

## **Cultural Perspective in Astronomy Education**

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### **ABSTRACT**

Looking into the night sky for centuries humanity has weaved stories that span a number of civilizations and even managed to cross borders between various nations. The research focused on the merger of cultural and astronomical aspects in teaching, specifically Astronomy. The cultural beliefs which participants hold were sought through semi-structured interviews to understand their perception of astronomy topics. The experiment was an observational study in which the researchers converted the interview data into text and examined it according to thematic. In order to determine patterns and topics that were culturally relevant to astronomical matters, thematic coding was used. This process required various coding steps for reliability and precision. Participants emphasized how much cultural knowledge helped them understand astronomy better. In sharing this knowledge, they discovered that despite being studied scientifically, cultural beliefs act as a linkage and not a blockage. The research which was carried out by the astronomers in the department for astronomical studies brought out the importance of cultural views in enriching students' learning experiences concerning astronomy. There is therefore a need to include culture in the teaching of astronomy so as to enable learners to appreciate it better. Through this, the interrelations between culture and astronomic knowledge could be easily understood, hence more interesting educational facilities for all students.

**Keywords: Astronomy Education, Cultural Perspective, Scientific, Integration, Culture, Astronomical Concepts,**

## I. INTRODUCTION

Studying the mysteries of the cosmos, humanity has gazed at the night sky, weaving stories, and navigating journeys. This universal human experience transcends cultures, yet the interpretations and relationships formed with celestial objects altered greatly. This great variety of cultural astronomy offers a powerful communication channel through which to enhance astronomy education. This qualitative research delves to explore the cultural beliefs of astronomy students regarding personal experiences towards astronomy topics and what motivation drives them to study astronomy. According to International Encyclopedia of the Social and Behavioral Sciences (2001), cultural perspective refers that each individual develops into a person who thinks, feels, and acts adaptively and effectively within a given socio-cultural context, both by incorporating cultural meaning systems into his or her memories and by coordinating his or her responses with the possibilities of outside factors that are defined and frequently taken for granted in the context.

The conceptualization of the cultural perspective in astronomy education is an emerging field that seeks to integrate the social and historical context of astronomical knowledge. This interdisciplinary approach, known as Cultural Astronomy, aims to recognize and incorporate the diverse contributions and understandings of astronomy from various cultures and societies throughout history. Factors contributing to the conceptualization of cultural perspectives in astronomy education include the beliefs and practices of ethnic groups, celestial objects' significance in daily life, and traditional myths and stories. According to Spinelli et al. (2019), they discussed the advantages of ethnoastronomy in preserving cultural heritage and assisting indigenous students in interpreting astronomy from their cultural standpoint. Collectively, these studies emphasize the significance of integrating cultural perspectives into astronomy education to enhance inclusivity and foster a deeper understanding of astronomical concepts across various cultural contexts.

The rich cultural diversity and history inherent in astronomy provide a foundation for integrating culture into education, as seen in the Conceptual Framework for Culture in Astronomy Education. Additionally, indigenous star knowledge emphasizes storytelling and relationships, highlighting the importance of inclusion and relevancy in cultural perspectives in astronomy education. Furthermore, Cultural Astronomy offers a discipline that can reshape teaching strategies by linking theoretical astronomical concepts with real-world experiences, such as traditional navigation methods and archaeological sites like Chankillo. These factors collectively contribute to the development of innovative pedagogical frameworks that bridge cultural diversity with astronomical learning. Astronomy has a long history of captivating humanity, influencing not only scientific advancements but also inspiring diverse cultural beliefs and practices. Cultural astronomy bridges this gap, exploring how societies understand and interact with the cosmos (Salimpour & Fitzgerald, 2022).

Astronomy education plays a vital role in establishing a connection between students and the vast world around them, extending far beyond their immediate

environment (Picazzio, 2016). Cultural perspectives provide meaning and connection to astronomical concepts, making them more engaging and relatable. Furthermore, education serves as a powerful tool for transmitting cultural knowledge and values (Kapur, 2018).

Integrating cultural astronomy into the curriculum allows students to develop a deeper appreciation for both science and their cultural heritage. However, acknowledging these diverse perspectives requires respecting non-Western worldviews and their associated cultural frameworks (Ruggles, 2009).

This study delves into this connection between culture and astronomy through a social semiotics lens. It explores participants' responses and uses case studies to illustrate this cultural influence. Ultimately, the research proposes a framework that incorporates cultural contexts into astronomy education, fostering a more respectful and inclusive learning environment.

## **II. METHODOLOGY**

This study conducted qualitative research using an instrumental case study approach. According to Hassan, M. (2024), a case study is a research method that entails conducting a thorough evaluation and analysis of a specific phenomenon or case, such as an individual, organization, community, event, or scenario. Furthermore, an instrumental case study is a type of case study that is used to comprehend an event that contributes to accomplishing an objective, and it is important when the researcher wants to understand whether the phenomenon contributes to the achievement of a goal.

### ***Participants***

The participants were selected through an online survey. Purposive sampling technique is a non-randomized approach in research to select possible participants who meet the inclusion criteria applicable to the study (Hassan, 2024). Thus, purposive sampling techniques were implemented to select the participants that would suit for the research, and to achieve its objectives. There are a total of five (n=5) interviewees who are currently enrolled in Bachelor of Science in Astronomy at Rizal Technological University, have some prior exposure to cultural interpretations of astronomy, and are willing to be interviewed. The five interviewees are: Student 1 (S1), Student 2 (S2), Student 3 (S3), and Student 4 (S4), all of them are 20 year old second-year astronomy students, and Student 5 (S5) is a 19 years old first-year astronomy student.

### ***Data Gathering***

The researchers conducted an one-on-one interview for gathering in-depth qualitative data of the perspectives and experiences of the participants. According to the article of Hecker and Kalpokas (n. d.), interviews are commonly used in a case study since it provides rich data, such as experiences, viewpoints, and understanding of the selected individuals' in a study. Furthermore, a semi-structured interview was

implemented to the interviewees. In fact, it is an exploratory type of interview that was commonly used in social sciences for qualitative research. In addition to offering a general structure through a pre-planned guide or procedure that centers around a central topic, a semi-structured interview facilitates exploration and allows for the exploration of topical paths as the discussion progresses (Berler & Magaldi, 2020).

The interview concepts are determined by one-on-one interview along with instrumental case study: (i) assisted interviewees to share their personal experiences towards astronomy topics; (ii) encouraged participants to understand their existing knowledge about Astronomy; (iii) let the interviewees to share their beliefs and philosophical views. Hence, the fundamentals for asking questions in the three stages, based on the transcription, contains the following:

The researchers distributed a letter agreement to each participant for gathering their formal consent for the interview and for answering the given semi-structured questionnaires. Furthermore, an email was also distributed to the participants for acknowledgement of their chosen interview schedule and the google meet link, where the interviews were held. When interviewing the following were considered by the researchers: provided a powerpoint presentation for the participants; did their best to listen and respect the interviewees' talks. The interviewer gives in-depth questions without interrupting the participants' thoughts. Before the interview ended, the interviewer considered the participant's right for correction and revision of their answers. The interview was recorded in video format and transcribed verbatim into textual data by the researchers.

