



## Formation Of Local Wisdom About Earth and Space: an Analysis Of Thinking Pattern

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### ABSTRACT

Local wisdom has a role in reducing the impact of disasters. However, so far, local wisdom has not been a subject of study in disaster education. Kedu's residence in a disaster-prone area has a wealth of local wisdom that can be used as study material in disaster education. The phenomenon of disaster is related to the phenomena of earth and space so that the local wisdom of the community that can be used as material for study in disaster education is contained in the local wisdom of the community about earth and space phenomena. Therefore, to obtain data on local community wisdom about the disaster, a study of earth and space phenomena is needed. Study material in a scientific discipline must be scientific knowledge. The local wisdom of the community is not a scientific product. For this reason, scientific testing of the local community's livelihoods can be used as material for studies in disaster education. One way to test the knowledge of a knowledge product is to analyze the reasoning pattern of the knowledge product. For this reason, this study aims to analyze the pattern of reasoning to be used as a study material in disaster education and to categorize knowledge in the local wisdom of the ex-Karisidenan Kedu people on Earth and Space as misconceptions or P-Prims. This study uses qualitative research methods with the type of The Investigation of Lived Experience with the type of Cognitive Psychology. The stages of this research are literature study, data collection, and data analysis. Data analysis using the method of fixed comparison with a sequence of work steps as follows: Organizing Data, Data Reduction, Categorization, Synthesis, Compiling "Work Hypothesis". This study produced 31 research data on the local wisdom of the community about earth and space phenomena in the ex-residency of Kedu and surrounding areas in Central Java. Analysis of the data shows that most local people's wisdom about earth and space phenomena in the ex-residency of Kedu and surrounding areas in Central Java is a myth that has developed in the community and is believed to last for years, and some are in the form of Indigenous Knowledge. Local wisdom in the form of myth forms misconceptions, while local wisdom in the form of Indigenous Knowledge forms P-Prims. From the results of the analysis, it can be concluded that the myths that are built upon natural phenomena in society occur because people try to explain these phenomena with acceptable explanations based on limited facts that are known to be related to these phenomena that are linked to their limited knowledge. Society tries to explain natural phenomena with limited knowledge to form conclusions in the form of non-science and approach science. Non-scientific conclusions form myths, while conclusions that approach science form Indigenous Knowledge.

**Key Word:** Reasoning Patterns; Local wisdom; Earth and Space

### INTRODUCTION

United Nations International Strategy for Disaster Reduction (UNISDR) classifies Indonesia as a disaster-prone country (Ansori *et al.*, 2013). This is because Indonesia is located at the confluence of three major plates of the world, namely the

Pacific Ocean Plate, the Indo-Australian Plate, and the Eurasian Continent Plate (La Masinu *et al.*, 2018; Andriyani *et al.*, 2012). Thus, disaster education in schools has a role in disaster mitigation. The problem that arises is that the Indonesian people do not understand a variety of knowledge about earth and astronomy, so they do not yet

know the actions to be taken when facing the dangers of natural disasters (Andriyani *et al.*, 2012). The impact of these problems is the number of victims of natural disasters is quite a lot.

Community knowledge manifested in the form of local wisdom practices can reduce the impact of disasters (Meyers & Watson, 2008; Zulfadrim *et al.*, 2018). The local wisdom product becomes intellectual and cultural property (Mungmachon, 2012). However, local wisdom has not been recognized as a product of scientific knowledge because the formation does not involve scientific processes.

The former Kedu residency, which consists of Magelang, Temanggung, Purworejo, Wonosobo and Magelang districts, is a disaster-prone area because it is a mountainous region and surrounded by active volcanoes. As a disaster-prone area, people in this region have local wisdom when dealing with natural phenomena. This local wisdom can be used as study material in disaster education which involves knowledge of earth and space.

Disaster education in schools can be integrated into science learning (Hasanah & Wahyuni, 2016). Science learning is included in multicultural education studies that intersect with everyday life (Meyer & Crawford, 2011). As multicultural learning, disaster education in natural science learning is difficult to separate from the community's understanding manifested by local wisdom.

One of the elements forming the students' pre-conception is the local wisdom of the community. Students come to school with different pre-conceptions from existing knowledge buildings (Pablico, 2010), where the pre-conceptions are built from the local wisdom of the community. Local wisdom may be a misconception that occurs in the community or in the form of p-prims (Phenomenological Primitive). If local wisdom is a misconception in the community, then it will be a barrier to integrating local wisdom into the study material in disaster learning.

