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BENEFITS AND RELEVANCE IN LEARNING SCIENCE IN THE CONTEMPORARY TIMES AMONG GRADE 10 STUDENTS: A NARRATIVE INQUIRY

[1]Marshall James P. Dantic, [2] Christer Jeus Atrero, [3]Danilo V. Rogayan Jr.
[1, 3] *President Ramon Magsaysay State University*
[2]*San Agustin High School*

ABSTRACT

For the advancement of society, science education is crucial. In this study, the students' perceptions of the benefits and current relevance of scientific education were the main emphasis. Sixty students in Grade 10 had been selected for this study from three public national high schools. The participants wrote their short narratives about their perceived benefits of learning science and its relevance to the society. There are twelve themes emerged. The benefits perceived by includes: Acquisition of knowledge and understanding; Practical application in daily life; Appreciation of nature and earth; Personal and intellectual growth; and Preparation for further studies and careers. Meanwhile, the relevance of learning science includes: Problem solving and understanding causes; Practical application in daily life; Impact on society and medicine; Environmental awareness and solutions; and Improvement of society and everyday life. A conceptual paradigm is designed to describe the benefits and relevance of science learning.

KEYWORDS: Science, Science Learning, Benefits, Relevance, High School

1. INTRODUCTION

Science education holds significant importance for students of all age groups in the contemporary era. Nevertheless, the early introduction to science nurtures the innate curiosity of children. According to Ambag (2019), the field of science plays a crucial role in promoting objectivity within a realm governed by factual information. De La Cruz (2017) posits that the inclusion of science education in the curriculum enhances students' ability to engage in research, thereby enhancing their capacity for critical thinking. Engaging in critical thinking necessitates the acquisition and assessment of evidence prior to accepting or dismissing statements. Moreover, it is noteworthy that this phenomenon has the capacity to both address and give rise to many challenges (Rymanowicz, 2016).

Science education plays a crucial role in the progress of society, notably in the establishment and maintenance of laws and norms (Rogayan & Dantic, 2021). It is imperative for every nation to prioritize the establishment of a comprehensive educational system in order to foster the growth and progress of the nation as a whole (Omosewo, 2009). The ability to adapt is of paramount importance in order to succeed and persevere in the contemporary VUCAD2 (volatile, unpredictable, complex, ambiguous, disruptive, and diversified) landscape (Sadera, Torres, & Rogayan, 2020). The current situation of education is characterized by uncertainty, which can be attributed to the effects of globalization and the extensive utilization of advanced technology (2019).

The acquisition of scientific literacy is of utmost importance in the contemporary period. Despite the potential challenges that children may have in studying science during the aftermath of the pandemic, they continue to exhibit enthusiasm and perceive its relevance to their everyday experiences (Sparks, 2021). If this technology were applicable in daily circumstances, it would significantly enhance the sense of excitement. According to Zeyer (2015), the inclusion of health-related subjects within science education could potentially facilitate the development of a comprehensive comprehension of the significance of science and its pedagogical approach in educational institutions. The scientific community places significant emphasis on effective communication,

highlighting the need of disseminating scientific ideas and methodologies to individuals who may not ordinarily be engaged in the subject (Kola, 2013).

According to De La Cruz (2022), the primary objective of the science curriculum in the Philippines is to cultivate persons who possess a strong foundation in scientific knowledge and are capable of utilizing this knowledge to effectively tackle societal issues. As stated by SEI-DOST & UP NISMED (2011), the primary objective of science education in the country is to cultivate within students the capacity for scientific inquiry, along with the development of values and attitudes such as objectivity, curiosity, and honesty, as well as cognitive skills such as critical thinking.

The objective of this paper was to examine the perceptions of Grade 10 students regarding the significance and practicality of science education in the present era. The objective of this study is to fill a research vacuum by examining the perceptions of students at VUCAD2 on the scientific curriculum in contemporary times.

2. 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 (60) grade 10 students from three different national high schools in Zambales, Philippines that served as participants of the study. Purposive convenience sampling method were employed. The instrument used is composed of two questions; (a) What are the benefits of learning science in the contemporary times? and (b) What is the relevance of science education for the society? The data were interpreted using the steps from the thematic analysis by Braun and Clarke (2006).

