

Influence and Benefits of Sun Tzu's Art of War in Advising Undergraduate Science Education Research

MARSHALL JAMES P. DANTIC, PhD¹, NANCY JOY M. MANGANSAT, PhD²

President Ramon Magsaysay State University¹
Nueva Ecija University of Science and Technology²

Abstract: Sun Tzu's Art of War offers mentors a strategic framework for effective planning, adaptation, and leadership. This study explored the influence and benefits of applying Sun Tzu's *Art of War* principles to mentoring undergraduate science education research. The research aimed to understand how these principles shaped students' research writing processes and the resulting advantages for their academic work. A narrative inquiry approach was employed, utilizing structured short essays from 15 undergraduate science education students who had conducted research under advisors using Sun Tzu's *Art of War* principles. Purposive sampling was used. Data analysis involved thematic analysis following the steps outlined by Braun and Clarke (2006). The analysis focused on how Sun Tzu's principles influenced students' understanding of the research process, identifying and synthesizing evidence, and structuring clear and concise writing. The study found that Sun Tzu's *Art of War* principles significantly influenced students' research writing. These principles fostered strategic planning, adaptability, and a focused mindset, leading to improved organization, efficiency, and confidence. Students reported enhanced analytical skills, improved ability to identify and synthesize relevant evidence, and more effective communication of their research findings. The application of Sun Tzu's principles resulted in a more positive and effective research experience, boosting student confidence and motivation. The findings suggest that incorporating aspects of Sun Tzu's *Art of War* into research advising can enhance the quality and efficiency of undergraduate science education research.

I. Introduction

Undergraduate research is a requirement in various academic institutions (Basthomi, 2019). Students must complete these for graduation. More importantly, undergraduate research experiences are crucial for shaping the next generation of scientists. They offer a powerful way to cultivate high-caliber researchers by improving the investigative process and fostering higher-order thinking skills (Oriokot et al., 2011). These experiences provide students with hands-on opportunities to engage in the scientific method, develop critical thinking, problem-solving, and communication skills, all of which are highly valued by employers (Adebisi, 2022; Dantic, 2024).

Therefore, for it to be successful, advising plays an important role. Advising is an increasingly vital and valuable component of undergraduate programs (Andersen & West, 2020). This role, however, is demanding. Advisors must set high standards for students while providing crucial support and encouragement for success (White, 2015). It requires a deep understanding of the research process, significant time commitment despite heavy workloads, and skillful navigation of academic complexities (Zhang et al., 2017).

Sun Tzu's "Art of War" principles offer a novel approach for research advising (Dantic, 2025). Sun Tzu's *Art of War*, though a military strategy treatise, applies beyond the battlefield, offering insights in business, politics, and education (Dimovski et al., 2012). Its principles offer valuable insights into effective mentorship, emphasizing adaptability and strategic thinking (Dantic, 2025). These principles focus on strategy and tactics, not specific warfare, with broad applications across various fields, including education.

Sun Tzu's Art of War offers mentors a strategic framework for effective planning, adaptation, and leadership (Perez, 2017). This approach really helps students learn. It gives them the key skills and mindset for science research, helps them grow, and gets them ready for good STEM careers.

This study aims to explore the influence and benefits of Sun Tzu's Art of War in advising undergraduate science education research through narrative interviews.

II. Methodology

The study has used narrative inquiry as research design with structured short essay were the main instrument used to gather the required data. There were sixty (15) undergraduate science education students who have conducted their research under the guidance of an adviser using Sun Tzu's Art of War approach. Purposive sampling method were employed. The instrument used is composed of two main questions; (a) How do the principles in Sun Tzu's Art of War influence the actions of the undergraduate Science Education Students in their research writing? and (b) What are the benefits of applying Sun Tzu's Art of War principles the undergraduate science students' researches? The data were interpreted using the steps from the thematic analysis by Braun and Clarke (2006).

Themes Emerged from How the Principles in Sun Tzu's Art of War Influenced the Actions of Undergraduate Science Education Students in their Research Writing

It was discussed in this section on how the principles of Sun Tzu's art of war influences the actions of undergraduate science education students when they are writing and conducting their researches,

Influence of Sun Tzu's Principles on Research Writing Mentorship, Specifically Understanding of Research Process Steps

In the table presents the themes emerged on how the principles of Sun Tzu's Art of War influences the participants mentorship experience and their understanding on the research process.

Table 1

Themes emerged on how the Sun Tzu's Art of War Principles Influenced Students' Research Writing Specifically on Understanding of Research Process

Themes	Sub-Themes	Sample Significant Statement	Theme Description
Theme 1. Strategic Planning and Preparation	Sub-theme 1: Thorough Understanding of the Topic	"Sun Tzu's principle of "preparation before engagement" helped me prepare each research step thoroughly, which has allowed me to handle the process more calmly and effectively." URS7	This sub-theme highlights the importance of understanding the research topic and audience, based on Sun Tzu's principles from "The Art of War," for effective academic research strategy, enhancing work quality and impact.
	Breakdown into Manageable Steps	Sun Tzu's concept of planning has shown me the importance of having a roadmap. Breaking down my research into steps allows me to focus better and approach each part with purpose. URS8	This theme emphasizes breaking down complex tasks into manageable parts for better research efficiency, inspired by Sun Tzu's "divide and conquer" strategy, enhancing organization, motivation, time management, and academic success.
	Meticulous Planning at each Stage	"Sun Tzu's idea of preparation has been crucial. By organizing each part of my research before I start, I can focus on specific tasks and avoid feeling overwhelmed, which has made my work more efficient." URS5	This theme emphasizes the importance of strategic planning in academic research, utilizing Sun Tzu's principles to improve efficiency, motivation, task management, clarity, and focus, leading to more impactful research outcomes.

