation, and information retrieval.

Paraphrasing is the act of rephrasing or restating a piece of text or information in a different way while maintaining its core meaning and essence. It involves expressing the same ideas using different words or sentence structures to convey the original message with clarity and without copying the exact wording. Paraphrasing is often used to avoid plagiarism, simplify complex content, or provide a fresh perspective on existing information.

Summarization focuses on creating a shorter version of a text while preserving its main points, whereas paraphrasing concentrates on rewording specific parts of a text while maintaining the original content's meaning.

Example 1

One of the greatest challenges in quantum chemistry is to fully understand the complicated electronic structure of atoms and molecules. Over the past century, enormous progress has been made in describing the general behavior of relatively simple systems. In particular, combined with physical insights, elegant computational approaches have been developed, ranging from wave-function methods to quantum Monte Carlo and density functional theory. The challenge is that the Hilbert spaces of quantum systems grow exponentially with system size. Therefore, as these methods are extended to higher accuracy or to larger systems, the computational requirements become unreachable with current computers. This problem is not merely a consequence of technological limitations but stems from the inherent difficulty of simulating quantum systems with computers

based on classical mechanics. It is therefore important to know if the computational bottlenecks of classical computers can be solved by a computing model based on quantum mechanics quantum computation whose development has revolutionized our understanding of the connections between computer science and physics.

Summarization (Answer)

Quantum chemistry faces challenges in understanding the electronic structure of atoms and molecules. Advances in computational approaches, such as wave-function methods and quantum Monte Carlo, have improved system behavior. However, the exponential growth of quantum systems' Hilbert spaces makes computational requirements unreachable with current computers. To solve this, a quantum mechanics quantum computation model could address these computational bottlenecks.

Paraphrasing (Answer)

Understanding the intricate electrical structure of atoms and molecules in its entirety is one of the most difficult tasks in quantum chemistry. A great deal of work has been done in defining the typical behavior of relatively straightforward systems throughout the past century. Elegant computational methodologies, ranging from wave-function methods to quantum Monte Carlo and density functional theory, have been created in particular when paired with physical understanding. The problem is that when a quantum system gets bigger, its Hilbert space expands exponentially. Therefore, the computational requirements become insurmountable with present computers as these technologies are expanded to larger systems or higher precision. This issue is not just a result of technology restrictions but also results from the fundamental difficulty of replicating quantum systems using classical mechanics-based computers.

Activity 02.

Summarize and paraphrase the given article.

The article provides an in-depth examination of the remarkable journey of artificial intelligence (AI) from its inception with Alan Turing's pioneering work on computation and the Turing test to the contemporary era dominated by deep learning. It meticulously traces the historical development of AI, exploring crucial milestones, challenges, and paradigm shifts along the way. Beginning with Turing's groundbreaking contributions, the article explores the evolution of AI research, encompassing the rise and fall of expert systems, neural networks, and symbolic AI. It takes readers on a journey through the challenging period of the 'AI winter' in the 1970s and 1980s when AI faced significant setbacks, only to experience a renaissance later on. The narrative then turns to the 21st century, highlighting the transformative impact of deep learning, with a particular emphasis on convolutional neural networks (CNNs) and recurrent neural networks (RNNs). The article discusses key breakthroughs, such as the ImageNet competition and AlphaGo's triumph over a human Go champion, underscoring the immense potential of AI. Moreover, it delves into the ethical and societal implications of AI, addressing concerns about algorithmic bias, privacy issues, and AI's influence on employment dynamics. In conclusion, the article contemplates the future of AI, considering areas like explainable AI, reinforcement learning, and the quest for artificial general intelligence (AGI). It underscores the imperative of responsible AI development and ethical considerations, emphasizing the need to harness the power of AI for the betterment of society."