3. RESULTS AND DISCUSSION

Benefits of Learning Science in the Contemporary Times among Grade 10 Students

Theme 1. Acquisition of Knowledge and Understanding

Science is an epistemological framework employed to acquire knowledge pertaining to the constituents, functioning, and origins of the natural world (University of California, n.d.). The field of study spans a diverse array of academic disciplines, including physics, chemistry, biology, and astronomy. This interdisciplinary approach allows for the investigation of the enigmatic aspects of the cosmos (NASA, n.d.) and facilitates progress in the realms of technology and medicine. Like some participants (GX24) and (GX31) described, "The benefits I have been obtained in learning science is all about what all we have in our planet earth. And my favorite topics in science tells about physics and chemistry because it is amazing." and "The benefits of science is expanding our knowledge in our environment especially when we, the students discover it." The possibility to learn new things through scientific concepts, such as the basic physics laws and complex biological processes, is provided by this field. In connection to that, a participant stated "In learning science, I was able to study about biology and how can cross our genes, and the things we inherit and how did it. In chemistry I learned how different substances react when mixed with others. Science is a subject where we are enabled to creak to things that we learned. (GX37)" Science education instills a profound awareness of the world and its origins, going beyond merely imparting facts and figures. Another notable response by a participant (P30), “As I am learning science, now I understand how the earth formed and it will rip apart by earthquakes.” Natural processes and complex phenomena like planet formation and earthquakes are covered in science education. Investigating scientific ideas improves knowledge of related fields and how they affect our comprehension (Fularon & Dantic, 2021). According to Ortolani (2021), by emphasizing the formation of strong conceptions of science and ideas about the nature of scientific activity and its applications, science education has the ability to aid in the development of the necessary talents and understanding.

Table 1. Themes on Benefits of Learning Science in the Contemporary Times

Generated Themes	Sample Significant Statements	Theme Description
Acquisition of Knowledge and Understanding	"The benefits I have been obtained in learning science is all about what all we have in our planet earth. And my favorite topics in science tells about physics and chemistry because it is amazing." (GX24)	This theme describes how science learning encourages the acquiring of knowledge and enhances understanding towards fundamental principles and interconnected disciplines.
Practical Application in Daily Life	"There are many benefits in learning science. Now, I have idea how to solve	This theme emphasizes the science learning, along with hands-on learning,

	the problem I encountered in real life based from what I learned." (GX13)	provides practical knowledge that can be applied in reality, which affects decision and problem solving skills.
Appreciation of Nature and Earth:	"Science is also studying about life. This subject also encourage us to take and give care to every living things surrounded us." (GX22)	This theme highlights that learning sciences fosters awareness and environmental appreciation towards students promoting stewardship.
Personal and Intellectual Growth:	"Some benefits of science is its expand knowledge about my surroundings. I am becoming more aware about my growth as a person." (GX22)	This theme describe that science learning is a catalyst for personal and intellectual growth of the participants, and equips them essential skills and knowledge.
Preparation for Further Studies and Careers:	"And the things I learned, I can use it when I study in college or for work. (GX03)"	This theme describes that learning sciences can influence their preparation for future course and career.

Theme 2. Practical Application in Daily Life

Science education is a potent instrument that possesses practical applications in everyday life. According to Akpan and Kennedy (2020), the acquisition of knowledge aids in comprehending the intricacies of our surroundings and facilitates the process of making well-informed choices. The acquisition of scientific knowledge enables individuals to get a deeper understanding of the world around them and effectively address challenges encountered in everyday life. A participant (GX13) said that "There are many benefits in learning science. Now, I have idea how to solve the problem I encountered in real life based from what I learned." According to Dantic, Tamoria, Gannar, Deymos, and Catig (2023), students can enhance their comprehension of the natural world and employ scientific ideas to address practical issues by actively engaging in experiential learning and doing experiments. In relation to that, other participants (GX27) and (GX34) described, "Some benefits I obtained from science are: knowing how science works in real life situations; solve problems through science, and how to develop myself through science." and "Some of the benefits that I have learn in science are: that deep understanding can be used in everyday lives, how technology is affecting us and learning the functions of the different things around us." Science education additionally provides students with the necessary skills to effectively solve difficulties, allowing them to proficiently identify and analyze issues while also devising creative and novel solutions (DeHaan, 2017). Furthermore, this acquisition of knowledge also cultivates a heightened sense of accountability towards the natural world and promotes the adoption of sustainable activities. As participant (GX33) said "The benefits I obtain in learning science is the knowledge about how can you live or how the life revolves. It can help you in your daily lives." By employing the practical applications of science beyond the confines of the educational setting, students go on an experience of exploration and knowledge acquisition.