Theme 2. Adaptability and Flexibility	"I need to check the situation first. Because there are times that we rush writing, but there are many wrong in our study. We change plans midway." URS6	The theme explains the importance of being adaptable to changing circumstances, embracing new ideas, and reassessing research direction, enhancing academic work quality, thorough analysis, and proactive problem-solving.
Theme 3. Strategic Mindset and Visualization	"As a researcher, I also become a philosopher. Because we need to visualize war most of the time, we feel being soldier. Our interpretations becomes our decisions. If the decision is wrong, everything will be wrong. That's why we become more careful and considerate." URS11	The theme emphasizes strategic planning and visualization, drawing inspiration from Sun Tzu's principles, enabling leaders to anticipate challenges, make informed decisions, and maintain focus on objectives, promoting thoughtful decision-making and adaptability.

Theme 1. Strategic Planning and Preparation

This theme about strategic planning and preparation has three sub-themes.

Sub-theme 1: Thorough Understanding of the Topic. In the 10th chapter about terrain, article 31 says, "Hence the saying: If you know the enemy and know yourself, your victory will not stand in doubt; if you know Heaven and know Earth, you may make your victory complete."

According to Sun Tzu, 'knowing the enemy' is crucial for devising an effective strategy. Sun Tzu's principles in academic research urged students to thoroughly study their topic and do an extensive literature review, deepening their understanding before starting their study. Based on a participant's (URS1) perspective, "Sun Tzu's principle of 'know yourself and your opponent' has taught me to thoroughly understand both my topic and my audience before diving into the research. By being clear on what I want to achieve and the context of my research, I found the research process more structured and less overwhelming." Understanding the study subject and audience helps one to grasp the concept of "know yourself and your opponent," which guides knowledge of research and allows accuracy and purpose in academic research. According to Smith (2024), understanding your audience is crucial in writing, as it helps tailor your research to meet their needs and interests. By applying Sun Tzu's principles, researchers can ensure that their work is not only well-informed but also effectively communicated to their target audience.

Another participant (URS7) also described, "Sun Tzu's principle of 'preparation before engagement' helped me prepare each research step thoroughly, which has allowed me to handle the process more calmly and effectively." This demonstrates the importance of strategic planning and preparation in academic research, as it can lead to more successful outcomes. Salomao (2024) emphasized that research planning is crucial for defining focus, method, and goals; organizing project elements; guiding researchers; providing a roadmap for investigation; and consolidating and communicating findings. It helps maintain focus, facilitates communication, and tracks progress, while also providing a structured framework for study strategies and benefiting external stakeholders. By incorporating these principles into their research approach, the undergraduate researchers can enhance the quality and impact of their work.

Sub-theme 2: Breakdown into Manageable Steps. Breaking down tasks into smaller steps makes them more manageable and easier to create a plan for completing the task (Bradford & Greenberg, 2023). The lessons of Sun Tzu—especially the "divide and conquer" tactic and planning—have had a huge impact on how the participants approach research. The approach focuses on simplifying difficult tasks into smaller, doable stages, thereby improving efficiency and concentration. A participant (URS2) said that, "The 'divide and conquer' strategy of Sun Tzu has taught me how important it is to break the study process into smaller, more manageable steps. Using this method has helped me stay on track with things and do more study on each part. This method supports a methodical approach that lets undergraduate researchers look into each part in more depth and see the whole picture. This

method helps me do academic study more accurately and efficiently, which helps researchers learn more about the subject.

Another participant (URS8) said that, "Sun Tzu's concept of planning has shown me the importance of having a roadmap. Breaking down my research into steps allows me to focus better and approach each part with purpose." URS8 also mentioned that breaking down research into smaller steps has improved their time management skills and reduced feelings of overwhelm. Breaking down tasks is crucial for effective project management, as it simplifies large projects and improves motivation, goal-setting, and performance tracking, aiding in error identification and task prioritization for better time management (Zika-Viktorsson et al., 2006). This approach allows for a more thorough understanding of the subject matter and enhances the overall quality of the research.

Sub-theme 3: Meticulous Planning at each Stage. Gandrita (2023) emphasized that strategic planning is an organizational activity aimed at achieving a group's goals by defining objectives, investigating internal and external factors, and identifying necessary adjustments to achieve the desired outcome.

Strategic planning and meticulous organization are crucial in academic research, guiding efficiency, focus, and motivation. Drawing inspiration from Sun Tzu's wisdom, it gives importance to the preparation in research that is deeply ingrained in the scholarly journey. Based on one of the participants (URS5) describing, "Sun Tzu's idea of preparation has been crucial. By organizing each part of my research before I start, I can focus on specific tasks and avoid feeling overwhelmed, which has made my work more efficient." By carefully organizing their research, researchers build a solid foundation for purposeful inquiry. This keeps them from getting too overwhelmed and simplifies their work processes for optimal effectiveness. Another participant (URS9) said, "Sun Tzu's idea of "strategic planning" helped me approach each research phase with a specific goal, which has improved my efficiency and kept me motivated." By adopting Sun Tzu's idea of preparation, the author cultivates a structured and methodical approach to research, allowing them to navigate the scholarly landscape with clarity and precision. This strategic planning also helps researchers stay focused on their objectives and avoid getting sidetracked by irrelevant information (Cote, 2020). Ultimately, it leads to more meaningful and impactful research outcomes.

Further, URS6 emphasized, "The principle of strategy and timing has helped me approach the research process with a plan in mind. I'm now more intentional about when and how I gather data, which makes the process smoother."