### ***Data Analysis***

The study ensued the steps for analysis in instrumental case study as follows: (i) listened carefully and thoroughly throughout the interviewees' descriptive responds; (ii) transformed their descriptive experiences from voice to textual data by transcribing; (iii) comprehended the eloquent informations in textual data that is helpful to the study objectives and scope; and (iv) rearrange the eloquent informations in textual data and summarized them by interpreting the findings. The steps were followed by two coders. The coders employed thematic codes to the discussions.

***Example Table for thematic code plan for identified themes***

<b>Themes</b>	<b>Codes</b>	<b>Descriptive Responses</b>
Ex. Educational Development	Ex. Learning Advancement	Indicate here the statement of the participants and cite it.

The study utilized thematic analysis based on the study of Agnes, A. H. et. al (2022), it is a data analysis approach which involves skimming and reading through a data set and identifying its patterns to get the themes. Additionally, thematic analysis is a versatile technique to qualitative analysis, which allows the researchers to

generate new ideas and concepts from the data (Agnes et. al, 2022). In fact, it is also associated with instrumental case study since it engaged on participant's ideas, opinions, knowledge, experiences, or beliefs generated from qualitative data. The thematic analysis used in this study was carried out using a six-phase coding process: (1) understanding the data; (2) developing initial codes; (3) looking for themes among codes; (4) evaluating themes; (5) defining and identifying themes; and (6) providing the end result (Clarke & Braun, 2013).

The coder used combined inductive and deductive qualitative coding techniques to establish a comprehensive and nuanced understanding of the experiences of the participants. Qualitative coding is the practice of methodically classifying extracts derived from qualitative data in order to identify themes and patterns. Moreover, coding qualitative data is an excellent technique to acquire a better understanding of your findings (Delve, n.d.). The qualitative data of the study was analyzed using a software intended for qualitative data analysis, DelveTool. There are five steps for coding using the inductive-deductive approach, as follows:

- 1.) Started by using deductive coding: the coder developed an initial set of codes from the research questionnaires, then assigned it to relevant excerpts.
- 2.) Shift to inductive coding: the coder opened new codes from the data, and developed them based on the patterns, themes, and insights occurring originally from the qualitative data.
- 3.) The coder repeated and Improved continuously all the codes from the textual data. Also, merged the same codes, splitted the codes that covered multiple concepts, and assured the consistency of the code definitions.
- 4.) Classified the codes into categories: grouped the related codes into broader categories to structure the analysis.
- 5.) Repeated the coding rounds for all participants.

### ***Data Validity and Reliability***

To ensure reliable and insightful data, the researchers provided the following: (1) inclusion criterion in selecting the participants; (2) Emailed them the Aide Memoire and Informed Consent Form for their to have insights on the background of the study, and to acknowledge their ethical and legal rights. By integrating these, the study aims for the entrustment and transparency of the participants and vice versa.

This yielded in-depth data from five participants. To ensure the credibility of their qualitative research, researchers should focus on strengthening its reliability and validity. This involves considering the underlying philosophy of knowledge, how they acquire knowledge, and the overall research approach (Rose, 2020).

The two researchers independently coded and interpreted the data through a software called DelveTool, an easy-to-use online platform for collaborative qualitative analysis, helping researchers efficiently uncover insightful findings. Regardless of the coding method employed, ensuring both validity and reliability is paramount in

qualitative research.

The researchers use the peer debriefing to probe their process in an independent and unbiased way. It is a collaborative process within qualitative research where researchers discuss their findings, interpretations, and methodological approaches with impartial colleagues to enhance the research's validity and credibility.

### ***Data Availability Statement***

The research data is not available since the gathered data of the researchers are protected by the **Republic Act 10173 – Data Privacy Act of 2012** which aims to protect personal data in information and communications systems both in the government and the private sector.

## **I. RESULTS AND DISCUSSION**

### ***PERSONAL EXPERIENCES***

*Table 1: Thematic code plan on themes of Personal Experiences*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
Personal Experiences	Knowledgeable	"regarding po dyan nung una kong pumasok sa astronomy is wala po talaga akong kaalam alam na kung ano po yung matatalked dito, alam ko lang is about planetarium" (S1)  "I think if I rate my knowledge about astronomical topics from 1 to 10, 1 being the lowest and 10 being the highest, I think my rating will be 6 out of 10." (S3 & S5)  "i think i am pretty knowledgeable pero hindi

		siya ganon ka indept kasi 2nd yr pa lang ako” (S2 & S4)
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The most common code among the interviewees under the personal experience theme is Knowledgeable. All of the interviewees had expressed a statement that is denoted under this code. Participants 3 and 4 provided a clear definition of their progression in learning astronomy with their statement, “I think if I rate my knowledge about astronomical topics from 1 to 10, 1 being the lowest and 10 being the highest, I think my rating will be 6 out of 10.” On the other hand, participant 2 and 4 expressed both their confidence, and deficiency in their current astronomy knowledge in their statement, “I think i am pretty knowledgeable pero hindi siya ganon ka indept kasi 2nd yr pa lang ako.” Lastly, participant 1 expressed his limited knowledge after taking astronomy program in the statement, “regarding po dyan nung una kong pumasok sa astronomy is wala po talaga akong kaalam alam na kung ano po yung matatalked dito, alam ko lang is about planetarium.” Overall, it can be stated that it is common for BS astronomy students to have a personal assessment regarding their knowledge about the subject based on what they have experienced from the program so far. Lastly all of the interviewees displayed doubt, and inconfidence at their current knowledge about astronomy.