Theme 3. Appreciation of Nature and Earth

The inclusion of science education in the curriculum is of the utmost significance as it fosters students' understanding and admiration for the natural world and the planet we inhabit. García-González and Schenetti (2022) argue that the interconnectedness between nature and learning facilitates the development of ecological consciousness and sustainable practices, hence advocating for a holistic educational framework. The provided material conveys essential knowledge on the complexities of the world, the underlying systems governing natural events, and the significance of environmental conservation. Regrettably, students exposure to nature remains incomplete due to their restricted access to outdoor areas and limited options for engaging in hands-on experiences. Despite engaging in scientific studies, individuals continue to hold an appreciation for nature and the various interconnected systems of the Earth. The participants (GX18) and (GX03) described, "Since I was in elementary, science is my favorite subject. And because of science, I understand the value of our mother earth and the environment" and "The benefits of learning science for me is obtaining important information about earth and mother nature." By doing so, they also learned stewardship like a participant (GX22) stated "Science is also studying about life. This subject also encourages us to take and give care to every living thing surrounded us." As students engage in the study of science, they cultivate a deep admiration for the complex and captivating aspects of the Earth, thereby nurturing a profound sense of wonder and reverence towards the natural world. According to Hadzigeorgiou and Schulz (2019), the process of scientific education allows students to set out on a transformative experience of exploration and understanding. This educational journey develops a deeper connection with the environment and the natural world, which has the potential to endure throughout their lives.

Theme 4. Personal and Intellectual Growth

The inclusion of science education in the curriculum is of utmost importance as it significantly contributes to the cognitive and personal development of pupils. According to Das, Amrita, and Singh (2014), the acquisition of information and skills enables individuals to comprehend the complexities of the world, critically evaluate issues, and make well-informed choices. Most of the participants (GX44) and (GX32) says about science learning, "Some benefits of science is its expand knowledge about my surroundings. I am becoming more aware about my growth as a person." and "My knowledge about my surroundings expanded and it makes life much comprehensible. Also, it gives explanation to the things that I don't know." The participants tell that learning science let them grow the ability to think critically and solve problems. And inquiry based learning in science lets it possible (Hart, 2018). In relation to that, another response from other participants (GX50) and (GX43) were stated "I am now not awkward to share my experiences with others because I can back it up with science explanation." and "By comprehending these things, I am personally evolving as a person into aware one." Through the process of education, students acquire the ability to engage in critical thinking (Pursitasari, Suhardi, Putra, & Rachman, 2020), comprehend the complexity of life, and cultivate self-awareness (London, Sessa, & Shelley, 2023), as well as curiosity and active involvement with the world.

Theme 5. Preparation for Further Studies and Careers

"I learned many things from sciences. Someday I will use it to create medicine. (GX52)" Several people have expressed similar viewpoints. The acquisition of knowledge in science is not solely limited to the accumulation of information, but also encompasses the cultivation of skills necessary for achieving success in further education and professional endeavors (Rogayan, Baterna, & Mina, 2020). There are other notable responses, "And the things I learned, I can use it when I study in college or for work. (GX03)" and "As a student of science curriculum, I obtain few benefits such as advance learning of out topics including research and robotics as preparation for college and senior high. (GX28)" According to Manalansan, Fogata, and Rogayan (2020), the acquisition of ideas, skills, and experiences through the study of science will act as crucial foundations for pursuing professions in STEM fields. These responses underscore the utilization of science in both scholarly and vocational settings. The students possess a comprehensive understanding of the significance of the knowledge and skills they acquire, particularly in the domains of science, technology, engineering, and mathematics (STEM), with regards to their future pursuits.