By being intentional and strategic in their research approach, authors can ensure that their work is not only rigorous but also relevant and impactful. This mindset of planning and timing can greatly enhance the quality and effectiveness of the research process, ultimately leading to more significant contributions to the scholarly community (Yeager, Hanselman, Walton, et al., 2019). Sun Tzu's concept of "strategic planning" serves as a catalyst for elevating research efficiency and maintaining motivation throughout the research writing.

Theme 2. Adaptability and Flexibility

Sun Tzu's emphasis on adapting tactics based on the situation resonates deeply in the research journey of the undergraduate science students, fostering a flexible and responsive approach to research writing. There is a huge importance of being open to new ideas and strategies, allowing for innovative solutions to emerge in the face of challenges (Sasson et al., 2020). It encourages students to embrace change and think creatively in order to achieve success in their academic endeavors. According to a participant (URS4), "The principle of adaptability is something I found particularly useful. Sun Tzu emphasizes adjusting tactics based on the situation, which helped me stay flexible and open to changing my research direction if I found unexpected information." Sun Tzu's principle of adaptability has shaped the approach of the undergraduate students to research. It encourages flexibility and receptivity to new information, allowing them to adjust research direction if unexpected findings arise.

Like what the participants (URS6 & URS8) said respectively, "I need to check the situation first. Because there are times that we rush writing, but there are many wrong in our study. We change plans midway." and "I also learn how to adapt with different circumstances, because writing this research has things to be aware."

This flexible method encourages a flow in academic research. Setting aside time to do a full analysis of the study scene can help you spot possible problems and make changes to your plans as needed. McGee and Keller (2007) justified it saying scientists possess qualities such as persistence, integrity, loyalty, openness, hard work, courage, resilience, and adaptability. Persistence allows for adaptation to changing circumstances, while embracing differences makes them unique and good scientists. These qualities are crucial in the field of science. This proactive way of thinking helps writers get through the complicated parts of research, making sure that my study fits with how academic inquiry is always changing.

URS 9 said, "Also, I am able to see the extra problems, which are not part of the manuscript, which I need to deal with as well." These qualities also enable scientists to navigate the challenges of peer review and constantly

improve their work (Scrimgeour & Pruss, 2016). URS 9's ability to anticipate and address additional problems demonstrates a proactive approach that is essential in scientific research.

Theme 3. Strategic Mindset and Visualization

In Chapter 1: Laying Plans, Article 15. It says, "The general that hearkens to my counsel and acts upon it will conquer: let such a one be retained in command!" Following Sun Tzu's principles has a huge influence on developing a strategic mindset and visualization. This following it allows for a philosophical perspective and visualization of the desired outcome, guiding the endeavors. By understanding the importance of strategic planning and visualization, individuals can better anticipate obstacles and make informed decisions to achieve their goals (Sisson, 1992).

A participant, URS11, described, "As a researcher, I also become a philosopher. Because we need to visualize war most of the time, we feel like soldiers. Our interpretations become our decisions. If the decision is wrong, everything will be wrong. That's why we become more careful and considerate." This mindset enables leaders to adapt to changing circumstances and stay focused on the ultimate objective. This approach fosters a proactive mindset that is crucial for success in dynamic environments. By combining strategic planning with visualization, individuals can navigate challenges with confidence and resilience (Calarco & Gurvis, 2006). "The steps of how I will conduct our study become easier to understand. They become logical, and I can follow the steps easily. We become more aware of the pros and cons of each phase," said URS10. By predicting challenges, weighing pros and cons, and making informed decisions, the author ensures each action aligns with the overarching goals, fostering a sense of purpose and direction in the research landscape (Ramakrishna, 2020). And if you achieve this, things will be like URS12 emphasized, "Now, I visualize the end before starting a new one. Meaning, I consider the outcome or output first so that I have direction on what I should conduct first."

Influence of Sun Tzu's Principles on Research Writing Mentorship Specifically on Identifying and Synthesizing Research Evidence

In the table presents the themes emerged on how the principles of Sun Tzu's Art of War influences the participants mentorship experience specifically on identifying and synthesizing relevant research evidences.

Table 2

Themes emerged on how the Sun Tzu's Art of War Principles Influenced Students' Research Writing Specifically on Identifying and Synthesizing Research Evidence

Themes	Sample Significant Statement	Theme Description
Theme 1. Efficient Resource Identification of Research Evidence	<i>Sun Tzu emphasizes the importance of preparation. This principle has helped me to focus on identifying sources that are truly relevant rather than collecting too many resources. It has improved my efficiency in sorting through information and made me more critical in my selection." URS1</i>	The theme advocates for strategic research resource identification and engagement, comparing it to Sun Tzu's military tactics, prioritizing quality over quantity to prevent information overload and enhance critical thinking.
Theme 2. Contextual Analysis and Evaluation	<i>"Sun Tzu's focus on analyzing the environment makes me think about how each piece of information fits into its larger picture. It helps me think to check each source's accuracy and usefulness, making sure my study is reliable and has meaning." URS2</i>	This theme highlights strategic planning and contextual analysis in military and academic settings, comparing Sun Tzu's strategies to research, emphasizing understanding source backgrounds for improved reliability and validity.
Theme 3: Depth of Understanding and Selectivity	<i>"Sun Tzu says that to know your area, you need to "look deeper" into sources. I don't just quickly gather information; I take the time to understand their depth and possible biases. This makes my proof better."</i>	This theme emphasizes strategic thinking and careful analysis in warfare and academic research, drawing from Sun Tzu's principles. It advocates for quality evidence over quantity, fostering critical thinking and informed conclusions,.