Community knowledge manifested in the form of local wisdom practices needs to

be tested for the scholarship so that it can be recognized as a product of scientific knowledge. One way to test the knowledge of a product of knowledge is to test its reasoning.

Reasoning ability is defined as the ability to think coherently and logically using known facts and assumptions (Guralnik, 1984). According to Small (1996) defines, reasoning ability is the ability to show the relationship or relationship between two or more things based on certain reasons and steps so that conclusions are formed. Santrock (2008) defines reasoning ability as the ability to think logically in drawing conclusions by using inductive and/or deductive. Reasoning ability is characterized by logical and analytical (Suriasumantri, 1998).

The process of drawing conclusions on reasoning involves propositions as a basis for inference which is commonly called the premise (Gofur, 2014). The premise is a statement about right or wrong on a matter. In the process of reasoning someone, the premise can come from their knowledge or assumptions.

Types of reasoning can be divided into two, namely inductive reasoning and deductive reasoning. Deductive reasoning is a process of reasoning that involves one or more general premises to reach a specific logical conclusion (Sumaryono, 1999; Sternberg, 2006). An example of deductive reasoning syntax is as follows:

Premise 1: All living things reproduce.

Premise 2: Goats are living things.

Conclusion: Goats breed

Contrary to deductive reasoning, inductive reasoning is the process of drawing conclusions by involving special premises, which are then drawn into conclusions that are specific in nature (Santrock, 2008; Sternberg, 2006). An example of the inductive reasoning syntax is as follows:

Premise 1: Goose breeds by laying eggs

Premise 2: Birds breed by laying eggs.

Premise 3: Ducks breed by laying eggs.

Conclusion: Animals that berksdom aves breed by laying eggs.

Phenomenological Primitive (p-prims) is an element of basic knowledge from a person who is classified in phenomenology, which uses the ability of minimal abstraction derived from experience or known phenomena that are the closest to which are not supported by a clear explanation (diSessa, 1983). P-prims arises due to the limitations of one's knowledge in understanding a newly known phenomenon that only relies on limited knowledge or experiences that are considered similar. For example, research on a misconception by Sadler *et al.*, (1989) who ask students why summer is hotter than winter. Students' answers to these questions are because, in summer, the distance from the earth to the sun is closer than in winter (the trajectory of the earth's revolution is oval in shape with an improper centre in the middle). The p-prims perspective views that students use an analogy by linking other phenomena that are considered to be related, for example, "the closer to the candle, the warmer", "the closer to the lamp, the brighter". Thus, the analysis of reasoning patterns using the perspective of prims will produce an original reasoning pattern due to respondents.

Unlike the perspective of misconceptions that considers students' ideas that are inherently incompatible with ideas received in physics need to be replaced, the perspective of prims recognizes that there are productive aspects of knowledge and reasoning that are not scientific, which might be used to reach scientific ideas as accepted by scientists (Fotou & Abrahams, 2016a). With the perspective of p-prims, it is possible to build concepts from unscientific ideas into scientific concepts, which during the process of learning unscientific concepts continue to coexist with scientific concepts and ultimately scientific concepts will become the final scheme (diSessa, 1983).

P-prims will emerge if the phenomenon presented is new. If the phenomenon that is asked is a well-known phenomenon, the respondent will answer the question with a standard knowledge scheme that has been stored in memory, which can be the

reasoning pattern in the knowledge scheme, not the original reasoning, but the reasoning taken from the explanations of others and their knowledge schemes. As a result, the pattern of reasoning recorded is the pattern of reasoning of others in understanding the known problem.

Local wisdom is a term used by experts to represent a system of values and norms that are organized, held, understood, and applied by local people based on their understanding and experience in interacting with each other and interacting with the environment (Agung, 2015). Local wisdom is hereditary by traditional stakeholders (Na Talang, 2001; Phongpit & Nantasuwana, 2002). Local wisdom has proven to be a kind of guide for the community in living their daily lives.

Local wisdom has characteristics, namely: bound locally, has a specific context, non-formal, and dynamic (Rajib, 2009). Local wisdom is formed from an experimental and continuous process so as to produce dynamic and informal knowledge (Zulfadrim *et al.*, 2018). However, local wisdom is often disputed with western science (Parmin *et al.*, 2015) because it is considered unscientific.