Relevance of Learning Science towards Society

Theme 1: Problem Solving and Understanding Causes

"The product of science are the things that we use nowadays to solve the problem, for example cellphones to communicate with our relatives. And by learning science we can do similar things (GX51)." The acquisition of scientific knowledge holds significant relevance, as it has the potential to yield substantial benefits for society. The importance of science education lies in its role in tackling societal issues and comprehending its underlying origins (Dantic, 2022). According to Rogayan and Dantic (2021), scientific education equips individuals with the essential knowledge and abilities required to critically assess intricate matters and make well-informed choices. The acquisition of scientific knowledge is highly pertinent as it equips learners with the necessary skills to address societal issues through informed and educated approaches. These are also justified by the participants (GX41 and GX49), "Scientific discoveries are solutions to the problems of society, like diseases, calamities and many more." and "By learning science we can be aware with the causes like in the pandemic. And we will know the policy that should be passed to solve the problem." In order to effectively address the pandemic challenges, it is essential to make well-informed decisions founded on scientific literacy. Understanding the causes and effects of the virus enables individuals to make informed decisions regarding preventative measures, treatment options, and public health policies, thereby contributing to effective solutions and a healthier future for all. As justified by one of the participants (GX41), " Scientific discoveries are solutions to the problems of society, like diseases, calamities and many more." UNESCO (2021) emphasized the significance of science in addressing social and global challenges. For individuals to make informed personal and professional decisions, they must comprehend and engage with science.

Table 2. Themes on Relevance of Learning Science in the Contemporary Times

Generated Themes	Sample Significant Statements	Theme Description
Problem Solving and Understanding Causes	Scientific discoveries are solutions to the problems of society, like diseases, calamities and many more. (GX41)	This theme highlights that science is relevant to equip people with knowledge and skills to address societal problems and develop solutions and informed decisions, develop practical.

Practical Application in Daily Life	Science is important in the society because it help us to know facts or obtain new knowledge from different lessons. There are different discoveries from science that we may use in our daily life. (GX25)	This theme explains that science learning is relevant to every day application in any given circumstances.
Impact on Society and Medicine	Science, as for my own perspective, is what run the society in the modern setting. The advancement achieved through the efforts of science have made the things we are using now. (GX26)	This theme emphasize that science learning is significant in shaping society and medical community that leads to breakthrough which will benefit the community.
Environmental Awareness and Solutions	If the practical science is obtained by all, then people can create campaign that will resolve environmental problem like garbage and pollution. (GX55)	This theme highlights that science learning promotes environmental awareness, addressing challenges fostering a generation of environmentally conscious individuals and preserving ecological balance.
Improvement of Society and Everyday Life	The discoveries through science are used to run the society. Science's relevance in society is evident through the discoveries and new knowledge it offers. (GX52)	This theme emphasizes that science learning improves society, empowers individuals with critical thinking, problem-solving, and innovation.

Theme 2: Practical Application in Daily Life

"Science is important in the society because it help us to know facts or obtain new knowledge from different lessons. There are different discoveries from science that we may use in our daily life (GX25)" The study of science is essential to our everyday existence (Ambag, 2018), as it provides valuable insights and practical applications that benefit society (University of California, n.d.). Like a participant (GX23) stated, "For the environment, now we can take care of it because of being aware with what will happen to us if we don't take care of it. Science also influences the improvement of economy." According to Howell and Brossard (2021), this occurrence facilitates individuals in acquiring a greater understanding of their immediate environment, enabling them to make well-informed choices and explore new approaches to problem-solving. The majority of participants express an agreement regarding the practical applicability of science education. Like participants' (GX28 and GX27) described, "Science is essential in our society in a way that science makes lots of opportunities for the students. It teachers us to make things easier and useable." and "Science is relevant in the society through making our lives much better and convenient." According to Saldivar, Fontina, Monje, Rogayan, and Deymos (2022) assert that science education confers individuals with the essential understanding required to effectively tackle obstacles and discover innovative resolutions.