*Table 1.1: Thematic code plan on themes of Personal Experiences*

THEMES	CODES	DESCRIPTIVE RESPONSES
Personal Experiences	Interested	<p>”kung gaano ako ka interesado matuto ng astronomy topics yung medyo lang depende kung paano ba dineliver saakin yung information or pano ko ba siya natanggap with.. with ano ba.. with serious or not kasi pag serious alam naman nating dapat yung seryoso lang dapat walang interesting, dapat tutok lang” (S1)</p> <p>“i am highly interested sa mga ah.. astronomy topics kasi ah.. astronomy was one of my choices talaga” (S2)</p>

		<p>“siguro as a astronomy student syempre kailangan kong maging interested sa mga astronomy topics especially yung mga recent developments na nangyayari sa astronomy” (S4)</p>
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The third most common code under the Personal experience theme, is interested. There are three instances in which the code Interested is distinguished, from the three interviews. Participant 2 and 4 expressed a personal interest with learning astronomy, in their statement, “I am highly interested sa mga ah.. astronomy topics kasi ah.. astronomy was one of my choices talaga”, and “siguro as a astronomy student syempre kailangan kong maging interested sa mga astronomy topics especially yung mga recent developments na nangyayari sa astronomy.” On the other hand, participant 1 expressed interest in how subjects are being taught with his statement, “kung gaano ako ka interesado matuto ng astronomy topics yung medyo lang depende kung paano ba dineliver saakin yung information or pano ko ba siya natanggap with.. with ano ba.. with serious or not kasi pag serious alam naman nating dapat yung seryoso lang dapat walang interesting, dapat tutok lang”. Overall, it seems 3 out of 5 astronomy students are personally interested in the subject.

*Table 1.2: Thematic code plan on themes of Personal Experiences*

THEMES	CODES	DESCRIPTIVE RESPONSES
Personal Experiences	Fascinated	<p>“noong bata kasi ako mahilig ako sa planetary ganyan kasi nakakamangha naman talaga yung mga planets lalo na kapag bata ka tapos habang tumatagal is parang ayun parang nagustuhan kong maging astronomy” (S1 &amp; S4)</p> <p>“yung past experience ko nung high school where in a meron kaming subject na earth science so natatalked ko yung mga</p>



		<p>planets then it came to a point na ano ako naging contestant madalas sa mga science contest especially sa astronomy kaya choice ko rin talaga yung astronomy ayun.” (S2)</p> <p>“bata pa ko mahilig akong.. Parang.. Naamaze lang ako kay mang tani ganyan tas parang since then nalaman ko yung meteorology pala is under astronomy ganyan.. So yun parang kung tutuusin naman lahat ng bata halos dream nilang maging astronaut, so isa ko sa mga batang yun ganun.” (S3)</p> <p>“I really like science. When I was in grade 3, I realized that science is too big for me. So, I decided to focus my attention to one field and I chose astronomy because, first, astronomy is a good field because, you know marami pang hindi nadi-discover dito, and It's a good field to start deepening my knowledge in science.” (S4)</p>
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The second most common code among all of the interviewees' personal experience is fascinated. There are particularly six instances for all the interviews where the code fascinated can be denoted. Four of the interviewees had personal experience along learning astronomy that is fascinating to them. Particularly, participants 1, 3, and 4 expressed their personal experiences in their childhood that made them fascinated about astronomy, “noong bata kasi ako mahilig ako sa planetary ganyan kasi nakakamangha naman talaga yung mga planets lalo na kapag bata ka tapos habang tumatagal is parang ayun parang nagustuhan kong maging astronomy”, a shared sentiment of participant 1, and 4, “bata pa ko mahilig akong.. Parang.. Naamaze lang

ako kay mang tani ganyan tas parang since then nalaman ko yung meteorology pala is under astronomy ganyan.. So yun parang kung tutuusin naman lahat ng bata halos dream nilang maging astronaut, so isa ko sa mga batang yun ganun,” as expressed by participant 3. On the other hand, participant 2 only has his fascinating personal experience about astronomy in high school, “yung past experience ko nung high school where in a meron kaming subject na earth science so natatalked ko yung mga planets then it came to a point na ano ako naging contestant madalas sa mga science contest especially sa astronomy kaya choice ko rin talaga yung astronomy ayun.” Overall, 4 out of 5 astronomy students have a personal experience in astronomy that can be said to be fascinating to them.

*Table 1.3: Thematic code plan on themes of Personal Experiences*

THEMES	CODES	DESCRIPTIVE RESPONSES
Personal Experiences	Motivated	<p>“nakakatulong siya... motibasyon siya para mas icorrect ko pa kung ano yung pinaniniwalaan ng iba or tama ba yung pinaniniwalaan nila or hindi.” (S1)</p> <p>“basically astronomy motivates me to study astronomy. so parang ganun, parang natural na lang sakin na gusto ko siyang iistudy since i'm nacucurious talaga ko sa... parang kung titignan mo kasi wala siyang ambag sa buhay natin pero in reality it is really important field of science” (S2)</p> <p>“So parang naginite nga yun para sakin.. Parang naging desidido na parang gusto ko na mag astronomy ganyan nung grade 8 ako ah tapos parang ayun parang nagreresearch ako about mga basic” (S3)</p>

		<p>“siguro since matagal ko na tong gusto, nung nakuha ko yung course or yung program... parang mas nag nag-ignite yung motivation ko para na mag aralan pa and mas matutunan yung subject in a deeper manner” (S4)</p>
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Also the second most common code under the Personal experience theme, is motivated. There are four instances in which the code motivated appear in all of the interviews, in which four of the interviewees expressed in their statement. Participant 1 expressed on how his personal experiences helped him to be motivated in correcting his misconceptions in astronomy, “nakakatulong siya... motibasyon siya para mas icorrect ko pa kung ano yung pinaniniwalaan ng iba or tama ba yung pinaniniwalaan nila or hindi.” Participant 2 and 3 expressed their deep personal motivation in studying astronomy as they stated, “basically astronomy motivates me to study astronomy. so parang ganun, parang natural na lang sakin na gusto ko siyang iistudy since i'm nacucurious talaga ko sa... parang kung titignan mo kasi wala siyang ambag sa buhay natin pero in reality it is really important field of science,” “So parang naginite nga yun para sakin.. Parang naging desidido na parang gusto ko na mag astronomy ganyan nung grade 8 ako ah tapos parang ayun parang nagresearch ako about mga basic,” respectively. Lastly, for participant 4 his personal experience that led his motivation further towards astronomy comes in college, “siguro since matagal ko na tong gusto, nung nakuha ko yung course or yung program... parang mas nag nag-ignite yung motivation ko para na mag aralan pa and mas matutunan yung subject in a deeper manner.”

*Table 1.4: Thematic code plan on themes of Personal Experiences*

THEMES	CODES	DESCRIPTIVE RESPONSES
Personal Experiences	Partially Motivated	<p>“sa may motibasyon ko is more on family na lang” (S1)</p> <p>“hindi kasi ako totally motivated, actually to be honest hindi talaga ko motivated na magaral ng astronomy however uh syempre may mga part dito</p>

		sa astronomy na parang dun ko nakita yung interest ko” (S3)
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An uncommon code under the personal experience theme, in which was only denoted twice. Participant 1 expressed lack of personal experiences and reasons, to be fully motivated towards learning astronomy, “sa may motibasyon ko is more on family na lang”. On the other hand, Participant 3 only had an particular area in which he had experience that served as his motivation, “hindi kasi ako totally motivated, actually to be honest hindi talaga ko motivated na magaral ng astronomy however uh syempre may mga part dito sa astronomy na parang dun ko nakita yung interest ko.” It can be easily deduced here that not all personal experience of students could push them in studying astronomy utmostly.