Theme 1. Efficient Resource Identification of Research Evidence

Sun Tzu's military strategies provide valuable insights for academic research, emphasizing preparation and selective engagement towards information. This principle emphasizes strategic planning, focusing on the study's focus and key research questions. Having many at hand can be confusing. By carefully selecting and organizing resources, researchers can streamline their process and improve the quality of their work (Chung & Neuman, 2007). According to a participant (URS4), "His principle of "selective engagement" taught that I should only use sources that really help my study instead of just getting a lot of data. This has helped me focus and do better work." This approach ensures that only the most relevant and impactful evidence is utilized in the research project. It also helps researchers avoid information overload and stay on track with their research objectives (Pontis et al., 2015). This principle ultimately leads to more efficient and effective research outcomes. Another participant (URS1) said, "Sun Tzu emphasizes the importance of preparation. This principle has helped me to focus on identifying sources that are truly relevant rather than collecting too many resources. It has improved my efficiency in sorting through information and made me more critical in my selection." This strategic approach not only saves time and resources but also ensures that the research is focused and targeted. By prioritizing quality over quantity, researchers are able to make more informed decisions and draw more meaningful conclusions from their findings (Tchetchik et al., 2015).

It encourages a proactive approach to resource identification, directing time and effort towards sources that directly contribute to the study's goals, thereby streamlining the search for relevant evidence. This is justified by URS5: "The principle of careful selection reminds me to pick only the most relevant evidence. It has sharpened my ability to filter through vast amounts of information and choose what best supports my thesis." Using Sun Tzu's ideas, researchers can focus their time and resources to get the right evidence for their work. This helps them do research in a smarter and more effective way. The principle of being selective acts as a compass, guiding researchers through the sea of information out there.

Theme 2. Contextual Analysis and Evaluation

According to Chapter 1 about laying plans, Article 26 states, "Now the general who wins a battle makes many calculations in his temple ere the battle is fought." This emphasizes the importance of strategic planning and preparation before engaging in any conflict. Sun Tzu's military strategies emphasize understanding the battlefield, which can be applied to academic research. Contextual analysis and evaluation are crucial tasks in research, as they involve considering the source's background, purpose, and potential biases. One of the participants, URS6, said, "Sun Tzu's emphasis on knowing the terrain of battle has taught me to understand the background of my sources. This approach has helped me be more critical in evaluating the reliability and context of each piece of evidence" (Berndtsson & Wackenhut, 2020). URS6's reflection highlights the importance of applying strategic thinking to academic research, just as Sun Tzu did in military conflicts. By adopting a methodical approach to analyzing sources, researchers can make more informed decisions and produce higher quality work (Sun et al., 2008).

It also is what another participant, URS2, reflected: "Sun Tzu's focus on analyzing the environment makes me think about how each piece of information fits into its larger picture. It helps me think to check each source's accuracy and usefulness, making sure my study is reliable and has meaning." By conducting a thorough analysis, researchers can better anticipate challenges and develop effective strategies to address them (Anmarkrud et al., 2013). Just as a general must assess the terrain before battle, scholars must carefully examine all aspects of their sources to ensure the reliability and validity of their research findings. Because assessing the environment and sources is crucial in creating a solid foundation for any study, taking the time to analyze each piece of information thoroughly can lead to more meaningful and impactful research outcomes. (Anjana & Choudhuri, 2018). This approach not only enhances the credibility of the study but also allows for a deeper understanding of the subject matter being explored.

Theme 3. Depth of Understanding and Selectivity

In Chapter IV: Tactical Disposition, article 2 says, "What the ancients called a clever fighter is one who not only wins but excels in winning with ease." This highlights the importance of strategic planning and efficient execution in warfare. It emphasizes the value of achieving victory with minimal effort and resources.

Sun Tzu's military strategies highlight the importance of strategic thinking and deep understanding, which can be applied to academic research. His principle of "looking deeper" emphasizes the need for researchers to thoroughly analyze sources, considering their assumptions, biases, and context to achieve a nuanced understanding of evidence. A participant (URS3) stated, "Sun Tzu says that to know your area, you need to "look deeper" into sources. I don't just quickly gather information; I take the time to understand their depth and possible biases. This makes my proof better." By incorporating Sun Tzu's concepts into their research, undergraduate researchers can enhance their critical thinking abilities and produce more comprehensive and intelligent studies. Another participant

(URS7) emphasized, "His teaching on "knowing your resources" encouraged me to scrutinize my sources carefully, making me more selective about the evidence I use. This has led to higher quality in my arguments." The testimony of URS7 emphasizes the need to closely review sources to improve the quality of the arguments made in studies. By following Sun Tzu's advice on "knowing your resources," researchers can ensure that their evidence is reliable and enhances the overall credibility of their work. Sarfin (2023), reviewing resources is essential as it helps pinpoint relevant information, ensures research quality and reliability, offers expert insights, and aids in discarding unreliable or outdated materials. This is linked with what URS9 and URS12 also try to pinpoint: "His principle of "knowing the essentials" guides me in selecting sources that add significant value to my research, instead of overloading my paper with excessive information," and "The principle of "knowing what is essential" has encouraged me to focus on finding only the most relevant evidence. By being selective, I'm able to gather stronger and more reliable sources, which has made my research foundation more solid." This strategy helps undergraduate researchers locate underlying ideas and assess more data. Finally, this may assist the undergraduate researchers in reaching better conclusions and advancing their study.

Influence of Sun Tzu's Principles on Research Writing Mentorship Specifically Structuring and Writing Clear and Concise

In the table presents the themes emerged on how the principles of Sun Tzu's Art of War influences the participants mentorship experience specifically structuring and writing clear and concise.