Theme 3: Impact on Society and Medicine

Science education is essential for shaping society (Thompson, 2023), advancing medicine (Bynum, 2010), and making significant discoveries (Thompson, 2023; Bynum, 2010). Consequently, it has contributed to developments that benefit society. It was also highlighted from the participants (GX26, GX17, and GX30) responses, "Science, as for my own perspective, is what run the society in the modern setting. The advancement achieved through the efforts of science have made the things we are using now.", "Society discovers significant things through science.' and "It will also help people more in the future." And these breakthroughs help the population. As one of the participants (GX22) empahsized, "Science influence society we have. Because of overpopulation they invented things." The exponential growth in population has led to a corresponding increase in needs (United Nations Department of Economic and Social Affairs Economic Analysis, n.d.). The population expansion has had a significant impact on the most recent pandemic. Science literacy holds significant value (Dantic, 2022). As the participants (GX53, GX60, and GX46) also stated, "Understanding science make things possible to create medicines and defeat diseases.", "Science is important for the society to survive, like in pandemic. Without it, people won't know how to resolve it and what to do." and "Scientific knowledge can improve the society. They will be doing educated decisions that will benefit majority." In order to address these needs, it is important to pursue innovations and make significant breakthroughs. Science education has a crucial role in creating possibilities for students and future generations, while also assuming an important position in the field of medicine by facilitating the advancement of treatments and cures. The comprehension of scientific knowledge plays a crucial role in times of pandemics, as it empowers individuals to make well-informed choices and enhances the overall quality of life (Dantic & Rogayan, 2021).

Theme 4: Environmental Awareness and Solutions

"It is important to learn science for us to learn which will be good and bad for us and environment. (GX20)" According to Rogayan & Nebrida (2019) science education plays a crucial role in promoting environmental awareness and identifying solutions to urgent ecological challenges Marp and Juele (2016) emphasized that promoting scientific awareness helps preserve the environment and maintain ecological balance. One of the participants (GX18) emphasized that "We should learn it so as to avoid the garbage pollution that contributes to disaster." Students are aware with consequences of neglected environment. So another participant (GX23) highlighted, "For the environment, now we should take care of it. Because if not, we are aware with what will happen to us." As students go deeper into scientific concepts, their awareness of environmental issues such as pollution and climate change increases (Anilan, 2014). Improving the scientific knowledge related to environment concern will surely slow the climate change (GX42). Effectively addressing environmental issues requires scientific solutions (Andersen, 2021). As another participant (GX55) explained, "If the practical science is obtained by all, then people can create campaign that will resolve environmental problem like garbage and pollution." Therefore, by engaging in relevant and practical science education focused on the environment, it is possible to cultivate a group of individuals who are ecologically aware. The participants recognize the significance of scientific inquiry in identifying alternative approaches and resolving environmental challenges.

Theme 5: Improvement of Society and Everyday Life

The acquisition of scientific knowledge has a pivotal role in the progression of society and the improvement of everyday life (UNESCO, 2021). The acquisition of scientific knowledge enables individuals to enhance their comprehension of the world and themselves. According to a participant "Science is important in the society because it help us to know facts or obtain new knowledge from different everythings. There are different concepts from science that we may use in our daily life. GX25" Furthermore, it has been argued by Ma, Zhang, and Luo (2023) that science education plays a crucial role in providing individuals with the essential skills of critical thinking and problem-solving, which are vital for effectively addressing complex social challenges. Additionally, it enables the development of innovative concepts and the progression of technical breakthroughs, hence resulting in enhancements across various fields including healthcare, agriculture, and environmental preservation (Dantic, 2021). A participant (GX52) stated that "The discoveries through science are used to run the society. Science's relevance in society is evident through the discoveries and new knowledge it offers. And participants also justify that, from practical applications to everyday life, science presents opportunities for advancements that benefit society as a whole (GX25 & GX26). Our modern society has been formed by the continual progress of science, which also promotes innovation (Azevedo & Duarte, 2018).

4. CONCLUSION

Based from the findings, it conclude that science learning offers numerous benefits, including knowledge acquisition, practical application, appreciation of nature, personal growth, and career preparation, shaping a well-rounded global citizenry. Science learning is relevant cause it has impacts on human life by equipping individuals with problem-solving skills, enhancing well-being, promoting environmental awareness, and fostering innovation, knowledge, and informed decision-making, ultimately improving society and global community.

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