*Table 1.5: Thematic code plan on themes of Personal Experiences*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
Personal Experiences	Curiosity	<p>“dito sa astronomy, sa ating course program kasi mahirap yung mga concepts but as we can see uh pag nakita mo siyang uh may cultural impact siya macurios ka talagang aralin.” (S2)</p> <p>“comets dito sa certain culture sa pilipinas na ‘tae ng bituin’ so yun, para sakin naging helpful yun kasi makikita mo yung shape nung mismong comets sa night sky so para siyang dumadaan lang ganun, so nakahelpful din yun for me para tumaas yung curiosity ko regarding sa comets” (S2)</p> <p>“its okay to be curious especially pag astronomy student ka kasi hindi mo talaga alam yung mga</p>

		sagot na maaari mo pang makuha o minsan diba parang hindi mo pa alam yung mga tanong na kailangan mong itanong” (S4)
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A common code under the personal experience theme is curiosity. There are three instances in which this code has been distinguished in all of the interviews. Participant 4 expressed his personal experience being an astronomy student was the reason for needing to be curious, “its okay to be curious especially pag astronomy student ka kasi hindi mo talaga alam yung mga sagot na maaari mo pang makuha o minsan diba parang hindi mo pa alam yung mga tanong na kailangan mong itanong.” Participant 2 expressed curiosity in some of his personal experiences, particularly in some of cultural belief he heard of, “comets dito sa certain culture sa pilipinas na 'tae ng bituin' so yun, para sakin naging helpful yun kasi makikita mo yung shape nung mismong comets sa night sky so para siyang dumadaan lang ganun, so nakahelpful din yun for me para tumaas yung curiosity ko regarding sa comets.” Moreover, participant 2 also acquired curiosity while being an astronomy student towards cultural astronomy, “dito sa astronomy, sa ating course program kasi mahirap yung mga concepts but as we can see uh pag nakita mo siyang uh may cultural impact siya macucurious ka talagang aralin.”

*Table 1.6: Thematic code plan on themes of Personal Experiences*

THEMES	CODES	DESCRIPTIVE RESPONSES
Personal Experiences	Core Beliefs	<p>“pinaniniwalaan ko ring sumusunod sakin yung buwan although alam ko yung scientific basis nun na hindi naman talaga siya sumusunod sayo” (S2)</p> <p>“siguro yung knowledge ko na nagagamit ko pa rin hanggang ngayon or pinaniniwalaan ko pa rin ngayon pero totoo naman kasi yun... feeling ko yung ano yung mga basic lang, yung pagkakasunod sunod ng solar system ganyan”</p>

		<p>(S3)</p> <p>“I cannot relate cultural belief and the phenomena, celestial phenomena such as tide, eclipses, and planetary movement. So, for me hiwalay syang topic so halimbawa ‘pag may nakita akong comet hindi ko sya ina-associate bilang bad omen or good luck, so walang ganon.” (S5)</p>
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Another common code under personal experience theme, is core belief. There are three instances in which this code can be distinguished from the statements of three participants. For participant 2 and 3, personal experiences of cultural astronomy had led them in developing core beliefs that up until now they hold onto respectively they stated, “pinaniniwalaan ko ring sumusunod sa kinang buwan although alam ko yung scientific basis nun na hindi naman talaga siya sumusunod sayo,” “siguro yung knowledge ko na nagagamit ko pa rin hanggang ngayon or pinaniniwalaan ko pa rin ngayon pero totoo naman kasi yun... feeling ko yung ano yung mga basic lang, yung pagkakasunod sunod ng solar system ganyan.” On the other hand, participant 5 experience lead him to have a core belief of separation of astronomy and cultural astronomy which can be seen in his statement, “I cannot relate cultural belief and the phenomena, celestial phenomena such as tide, eclipses, and planetary movement. So, for me hiwalay syang topic so halimbawa ‘pag may nakita akong comet hindi ko sya ina-associate bilang bad omen or good luck, so walang ganon.”

*Table 1.7: Thematic code plan on themes of Personal Experiences*

THEMES	CODES	DESCRIPTIVE RESPONSES
Personal Experiences	Coping Mechanism	<p>“yun nung belief na yun hindi ako naniniwala dun actually ha na nakakaffect siya sa mood ng people ganyan pero parang ano, parang ginagawa ko siyang ano uh parang yun yung pantawid ko e na parang uh super malas ko, super malas ko ng araw na</p>

		yun so parang nalaman ko na merong mercury retrograde pala so parang sakin siguro dun ko na lang siya sisi kasi ayokong isisi sa sarili ko na ano uh baka minamalas talaga ako today baka kasi minamalas talaga ako today ganun so parang kahit nakakahiya man as astronomy student, na parang naniniwala ka totally na nakaka affect sayo yung mga ganun” (S3)
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One of the least common codes under the personal experience of them, is coping mechanism, in which only expressed by one interviewee. In the context of cultural astronomy, Participant 3 had personally experienced using these beliefs as a coping mechanism in unfortunate situations, “yun nung belief na yun hindi ako naniniwala dun actually ha na nakakaffect siya sa mood ng people ganyan pero parang ano, parang ginagawa ko siyang ano uh parang yun yung pantawid ko e na parang uh super malas ko, super malas ko ng araw na yun so parang nalaman ko na merong mercury retrograde pala so parang sakin siguro dun ko na lang siya sisi kasi ayokong isisi sa sarili ko na ano uh baka minamalas talaga ako today baka kasi minamalas talaga ako today ganun so parang kahit nakakahiya man as astronomy student, na parang naniniwala ka totally na nakaka affect sayo yung mga ganun.” It is a rare occurrence for an astronomy student to cope using astronomical beliefs.

*Table 1.8: Thematic code plan on themes of Personal Experiences*

THEMES	CODES	DESCRIPTIVE RESPONSES
Personal Experiences	Clarity	“sa tingin ko hindi siya nakakashape ng interpretation ko kasi nga since ngayon nag-aaral na ako parang alam ko na kung ano ba talaga yung talagang para san yun” (S4)

Another one of the least common codes under the personal experience of them, is Clarity, which is also denoted only once. In the context of cultural belief, Participant 4 expressed that due to his personal experience he has a clear understanding of what believe, “sa tingin ko hindi siya nakakashape ng interpretation ko kasi nga since ngayon nag-aaral na ako parang alam ko na kung ano ba talaga yung talagang para san yun.” It can be stated that for a few there is a clear boundary between cultural, and scientific astronomy which has developed through their personal experiences while learning astronomy.