Table 3

Themes emerged on how the Sun Tzu's Art of War Principles Influenced Students' Research Writing Specifically on Writing Clear and Concise

Themes	Sample Significant Statement	Theme Description
Theme 1. Emphasis on Clarity and Simplification in Writing	<i>"I strive for simplicity and precision, following Sun Tzu's advice to be "swift and clear" in communication. By focusing on essential information and avoiding unnecessary details, " URS3</i>	The theme emphasizes the significance of clarity, simplification, and direct communication in writing, highlighting strategies like logical organization and emotional intelligence to enhance effectiveness and prevent confusion.
Theme 2. Focus on Conciseness and Impactful Expression	<i>"Sun Tzu encourages concise expression, which I've applied by using simpler language and avoiding lengthy explanations. This has made my papers more readable and impactful." URS4</i>	The theme emphasizes the importance of clear, concise communication in academic writing, promoting simpler language and brevity to enhance readability and make it more accessible to audiences.
Theme 3. Emphasizing Simplicity and Purposeful	<i>"I focus on eliminating unnecessary words and phrases, applying Sun Tzu's advice on simplicity. This helps me produce clear, concise research that communicates my ideas more powerfully." URS7</i>	The theme emphasizes simplicity and intentionality in writing, based on Sun Tzu's philosophy, to enhance research communication effectiveness and engagement by reducing unnecessary words.

Theme 1. Emphasis on Clarity and Simplification in Writing

According to Sun Tzu, "If the instructions are not clear, the general is to blame. But if the instructions are clear and not followed, then it is the fault of the officers." This quote reinforces the importance of clear and concise communication in achieving successful outcomes. By adhering to this principle, researchers have seen a significant improvement in the effectiveness of my writing. Edwards (2024) emphasizes the importance of clear and concise communication, which can be improved through preparation, active listening, emotional intelligence, and fostering a positive organizational culture.

Based on a participant (URS2), "His emphasis on clarity in communication has helped me refine my writing skills. I always aim to make my sentences direct and to the point, which has improved both the readability and the persuasiveness of my arguments." This participant's feedback highlights the practical application of Emerson's principles in enhancing writing skills. By focusing on clarity and conciseness, individuals can effectively convey their message and engage their audience more effectively (Kouassi, 2015). This is also related to URS1's answer, "The principle of simplicity has influenced me to aim for clarity in my writing. Instead of overloading my paper with complex terms, I prioritize making my points straightforward and easy to understand, which I found also improves the flow of my paper."

However, URS3's response is focused on being swift and clear, which is one of Sun Tzu's core principles in Art of War. "I strive for simplicity and precision, following Sun Tzu's advice to be "swift and clear" in communication. By focusing on essential information and avoiding unnecessary details, I find that my papers are much more coherent and easier to follow." Through this approach, it also helps them to effectively convey ideas to the reader without causing confusion or ambiguity. Haines (2024) advised that to avoid confusion in your writing, organize it logically with a clear introduction, body, and conclusion. Use headings, subheadings, and formatting techniques to guide readers effectively through the text.

Theme 2. Focus on Conciseness and Impactful Expression

Sun Tzu's emphasis on concise expression has influenced readers of different fields to appreciate the power of simplicity in communication. For undergraduate researchers, adopting simpler language and avoiding lengthy explanations improves their writing. This helps them convey ideas and arguments effectively without overwhelming the audience with unnecessary details (Khana, 2019). Based on the narrative of URS4, it says, "Sun Tzu encourages concise expression, which I've applied by using simpler language and avoiding lengthy explanations. This has made my papers more readable and impactful." Fiveable (2017) concise writing helps prevent confusion, improves readability, and makes arguments more compelling by letting readers easily understand key points.

Which is also related to URS5's response, "I always try to be "clear and concise," as Sun Tzu suggests, especially when explaining complex ideas. This approach has helped me create papers that are easier for others to understand and follow." In addition, URS5 emphasizes the importance of clarity and conciseness in communication, as it aligns with Sun Tzu's advice on effective communication. By following this approach, undergraduate researchers have been able to effectively convey complex ideas in a more understandable manner and lead to improvement (Dukhan, 2005). URS7 tries to justify that, "By following Sun Tzu's advice on simplicity and conciseness, I have noticed a significant improvement in the overall quality of my writing. Not only have my papers become more engaging and impactful, but they have also become easier for my audience to comprehend."

Theme 3. Emphasizing Simplicity and Purposeful

Writing According to Sun Tzu, "Even the finest sword plunged into salt water will eventually rust." It talks about the environment; if it is polluted, then even the best tools will deteriorate over time. This concept can be applied to writing as well, emphasizing the importance of maintaining simplicity and purpose in order to prevent deterioration in communication effectiveness (Fiveable, 2017). That's how the participants learned from Sun Tzu. A participant (URS7) said, "I focus on eliminating unnecessary words and phrases, applying Sun Tzu's advice on simplicity. This helps me produce clear, concise research that communicates my ideas more powerfully." Drawing inspiration from Sun Tzu's philosophy, they have adopted a focused approach, prioritizing concise and purposeful communication in their research. This approach not only enhances the communicative power of their ideas but also ensures the message is delivered with precision and clarity.

By applying brevity, researchers aim to craft research papers that communicate complex concepts in a direct and straightforward manner (Holmberg & Sperlich, 2021), enhancing the overall effectiveness of their academic communication. According to URS8, "I emphasize purposeful writing, ensuring that each sentence serves a purpose. This has improved the overall clarity and flow of my research papers." By focusing on concise and purposeful communication, researchers can effectively convey their ideas to a wider audience and contribute meaningfully to their field. This approach also helps readers grasp complex concepts more easily, leading to a more impactful research paper overall (Iqbal, 2018).