Many studies have tried to integrate local wisdom into formal learning (Zulfadrim *et al.*, 2018; Mungmachon, 2012; Hasanah & Wahyuni, 2016; Agung, 2015; Parmin *et al.*, 2015; Subali *et al.*, 2015). However, none of these studies analyzed the reasoning patterns of local wisdom knowledge products. Likewise, there are many studies that discuss reasoning patterns (Fotou, & Abrahams, 2016a; Fotou, & Abrahams, 2016b; Hammer, 1996; Juliyanto, 2018), but none have discussed the reasoning patterns of local wisdom.

This study seeks to analyze the patterns of reasoning used by the local wisdom of the former Kedu residency on earth and space. Local wisdom that has logical and scientific reasoning patterns can be recognized as scientific knowledge in disaster education study materials.

## METHOD

### Research Approach

The qualitative research approach used in this study is the type of The Investigation of Lived Experience with the type of Cognitive Psychology (Gall *et al.*, 2003). The Investigation of Lived Experiences research type is qualitative research that explores inner experience, while the Cognitive Psychology type is a qualitative research type of The Investigation of Lived Experiences that explores structures and processes that involve mental activities, how these structures and processes are studied, and how to develop maturity. Research classified as Cognitive Psychology is research on perception, memory, attention, thinking ability and problem-solving skills.

This research design was developed based on a qualitative research paradigm that attempts to uncover inner experience. This research seeks to explore the process of reasoning for local wisdom. This research begins with a theoretical study that aims to build the direction and framework of research through the preparation of research instruments. The research instrument revealed the inner experience in the form of the pattern of reasoning of the local community's wisdom.

The research tradition used in this qualitative research is the Cognitive Psychology tradition. The assumption used is the human thought process in responding to a stimulus cannot be fully revealed, but only the brain's response to the stimulus can be known. The response is the result of the thought process, so the thought process can be obtained by analyzing the responses that arise.

Responses in the form of answers are then grouped into two categories, namely local wisdom or not. Local wisdom obtained will be analyzed by reasoning patterns.

### Research Subjects

The subject of this research is the ex-residency community of Kedu. Respondents for interviews were determined by the

snowball technique. If the research data is deemed saturated, the interview is stopped.

### Data and Data Sources

The data in this study come from primary and secondary data. Primary data were obtained from interviews with the community. Secondary data was obtained from browsing on the internet, collecting data from relevant agencies in the district/city, and collecting data from written sources. Research data in the form of oral and written.

### Data Collection Methods

The data collection method in this research is an interview. The written test aims the type of interview used is a standard open structured interview. During the interview process, researchers asked permission from respondents to record conversations during the interview process. The results of the recorded interviews will be transcribed in written documents to facilitate the analysis process.

### Research Instruments

Based on the data collection methods above, the research instrument used in this study is an interview guide. The interview guidelines created will be validated. Although the interview method used is structured, the interview guidelines used are not rigid, meaning that the researcher is free to explore respondents' answers. The guidelines contain guidelines for conducting interviews to achieve research credibility and key questions to direct working hypotheses. Moreover, questions can be developed by researchers during the interview process based on the development of the situation (Moleong, 2012).

### Validity of Data

The terms of credibility, transferability, dependability, and confirmability must be met by qualitative research data (Sugiyono, 2006). According to Guba and Lincoln, validity, external validity, reliability and objectivity, which are used in quantitative research are replaced by credibility,

transferability, dependability, and confirmability in qualitative research (Guba & Lincoln, 1985). In this study, the credibility of the data can be met with data triangulation techniques. Data triangulation in this study was done by asking about local wisdom that had been obtained from other respondents. Data transferability is obtained by describing the data in detail. In this study, the dependability of the data was taken by snowballing in data collection so that it came to a state where the data was saturated. Confirmability of data is obtained by avoiding the subjectivity of researchers in data collection by making interview guidelines and presenting data as it is.

### Data Analysis Techniques

The process of analyzing the data of this study was adapted from the fixed comparison method presented by Moleong, whose steps are as follows: Organizing Data, Data Reduction, Categorization, Synthesis, Compiling "Work Hypothesis" (Moleong, 2012). Organizing data is done by transcribing the results of interviews and combining interview transcripts with secondary data. Data reduction is made by combining and/or discarding the same or almost the same data. Synthesis begins with

grouping the same or almost the same pattern of reasoning and describing the differences with other patterns of reasoning. The next step of synthesis is to name groups of different reasoning patterns based on their characteristics. The final step of the fixed comparison method is to formulate a working hypothesis. The working hypothesis is prepared by adopting and/or adapting existing theories of reasoning.