*Table 1.9: Thematic code plan on themes of Personal Experiences*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
Personal Experiences	Hesitated	“natakot ako nung umpisa kasi sabi ko baka makaffect yun sa belief ko, sa love ko kay god ganyan pero nung tumagal naman parang inaccept ko na hindi naman magsasabi ang mga scientists ng ganyan kung wala naman talagang proof diba” (S3)

Another one of the least common codes under the personal experience of them, is Hesitated, which is also denoted only once. Participant 3 personally experienced hesitation between choosing a scientific perspective, or religious belief, “natakot ako nung umpisa kasi sabi ko baka makaffect yun sa belief ko, sa love ko kay god ganyan pero nung tumagal naman parang inaccept ko na hindi naman magsasabi ang mga scientists ng ganyan kung wala naman talagang proof diba”. It can be stated that personal beliefs, and scientific knowledge can be a conflict to some students.

*Table 1.10: Thematic code plan on themes of Personal Experiences*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
Personal Experiences	Influenced	“mas nakakaimpluwensya siya para pag-aralan ko yung astronomy... para mas mapag-aralan ko pa yung astronomy.” (S4)



One of the least common codes under the personal experience of them, is Influenced, which is also denoted only once. In the context of cultural astronomy participant 4 expressed how his personal experiences in cultural astronomy influenced him in studying astronomy as he stated, “mas nakakaimpluwensya siya para pag-aralan ko yung astronomy... para mas mapag-aralan ko pa yung astronomy.” It can be stated that cultural immersion towards astronomy can only influence a few in studying further astronomy, to college.

## **ASTRONOMY EDUCATION**

*Table 2: Thematic code plan on themes of Astronomy Education*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
Astronomy Education	Interested Topics	<p>“pinakagusto ko lang na topic about astronomy is about sa planetary” (S1)</p> <p>“uh actually interested ako sa parts ng.. sa.. sa cosmology yung.. yung mga malalalim na paksa sa astronomy” (S2)</p> <p>“interested din ako sa ano e yung how astronomy [background noise] is related to development ng ano.. ng culture mga ganon” (S2)</p> <p>“yung physics talaga mhmm behind ano... gusto ko talagang palalimin yung knowledge ko about planetary science kasi uh since parang.. nag online tayo nun diba so para sakin ano hindi ko siya totally natutukan pero gusto ko siyang aralin” (S3)</p> <p>“siguro yung unified theory</p>

		<p>yung kung paano magu-unify yung general relativity and yung quantum physics yun yung topic na gusto kong pag aralan o interested ako although parang mahirap pa siyang gawin pero yun siguro bukod dun, yung mga unknown stuffs like dark matter, dark energy” (S4)</p> <p>“solar astronomy and galactic astronomy because there's so much more we can explore and find in this field” (S5)</p>
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The most common code among all the interviewees under the Astronomy education theme, is Interested topic. The code appears in all of the interviewees' statements, with six distinguished iterations. All of the interviewees had a field of interest in astronomy education they are most interested in. While all of them had a technical field in astronomy they are interested in, Participant 2 also showed interest in cultural background in astronomy education, “interested din ako sa ano e yung how astronomy [background noise] is related to development ng ano.. ng culture mga ganon. It is easily deducible that there are aspects in astronomy education that astronomy students had the most interest in,

*Table 2.1: Thematic code plan on themes of Astronomy Education*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
Astronomy Education	Learning Experiences	<p>“ang masasabi ko po is hindi naman po siya ganung naging mahirap kasi po magagaling po yung una ko pong naging prof ng first year, which is pinaliwanag nila yung fundamentals ng mga astronomy ganyan tapos diniscuss nila sa way na maiintindihan ng mga</p>

		<p>beginner pagdating sa astronomy na may ganitong concept at pinaliwanag niya kung paano ba nakuha yung ganon at mas sim... simple at more on examples yung binigay nila kaya mas naunawaan ko kung anong meron sa astronomy” (S1)</p> <p>“so studying astronomy topics uhh.. challenge ganun kasi syempre mahirap siyang igrasp yung concepts niya pero in term ano e it makes you fulfilled and happy at somehow na magegets mo yung topic na yun” (S2)</p> <p>“Inaral ko yung mga basics ng astronomy before akong pumasok sa college” (S3)</p> <p>“I always want to read astronomical books and stuff and also astronomical movie-related, astronomy-related movies. And also, I devoted my free time in advancing my knowledge in astronomy.” (S5)</p> <p>“it is both thrilling and also frustrating” (S1 &amp; S5)</p>
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The second most common code among the interviewees under the Astronomy education theme, is Learning experience. The code appears in four out of five interviewees statements, but is also one of the most iterated code with six instances of appearance. Participants 1, 2, 3, and 5 expressed their learning experience in astronomy education such as the challenges, how they cope, and the effort of both the faculty and students to learn the subject. Participant 1 expressed the difficulty of education in astronomy as a learning experience, and how they keep up, which can be

seen in their statement respectively “ang masasabi ko po is hindi naman po siya ganung naging mahirap kasi po magagaling po yung una ko pong naging prof ng first year, which is pinaliwanag nila yung fundamentals ng mga astronomy ganyan tapos diniscuss nila sa way na maiintindihan ng mga beginner pagdating sa astronomy na may ganitong concept at pinaliwanag niya kung paano ba nakuha yung ganon at mas sim... simple at more on examples yung binigay nila kaya mas naunawaan ko kung anong meron sa astronomy,” and “so studying astronomy topics uhh.. challenge ganun kasi syempre mahirap siyang igrasp yung concepts niya pero in term ano e it makes you fulfilled and happy at somehow na magegets mo yung topic na yun.” Participant 3, and 5 showed how they stay ahead in learning astronomy, respectively they stated “Inaral ko yung mga basics ng astronomy before akong pumasok sa college,” “I always want to read astronomical books and stuff and also astronomical movie-related, astronomy-related movies. And also, I devoted my free time in advancing my knowledge in astronomy.” Lastly, participants 1, and 5 showed how they view the learning experience in astronomy education.

*Table 2.2: Thematic code plan on themes of Astronomy Education*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
Astronomy Education	Learning Priority	“hindi talaga siya nakakaapekto sa akin kasi una sa lahat is mas prinaprioritize ko yung turo ng mga prof kesa sa mga beliefs ng iba kasi is mas focus ako dun sa may tinuturo kesa sa mga kultura na pina-paniwalaan ko.” (S1)

The least common code among the interviewees under the Astronomy education theme, is Learning priority. The code appears in one out of five interviewees statements, and was iterated once. Participant 1 in the context of astronomy education expressed his priority of learning particularly putting technical aspects of astronomy over cultural as seen in his statement, “hindi talaga siya nakakaapekto sa akin kasi una sa lahat is mas prinaprioritize ko yung turo ng mga prof kesa sa mga beliefs ng iba kasi is mas focus ako dun sa may tinuturo kesa sa mga kultura na pina-paniwalaan ko.”