Benefits of Applying Sun Tzu's *Art of War* Principles in Research Writing

This section presents the theme emerged from the qualitative analysis of the researcher towards the benefits of applying Sun Tzu's Art of War Principles in writing undergraduate research.

Table 4

Themes emerged on the Benefits of Applying Sun Tzu's Art of War Principles

Themes	Sample Significant Statement	Theme Description
Theme 1. Increased Confidence and Motivation	<i>"Applying these (Sun Tzu's) principles has helped me feel more organized and prepared, which has increased my confidence in producing high-quality work." URS6</i>	This theme highlights how applying the principles in research boost confidence and motivation, allowing researchers to feel organized, and in control, enabling them to tackle complex topics with greater assurance.
Theme 2. Improved Strategic Mindset and Analytical Skills	<i>"Applying these principles has built my analytical skills and improved my focus. I now approach research with a more strategic mindset, and this shift has made me feel more capable of producing thorough and impactful work." URS2</i>	This theme promote a strategic and analytical mindset in researchers, aiding in problem-solving, data organization, informed decision-making, and resulting in more impactful research.
Theme 3. Enhanced Organization and Efficiency	<i>"The biggest benefit is that I now feel more organized and confident. Sun Tzu's principles taught me to be methodical, which has improved my overall research process." URS9</i>	The theme promotes Sun Tzu's strategic principles for researchers, enhancing decision-making, adaptability, resilience, stress reduction, and confidence in research endeavors.

Theme 1. Increased Confidence and Motivation

URS6 said, "Applying these (Sun Tzu's) principles has helped me feel more organized and prepared, which has increased my confidence in producing high-quality work." Sun Tzu emphasizes the importance of inspiring confidence in followers by setting clear goals and demonstrating leadership qualities (Watson, 2007b). By the application of Sun Tzu's principles, it has significantly increased the researcher's confidence. By adopting a strategic mindset, the researcher feels more in control of the research process, navigating each step with clarity and purpose (Beatty & Hughes, 2005). This means that the principles of "The Art of War" can provide a framework for researchers to approach complex topics with confidence.

Confidence and motivation are essential components in the research process, as they fuel perseverance and resilience when facing challenges. According to participant URS1, "The most valuable benefit has been the boost in my confidence. Applying Sun Tzu's strategic mindset has made me feel more in control and capable of handling each step in the research process, which has motivated me to tackle more complex topics." This confidence motivates them to tackle complex topics with confidence, rather than feeling lost or overwhelmed. Writing confidence is vital for overcoming self-doubt and impostor syndrome, requiring a growth mindset and setting achievable goals (Mascle, 2013). This leads to the benefit perceived by URS3, "The biggest benefit has been the shift in mindset from feeling lost to feeling focused and prepared. I feel more equipped to tackle challenges." The principles provide a roadmap for each research phase, equipping them with strategies for challenges. This proactive and strategic mindset instills a deep sense of confidence, allowing them to approach obstacles with greater assurance. This is justified by URS4: "The greatest benefit is that I now feel more strategic in my research. Sun Tzu's principles gave me a roadmap for every phase of the process, which has helped me become a more independent and confident researcher." The sense of having a plan and framework to guide actions has significantly reduced the anxiety associated with research (Nguyen & Nguyen, 2020), empowering the researcher to tackle challenges with greater assurance.

The Sun Tzu's Art of War mentoring approach empowers students to approach research with greater confidence and motivation. By having a clear plan and strategies to address challenges, students feel more in control of their research and are less likely to become overwhelmed.

Theme 2. Improved Strategic Mindset and Analytical Skills

"Every battle is won before it is fought." Sun Tzu's emphasis on analysis has influenced all of his principles. He analyzed everything, the terrain, resources, weaknesses and strengths, even the atmosphere, before and during the battle. This philosophy about strategic principles has transformed the participants research approach, fostering an analytical and strategic mindset (Valenti, 2014). URS4 said, "The greatest benefit is that I now feel more strategic in my research. Sun Tzu's principles gave me a roadmap for every phase of the process, which has helped me become a more independent and confident researcher." This approach has helped them break down complex problems into easier parts and develop a more organized way to collect, analyze, and understand data. It also boosts their decision-making, letting them predict challenges and adjust their research plans accordingly.

The present study highlights the critical role of diverse stakeholder involvement in the design and development phases of research projects, thereby advocating for the inclusion of educators, industry experts, and students. This collaborative ethos ensures that the project aligns with real-world needs and benefits the intended users, thereby enhancing its applicability and impact (Jussila et al., 2020). Such integration of varied perspectives ensures that research outcomes are practical, relevant, and effectively address the needs of the intended beneficiaries.

According to URS2, "Applying these principles has built my analytical skills and improved my focus. I now approach research with a more strategic mindset, and this shift has made me feel more capable of producing thorough and impactful work." The systematic approach has aided researchers in identifying patterns and trends within their data, leading to more insightful conclusions (Hughes, 2020). This methodical process ultimately produces more accurate and reliable research outcomes. This shift has equipped the researchers with the tools to generate thorough and impactful research (Abutabenjeh & Jaradat, 2018). As for the final say, URS11, "I became a critical thinker who considers other factors before deciding on something. Aside from that, I observed more now, not focusing on what was only in my front."

In overall, the Sun Tzu Art of War mentoring approach benefits students by developing their analytical and strategic skills, enhancing their adaptability and resilience when facing challenges, and improving their communication and collaboration abilities, fostering thorough and well-planned research.

Theme 3. Enhanced Organization and Efficiency

Sun Tzu stated, "Thus the expert in the battle moves the enemy and is not moved by him." Adopting Sun Tzu's principles can provide researchers with a strategic edge in navigating challenges and competition. This approach can sharpen decision-making skills and cultivate adaptability and resilience when facing obstacles (Ho & Choi, 1997). Researchers should be organized and strategic to work efficiently and effectively. Sun Tzu's ideas can help researchers succeed.

According to URS5, "The most valuable aspect has been the improvement in my organizational skills. Having a structured plan has reduced my stress and increased my confidence in handling the research process." The researchers highlight the benefits of incorporating Sun Tzu's Art of War into their research process, which can be overwhelming and chaotic. However, URS8 countered it, "The most valuable impact has been the sense of control over my work. Sun Tzu's principles gave me tools to stay focused, which has improved both my skills and my confidence as a researcher." So, by implementing these strategic principles, they have improved their organizational skills and developed a clear plan for each stage of the research process (Tang, 2002), from data gathering to analysis and writing.

Improved organization skills are invaluable, especially when they are completing the research, as it enables them to manage their time effectively, and meet deadlines.

The idea also notes by URS9, "The biggest benefit is that I now feel more organized and confident. Sun Tzu's principles taught me to be methodical, which has improved my overall research process." The structured approach has lowered stress and boosted confidence in managing the research complexities. The researchers say having a clear plan gives them more control and direction, making the research journey less intimidating (Baim-Lance et al., 2020).

The Sun Tzu Art of War framework helps students manage time and resources more effectively. As the students emphasized, organizing each research task in advance allows them to focus and avoid feeling overwhelmed, thereby improving efficiency.

III. Conclusions

The following conclusions are based from the findings;

1. Influence of Sun Tzu's Art of War Principles on Undergraduate Science Education Students' Research Writing

The principles of Sun Tzu's Art of War have greatly impacted undergraduate science education students' research writing by promoting a structured and strategic approach to the research process. Students have learned to break down complex tasks, plan meticulously, and remain adaptable, which enhances their focus and motivation. Additionally, the emphasis on selective engagement and contextual analysis has improved their ability to identify and synthesize relevant research evidence, fostering critical thinking and informed decision-making. Furthermore, the application of clear and concise communication principles has refined their writing skills, resulting in more effective and persuasive research papers. Overall, integrating Sun Tzu's strategies into research writing mentorship has led to improved research quality and clarity, equipping students with essential skills for academic success.

2. Benefits of Applying Sun Tzu's Art of War Principles in Research Writing

Incorporating Sun Tzu's principles into research writing significantly enhances researchers' confidence, motivation, and organizational skills. By fostering a strategic mindset, researchers can approach complex topics with greater control and clarity, leading to improved data collection and analysis. This method not only facilitates the breakdown of intricate problems but also enhances decision-making and adaptability in the face of challenges. Ultimately, the application of these principles results in more thorough, impactful research and a more efficient, less stressful research process, empowering researchers to work effectively and confidently.

References

1. Abutabenjeh, S., & Jaradat, R. (2018). Clarification of research design, research methods, and research methodology. *Teaching Public Administration (Vol. 36, Issue 3, p. 237)*. SAGE Publishing. <https://doi.org/10.1177/0144739418775787>
2. Anmarkrud, Ø., Bråten, I., & Strømsø, H. I. (2013). Multiple-documents literacy: Strategic processing, source awareness, and argumentation when reading multiple conflicting documents. *Learning and Individual Differences. Elsevier BV, (Vol. 30, p. 64)*. <https://doi.org/10.1016/j.lindif.2013.01.007>
3. Baim-Lance, A., Onwuegbuzie, A. J., & Wisdom, J. P. (2020). Project Management Principles for Optimizing Publication Productivity of Mixed Methods Studies. *The Qualitative Report. Nova Southeastern University*. <https://doi.org/10.46743/2160-3715/2020.4149>
4. Beatty, K. C., & Hughes, R. L. (2005). Strategic aims: Making the right moves in leadership. *Leadership in Action (Vol. 25, Issue 4, p. 3)*. Wiley. <https://doi.org/10.1002/lia.1123>
5. Berndtsson, J., & Wackenhut, A. F. (2020). Truth, Sources, and the Fog of War. *Wackenhut, Routledge eBooks (p. 47)*. Informa. <https://doi.org/10.4324/9780429299261-7>
6. Calarco, A., & Gurvis, J. (2006). Flexible flyers: A leader's framework for developing adaptability. *Leadership in Action (Vol. 25, Issue 6, p. 14)*. Wiley. <https://doi.org/10.1002/lia.1142>
7. Chung, J. S., & Neuman, D. (2007). High school students' information seeking and use for class projects. *Journal of the American Society for Information Science and Technology, 58(10)*, 1503–1517. <https://doi.org/10.1002/asi.20637>
8. Cote, C. (2020, October 6). *Why is strategic planning important?* HBS Online. <https://online.hbs.edu/blog/post/why-is-strategic-planning-important>
9. Dukhan, N. (2005). Communication in undergraduate research. In *Proceedings of the 6th International Conference on Information Technology Based Higher Education and Training (pp. S2A/17–S2A/21)*. IEEE. <https://doi.org/10.1109/ithet.2005.1560315>
10. Edwards, J. (2024). *6 Training topics (& Tips!) for better workplace communication*. Niche Academy. <https://www.nicheacademy.com/blog/6-training-topics-tips-for-better-workplace-communication>
11. Gandrita, D. M. (2023). Improving Strategic Planning: The Crucial Role of Enhancing Relationships between Management Levels. *Administrative Sciences, 13(10)*, 211. <https://doi.org/10.3390/admsci13100211>
12. Greenberg, S. (2024). *Problem-solving techniques that work for all types of challenges*. Clearer Thinking. <https://www.clearerthinking.org/post/problem-solving-techniques-that-work-for-all-types-of-challenges>
13. Haines, D. (2024, August 15). *Confusion in writing and how to solve the problems*. Just Publishing Advice for Writers and Authors. <https://justpublishingadvice.com/confusion-in->