*Table 2.3: Thematic code plan on themes of Astronomy Education*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
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Astronomy Education	Program Advancement	<p>“We could make cultural beliefs a tool to teach astronomy to everybody.” (S5)</p> <p>“we really have to utilize cultural belief, cultural traditions to teach astronomy lalo na sa public high school” (S5)</p> <p>“pag ginamitan natin ng acculturation yung astronomy don marerealize ng bawat Pilipino na may part pala ang astronomy sa isang Pilipino dati sa ancestors natin so there will be connection so mas magiging interested sila in learning astronomy” (S5)</p>
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A common code among the interviewees under the Astronomy education theme, is Program advancement. This code was particularly iterated three times in participant 5’s interview. Participant 5 expressed his idea on how program advancement can be made in astronomy education by incorporating cultural astronomy onto it. Particularly, using cultural perspectives in astronomy to bring astronomy to the general education, and public. This can be seen in his statement, “We could make cultural beliefs a tool to teach astronomy to everybody,” in which he shared ideas on how to advance astronomy education to the public.

### **CULTURAL KNOWLEDGE**

*Table 3: Thematic code plan on themes of Cultural Knowledge*

THEMES	CODES	DESCRIPTIVE RESPONSES
Cultural Knowledge	Existing Knowledge	<p>“meron din akong pre existing cultural understanding like how... how ships navigate the southern hemisphere through the help of the cons.. constellations” (S2)</p>

		<p>“so siguro sa atin namang lahat ang pre existing cultural understanding natin is yung related sa moon, na which is yung parang bat ka sinusundan ng moon, well in fact hindi naman siya sumusunod sayo ganun and then yung... siguro yung pag nagha-half moon yung nagphaphase yung moon uh kina.. meron daw supernatural being na kumakain sa kanya” (S2)</p> <p>“yung association ng buhay ng tao at don sa kapalaran based sa waning ng buwan so yung pag iba-iba ng phases ng buwan so may epekto daw yon sa behaviour ng tao sa kapalaran ng buhay nya so ayon mayron ganon.” (S5)</p>
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According to the statement of Student 2, “meron din akong pre existing cultural understanding like how... how ships navigate the southern hemisphere through the help of the cons.. constellations,” which means he/she has knowledge of how sailors navigate their ship through the help of constellations. This practice likely stems from a cultural tradition that has been passed down through generations within a specific maritime culture. The use of celestial navigation, particularly through observing constellations, has been a common practice among seafarers for centuries. It enables the determination of direction and location at sea, especially in the absence of modern navigational tools. In fact, based on an article of Universe Unriddled (2024), ancient maritime celestial navigation, known as sailing by the stars, was not merely an art but a crucial skill honed over the years. It entailed understanding the positions of stars, the sun, and other celestial markers to determine one’s location at sea. This practice provided sailors with the guidance needed to traverse treacherous seas and explore uncharted territories without the help of modern navigational tools.

Additionally, Student 2 also stated, “so siguro sa atin namang lahat ang pre existing cultural understanding natin is yung related sa moon, na which is yung parang bat ka sinusundan ng moon, well in fact hindi naman siya sumusunod sayo ganun and then yung... siguro yung pag nagha-half moon yung nagpha-phase yung moon uh kina..

meron daw supernatural being na kumakain sa kanya,” he suggested that there is a common Filipino belief about how Moon follows or is followed by people. However, Student B cleared that this belief is not entirely accurate, as the moon does not actually follow anyone scientifically. Moreover, he/she mentioned that there is a supernatural being that is believed to eat the Moon whenever its phases, particularly during a half Moon. This belief is the most common belief among Filipinos and is considered a cultural explanation for the Moon’s phases.

Student 5 addressed that there is a belief about how Moon’s phases affect human behavior and destiny. This belief is rooted from the cultural understanding that perceives cosmic events as connected to human experiences and outcomes.

Overall, these remarks are the cultural pre-existing knowledge of the interviewees, which provided insights into the students’ cultural perspective and awareness of celestial phenomena as an astronomy student even though they are not scientifically accurate. These assertions represent long-held cultural ideas and myths that have been passed down through generations and are firmly ingrained in the society. Recognizing diverse cultural perspectives is crucial in understanding the range of knowledge systems and how they influence our perception of the world.

*Table 3.1: Thematic code plan on themes of Cultural Knowledge*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
Cultural Knowledge	Cultural Background	<p>“wala naman talaga kong naii-share na mga kultura dahil wala namang masyadong naituro sa kinunang mga beliefs is alam ko namang matagal niyo ng alam at matagal na rin naman siyang nai-debunk so wala akong maishashare na kultura na... na kinalakihan ko o mga paniniwala na kinalakihan ko tungkol sa astronomiya” (S1)</p> <p>“my cultural belief dyan.. syempre ako na lumaki dito sa metro manila walang ganun... of more of traditional sense kumbaga more on religious sense</p>

		<p>yung pag-intindi ko” (S2)</p> <p>“lumaki ako sa religious family” (S3)</p> <p>“uhm actually dito na ko pinanganak sa manila pero yung parents ko and yung lola ko they came from abra or the cordillera region, and sa kanila ko naririnig yung mga kwento about the different cultural beliefs especially sa astronomy.” (S4)</p>
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Student 1 said that, “wala naman talaga kong naii-share na mga kultura dahil wala namang masyadong naituro sakin nun [background noise] at yung mga beliefs is alam ko namang matagal niyo ng alam at matagal na rin naman siyang naidebunk so wala akong maishashare na kultura na... na kinalakihan ko o mga paniniwala na kinalakihan ko tungkol sa astronomiya,” which means that he/she was not taught enough about cultural beliefs related to astronomy, and acknowledged that his/her known beliefs have been debunked when he/she started to study astronomy, which leads to him/her lacks of cultural information about astronomy.

Furthermore, Student 3 mentioned that he/she grew up in a religious family and it is affecting her understanding about astronomy.

While Student 2 and Student 4 highlighted that even though their place origin have a significantly impact on their cultural beliefs, they still have ways to have background on ethnoastronomy even if its in cultural or religious context, they stated that, “my cultural belief dyan.. syempre ako na lumaki dito sa metro manila walang ganun... of more of traditional sense kumbaga more on religious sense yung pag-intindi ko” (S2), and “uhm actually dito na ko pinanganak sa manila pero yung parents ko and yung lola ko they came from abra or the cordillera region, and sa kanila ko naririnig yung mga kwento about the different cultural beliefs especially sa astronomy.” (S4)

These statements emphasized the diverse experiences and perspectives that shape the cultural knowledge of the participants, stating the influence of upbringing, family origins, and personal experiences in shaping cultural identity and beliefs.