- [writing/#:~:text=By%20Derek%20Haines%20/%20August%202015,unclear%2C%20even%20with%20reaso nable%20grammar.](#)
14. Ho, S. K. M., & Choi, A. S. F. (1997). Achieving marketing success through Sun Tze's art of warfare. *Marketing Intelligence & Planning*, 15(1), 38–49. <https://doi.org/10.1108/02634509710155651>
 15. Holmberg, H., & Sperlich, B. (2021). Some personal advice concerning how to write precise, concise and eloquent research articles. *Frontiers in Sports and Active Living*, 3, 648929. <https://doi.org/10.3389/fspor.2021.648929>
 16. Hughes, C. A. (2020). Managing time and maintaining focus. In *Edward Elgar Publishing eBooks*. Edward Elgar Publishing. <https://doi.org/10.4337/9781788975636.00041>
 17. Iqbal, M. A. (2018). A brief guideline on writing research paper. *Update Dental College Journal*, 7(2), 1. <https://doi.org/10.3329/updcj.v7i2.36205>
 18. Jussila, J., Raitanen, J., Partanen, A., Tuomela, V., Siipola, V., & Kunnari, I. (2020). Rapid product development in university-industry collaboration: Case study of a smart design. *Technology Innovation Management Review*, 10(3), 49–59. <https://doi.org/10.22215/timreview/1336>
 19. Kouassi, J. (2015). Understanding Emerson's *Self-Reliance* in terms of education with a focus on language didactics. *Human and Social Studies*, 4(3), 90–101. <https://doi.org/10.1515/hssr-2015-0026>
 20. Mascle, D. (2013). Writing self-efficacy and written communication skills. *Business Communication Quarterly*, 76(2), 216–225. <https://doi.org/10.1177/1080569913480234>
 21. McGee, R., & Keller, J. L. (2007). Identifying future scientists: predicting persistence into research training. *CBE life sciences education*, 6(4), 316–331. <https://doi.org/10.1187/cbe.07-04-0020>
 22. Nguyen, T. A., & Nguyen, A. D. (2020). Applying business strategies to establish your research program. *Current Protocols Essential Laboratory Techniques*, 20(1), e41. <https://doi.org/10.1002/cpet.41>
 23. Pontis, S., Blandford, A., Greifeneder, E., Attalla, H., & Neal, D. M. (2015). Keeping up to date: An academic researcher's information journey. *Journal of the Association for Information Science and Technology*, 68(1), 22–35. <https://doi.org/10.1002/asi.23623>
 24. Ramakrishna, S. (2020). Achieving success and meaning in research maze shaped by the 21st century human civilization. *Drying Technology*, 39(7), 847–848. <https://doi.org/10.1080/07373937.2020.1829885>
 25. Salomão, A. (2024, November 13). Scope in research: Defining boundaries and focus. *Mind the Graph Blog*. <https://mindthegraph.com/blog/scope-in-research/>
 26. Sarfin, R. L. (2023). *5 Characteristics of Data Quality*. Precisely. <https://www.precisely.com/blog/data-quality/5-characteristics-of-data-quality>
 27. Sasson, N. J., Morrison, K. E., DeBrabander, K. M., Jones, D. R., & Ackerman, R. A., (2020). Social cognition, social skill, and social motivation minimally predict social interaction outcomes for autistic and Non-Autistic adults. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.591100>
 28. Scrimgeour, G. J., & Pruss, S. D. (2016). Writing highly effective reviews of a scientific manuscript. *Freshwater Science*, 35(4), 1076–1080. <https://doi.org/10.1086/688856>
 29. Sisson, J. D. (1992). How strategic is your planning? *American Water Works Association*, 84(11), 42–46. <https://doi.org/10.1002/j.1551-8833.1992.tb05880.x>
 30. Smith, A. (2024). Knowing your audience. *California Baptist University Writing Center*. <https://calbaptist.edu/life-at-cbu/student-support-services/writing-center/writing-skills-articles/Knowing%20Your%20Audience.pdf>
 31. Tang, T. K. Y. (2002). Powerhouse's management strategies for excellent business achievement. *Integrated Manufacturing Systems*, 13(6), 366. <https://doi.org/10.1108/09576060210436623>
 32. Tchetchik, A., Grinstein, A., Manes, E., Shapira, D., & Durst, R. (2015). From research to practice: Which research strategy contributes more to clinical excellence? Comparing high-volume versus high-quality biomedical research. *PLoS ONE*, 10(6). <https://doi.org/10.1371/journal.pone.0129259>
 33. Valenti, M. L. (2014). *The Mattis way of war: An examination of operational art in Task Force 58 and 1st Marine Division* [Master's thesis, U.S. Army Command and General Staff College]. <https://apps.dtic.mil/sti/pdfs/ADA613468.pdf>
 34. Yeager, D.S., Hanselman, P., Walton, G.M. et al. A national experiment reveals where a growth mindset improves achievement. *Nature* 573, 364–369 (2019). <https://doi.org/10.1038/s41586-019-1466-y>
 35. Zika-Viktorsson, A., Sundström, P., & Engwall, M. (2006). Project overload: An exploratory study of work and management in multi-project settings. *International Journal of Project Management*, 24(5), 385–394. <https://doi.org/10.1016/j.ijproman.2006.02.010>