*Table 3.3: Thematic code plan on themes of Cultural Knowledge*

THEMES	CODES	DESCRIPTIVE RESPONSES
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Cultural Knowledge	Cultural Practices	<p>“na-disperse yung tribe na yun pero na-maintain nila yung uh ethno astronomical background nila and it have been survived na okay pag ganito yung phase ng buwan, kinabukasan pwede kang magtanim ng ganitong crop” (S2)</p> <p>“sa sorsogon na coastal city siya na helpful.. na helpful daw ang moon to navigate the night sky so pagkita.. sinasabi rin dun pag kita mo yung stars definitely di siya uulan, well in fact hindi naman talaga uulan kasi clear skies walang clouds so uh helpful din yun” (S2)</p> <p>“yung nagstudy ako about cultural beliefs ng mga.. nasa malapit sa dagat na mas helpful yung pag.. pag walang moon mas helpful na mangisda kasi concentrated yung light pag nagflashlight ka pupunta yung isda sayo” (S2)</p> <p>“Ayun yung nabanggit ko kanina na pag may namatay parang ang tawag ata nila dun is danon if im not mistaken, d-a-n-o-n, so yung procedure na yun ginagawa nila kapag may namatay silang relative ganun on a full moon tapos minsan din pag marriage ganun, alam ko may tawag dun e kasi special rin</p>
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		kapag full moon or kita yung moon pag kinasal sila and then with regards naman sa farming ayun din, mahalaga din sa kanila yung moon hindi lang yung araw tas ayun nga pero parang important din sa kanila yung moon kasi it represents na parang nagpapahinga sila, pahinga na nila yung kapag nakikita na nila yung moon ayun, yung mga certain concept.." (S4)
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There were several cultural practices that Student 2 shared on how celestial observations have significantly contributed to the society: (1) The incorporation of celestial observation in the agricultural activities by predicting when is the best time to plant crops based on Moon phases; (2) Locals from Sorsogon city believes that if the stars are visible in the sky, it indicates clear skies, which means it will not rain; (3) Fishermen believes that the best time to fishing is when there is no moon since light is contracted, which makes the fish attracted towards the source.

On the other hand, Student 4 also shared cultural information from his/her grandmother that was originally from Cordillera's beliefs. It discusses the practices related to real-life events such as wedding and death, where full Moon has been involved. Moreover, he/she also shared that Moon indicates rest time for the farmers.

These remarks describe how cultural practices related to ethnoastronomy were deeply embedded in daily life, traditions, and beliefs, showing that there are diverse ways in which different cultures have integrated celestial observations into their systems.

### **CULTURAL-ASTRONOMICAL INTEGRATION**

*Table 4: Thematic code plan on themes of Cultural-Astronomical Integration*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
Cultural-Astronomical Integration	Satisfaction	"siguro masaya, dahil yun nga dati ko pa to gusto and ngayong pinag-aaralan ko na siya so ngayon

		satisfying siya na malaman mo yung reasons behind different things” (S4)
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Based on the statement of Student 4, he/she was feeling happiness and fulfillment while studying and uncovering the mysteries behind cultural and astronomical aspects since he/she stated that, “so ngayon satisfying siya na malaman mo yung reasons behind different things”.

This statement highlights the positive outcomes of exploring the connections of cultural perspectives and astronomical knowledge, which enriched the incorporation of cultural and astronomical knowledge.

*Table 4.1: Thematic code plan on themes of Cultural-Astronomical Integration*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
Cultural-Astronomical Integration	Connection	“actually yung cultural understanding ko i think it was more on a bridge than a barrier kasi if you were curious about it on a cultural sense, definitely would studied sa.. we would studied it on a scientific sense” (S2, S3, S4, S5)

Student 2, Student 3, Student 4, and Student 5 saying that, “actually yung cultural understanding ko i think it was more on a bridge than a barrier kasi if you were curious about it on a cultural sense, definitely would studied sa.. we would studied it on a scientific sense,” which suggested that all of their cultural understandings is not a hindrance in studying scientific approach rather it is helpful in building your curiosity towards the topic.

The statements from Student 2 to Student 5 have significantly contributed to the connectedness of cultural and astronomical aspects since they classified that their cultural knowledge became a bridge for them to study astronomy topics.

*Table 4.2: Thematic code plan on themes of Cultural-Astronomical Integration*

<b>THEMES</b>	<b>CODES</b>	<b>DESCRIPTIVE RESPONSES</b>
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Cultural-Astronomical Integration	Culturally Informed Beliefs	<p>“ayun kung paano mag declare ng war yung mga uh dating tribe tas ayun dinedectate nila kung mataas ba yung buwan, mataas ba sa night sky kung maliwanag ba siya, so kung titignan cultural basis lang yan parang meron silang guide na sinasamba sa buwan but in scientific basis and practical sense kaya sila sumusugod ng ganun hindi dahil sa ginagabayan sila ng god nila sa buwan but because maliwanag yung paligid kasi full moon yun” (S2)</p>
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There is a cultural practice that was embedded with cultural beliefs, and later on, was debunked using scientific knowledge. This was stated by Student 2 saying that, “ayun kung paano mag declare ng war yung mga uh dating tribe tas ayun dinedectate nila kung mataas ba yung buwan, mataas ba sa night sky kung maliwanag ba siya, so kung titignan cultural basis lang yan parang meron silang guide na sinasamba sa buwan but in scientific basis and practical sense kaya sila sumusugod ng ganun hindi dahil sa ginagabayan sila ng god nila sa buwan but because maliwanag yung paligid kasi full moon yun.” This interconnectedness of culture and science shows that cultural practices and scientific knowledge are used to shape astronomy.

*Table 4.3: Thematic code plan on themes of Cultural-Astronomical Integration*

THEMES	CODES	DESCRIPTIVE RESPONSES
Cultural-Astronomical Integration	Relevance	<p>“wala namang kinalaman yung mga kultura o paniniwala pagdating sa pag aaral.” (S1)</p> <p>“bali yung konsepto na yung mga beliefs ganun is hindi naman talaga siya totally nakatulong, oo nga sabi ko kanina na</p>

		<p>motibasyon siya para madebunked yung mga beliefs or maprove na matama sila pero most of the time habang nasa classroom ka wala kong naiisip na may bat gan.. gantong concept ng beliefs na dinedebunk habang nagtuturo yung prof” (S1)</p> <p>“serious at hindi ko siya magets kasi masyadong malalim and sometimes is naiintindihan ko naman siya kasi mas maayos siyang dineliver sakín tapos yung mga kultura naman is sometimes hindi naman nakakatulong sakín para makapag improve sa astronomy kagaya ng mga tanong niyo na nakakatulong ba siya or hadlang” (S1)</p> <p>“may mga events tayo sa school like yung National Astronomy Week... actually kasi yung pinaka familiar ako sa parang cultural something na related sa celestial phenomena is yung ano... bakunawa talaga, so para sakín since first year talaga yun talaga yung tumatak na topic sakín parang... though di ko siya totally kabisado pero yung... concept niya kasi talaga mismo parang yung ano daw kaya daw may eclipse kasi kinain daw ni bakunawa” (S3)</p> <p>“I do think it's very helpful</p>
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		<p>ah sa mga.. sa atin na i-acknowledge yung help ng ganung concept for us..to us.. uh discover what is the scientific base.. ah basis regarding such phenomena ayun.” (S2 &amp; S3)</p> <p>“When combined it with astronomy education parang... ayun nga dun napupunta yung root ng astronomy” (S4)</p> <p>“I think there is no relationship between my pre-existing cultural understanding and my formal astronomy education because I am not into the cultural context of astronomy but the science itself.” (S5)</p>
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Student 1 discussed the challenges of understanding the relevancy of cultural aspects towards astronomical aspects by stated that his/her cultural beliefs are irrelevant in studying astronomy, saying that, “wala namang kinalaman yung mga kultura o paniniwala pagdating sa pag aaral.” This means that cultural beliefs do not act as a bridge for him/her to be curious about the mysteries of cosmos. Also, expresses his/her concern on the effectiveness of debunking belief saying a particular line, “most of the time habang nasa classroom ka wala kong naiisip na may bat gan.. gantong concept ng beliefs na dinedebunk habang nagtuturo yung prof.” Lastly, he/she also added to the previous claims that cultural aspects somehow does not aided his/her improvement in learning about astronomy by stating that particular words, “ yung mga kultura naman is sometimes hindi naman nakakatulong sakín para makapag improve sa astronomy.”

While, Student 3 stated that astronomy events have helped him/her to in-depth his/her cultural knowledge, saying that, ““may mga events tayo sa school like yung National Astronomy Week... actually kasi yung pinaka familiar ako sa parang cultural something na related sa celestial phenomena is yung ano... bakunawa talaga, so para sakín since first year talaga yun talaga yung tumatak na topic sakín parang... though di ko siya totally kabisado pero yung... concept niya kasi talaga mismo parang yung ano daw kaya daw may eclipse kasi kinain daw ni bakunawa,” he/she has the same belief with Student B about a Moon eating supernatural being, which he/she called the

“Bakunawa”. Also, Student 3 mentioned that during National Astronomy Week (NAW), an astronomical program event in RTU, he/she became most familiar with this cultural belief that is related to the Moon’s phenomena. It seems that Student 3 was invested in this concept since his/her first year in school, although he/she does not fully remember the context, which make seems that astronomy and culture are relevant by helping each other im

Additionally, Student 3 mentioned that by integrating cultural concepts can be beneficial in understanding the scientific basis of certain phenomena, same statement as Student 2, in which they are saying that, “i do think it's very helpful ah sa mga.. sa atin na i-acknowledge yung help ng ganung concept for us..to us.. uh discover what is the scientific base.. ah basis regarding such phenomena ayun.”

Furthermore, Student 4 suggested that combined cultural perspective and astronomy education leads into a deeper understanding of astronomy by saying, “When combined it with astronomy education parang... ayun nga dun napupunta yung root ng astronomy”

On the other hand, Student 5 expressed a contrasting view by claiming that, “I think there is no relationship between my pre-existing cultural understanding and my formal astronomy education because I am not into the cultural context of astronomy but the science itself,” which means that he/she is into scientific basis than cultural basis of understanding the astronomy.

*Table 4.4: Thematic code plan on themes of Cultural-Astronomical Integration*

THEMES	CODES	DESCRIPTIVE RESPONSES
Cultural-Astronomical Integration	Advantages	<p>“I think it's opened up a lot of ways to appreciate astronomy, hindi lang yun sa computational basis but on the qualitative basis na” (S2)</p> <p>“Nasha-share ko yung knowledge ko about the topic and at the same time nasha-share ko naman yung tama sa kanila, nakakapagbigay ako ng awareness na hindi naman talaga yun yung nangyayari” (S3)</p> <p>“It makes my academic life</p>

		easier because I am advanced in the topics.” (S5)
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Student 2 highlights that culture opens a lot of opportunities to astronomy education by stating that, “I think it's opened up a lot of ways to appreciate astronomy, hindi lang yun sa computational basis but on the qualitative basis na.”

In addition to this, Student 3 mentioned the importance of the role of awareness in correcting misconceptions, by stating his/her experienced: “Nasha-share ko yung knowledge ko about the topic and at the same time nasha-share ko naman yung tama sa kanila, nakakapagbigay ako ng awareness na hindi naman talaga yun yung nangyayari.”

While, Student 5 expresses the personal benefit of sharing knowledge by saying, “It makes my academic life easier because I am advanced in the topics.”

Overall, participants promote deeper understanding by exchanging and sharing knowledge which advanced the cultural and astronomical perspectives.

#### IV. CONCLUSION

The study successfully explores the intricate relationship between personal experiences, cultural knowledge, and astronomy education. The thematic analysis reveals that participants' cultural beliefs and existing knowledge serve as a bridge to their scientific understanding of astronomy, fostering curiosity and motivation to learn.

The findings emphasize the significance of integrating cultural perspectives into astronomy education to enhance learning experiences and foster a deeper understanding of celestial phenomena. Participants expressed varying levels of knowledge, motivation, core beliefs, clarity, and hesitation related to astronomy, highlighting the importance of considering diverse perspectives.

The study underscores the value of cultural beliefs as a catalyst for curiosity and learning in the field of astronomy. By acknowledging and incorporating cultural astronomy into the curriculum, students can develop a deeper appreciation for both science and their cultural heritage. This research contributes to the broader discourse on qualitative research methodologies, educational practices in astronomy, and the intersection of cultural beliefs with scientific knowledge. In fact, studies of Mason, R. et. al (2006) and Gondwe, M. (2014), highlights the significance of including cultural viewpoints into astronomy education in showing how participants' cultural ideas and previous knowledge serve as a bridge to scientific understanding, increasing curiosity and drive to study (Gerdes, 2016). The findings highlight the relevance of cultural beliefs as an inspiration for inquiry and learning in astronomy, illustrating the importance of examining multiple perspectives (Gerdes, 2016b). By identifying and implementing



cultural astronomy into the curriculum allows students to develop a greater respect for both science and their cultural background (Bussi, 2013).

This research contributes to the broader discourse on qualitative research methodologies, educational practices in astronomy, and the intersection of cultural beliefs with scientific knowledge. Further exploration in this area could lead to enhanced pedagogical strategies, increased cultural awareness in astronomy education, and a more holistic understanding of the diverse ways in which individuals engage with celestial phenomena.

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