## RESULT AND DISCUSSION

This study produced 30 research data on the local wisdom of the community about earth and space phenomena in the ex-residency of Kedu and surrounding areas in Central Java. Analysis of the data shows that most local people's wisdom about earth and space phenomena in the ex-residency of Kedu and surrounding areas in Central Java is a myth that has developed in the community and is believed to last for years, and some are in the form of Indigenous Knowledge. Local wisdom in the form of myths form misconceptions, while local wisdom in the forms of Indigenous Knowledge forms P-Prims. The following data has been obtained.

Table 1. Research Result

No.	Phenomenon	Location	Information	Result	Science Explanation
1	Transfer of springs	Tragilan Village, Magelang Regency	The water source was covered with a magic stone by a thief, then a water source appeared in another place.	Myth	closed water sources, so the water pressure in the ground forms new springs
2	Earthquake "Lindu"	Kiringan Hamlet, Kelurahan Tidar Utara Kota Magelang	The earthquake occurred because of the figure of the queen of the South Coast, Nyi Roro Kidul who was on the mainland, to ward off bad luck due to the shaking, ancient Javanese people	Myth	Earthquakes are caused by the movement of the earth's plates. Indonesia is one of the earthquake-prone countries because it is located on three tectonic plates: the Indo-

			sprinkled salt around their houses or yards.		Australian Plate, the Eurasian Plate, and the Pacific Plate.
3	Tuk Umbul	Ngaropoh Hamlet, Umbul Sari Village, Magelang Regency	Water sources can treat diabetes	Indigenous Knowledge	pure water can reduce sugar that enters the blood (lowers blood sugar levels)
4	Changing the position of the stone used by Prince Diponegoro	Mantiasih Dumpoh Village, Magelang City	The stone that moved from its original position occurred because of an event that occurred in 1830. The incident was a sunan from Yogyakarta imprisoned for 45 days on the stone.	Myth	Changes in the position of rocks occur due to the dynamics of the earth, some of them are due to the process of subduction or plate shift.
5	Earthquake "Lindu"	Potrobangsari Village, Magelang City	The earthquake occurs because the earth is flexing. Ngulet itself comes from the Javanese language while in Indonesian it means "squirring". Javanese people interpret the word "ngulet" which is to stretch the limbs, and usually when you wake up.	Myth	Earthquakes are caused by the movement of the earth's plates. Indonesia is one of the earthquake-prone countries because it is located on three tectonic plates: the Indo-Australian Plate, the Eurasian Plate, and the Pacific Plate.
6	Lunar eclipse	Bulurejo Village, Magelang Regency	The lunar eclipse occurred because the moon was eaten by Buto Ijo. The community was struck with a gong with the intention that the moon was vomited by Buto Green, so that it reappeared and emitted its light.	Myth	A lunar eclipse is a natural phenomenon that occurs when Earth's shadow covers the Moon. This event occurs when the Sun, Earth, and Moon are right or almost in a straight line.

7	The Mound of Trees in the Middle of the Pond	Sobokarang Village, Magelang Regency	The residents believe that the dune should not be hoeed or flattened because it will be fatal for the person who will change the dune. There was a strange incident when a resident named Mr. Yusak hoeed the dune and died.	Myth	The dune in the middle of the pond occurs due to the process of silting the pond due to the deposition of solid particles.
8	Falling star	Girirejo Village, Magelang Regency	A falling star is a sign that the devil is being pelted by an angel while trying to find out about the future.	Myth	A falling star is a celestial phenomenon that enters the Earth's atmosphere and looks like a star at night.
9	Mount Tidar	Magelang City	Pakuning Tanah Jawa: Mount Tidar is an earth spike from the island of Java.	Myth	Mount Tidar is 503 meters above sea level, so it is included in the hill category. Mount Tidar is located in Magelang district, Central Java, Indonesia
10	Hello moon	Pati Regency	Someone will run away from home. Whether the run was short or long, it really happened. And it has been proven that in ancient times there was this incident, so there were people in the area that was still part of this city who fled for some reason.	Myth	hello moon is a phenomenon that describes around glow around the moon. The hello moon is caused by the presence of ice crystals in the cold cirrus clouds in the troposphere
11	Rainbow	Kebonlegi Village, Magelang Regency	The rainbow is a dragon drinking in the river.	Myth	Rainbow is a meteorological phenomenon caused by the reflection, refraction, and diffraction of

					light in water droplets that produces a spectrum of light that appears in the sky.
12	Mount Sindoro	Mount Sindoro, Wonosobo Regency	Mount Sindoro originates from Mount Sumbing, whose peak is then hit by the nails of the Pancanaka from Wrekudara, then the peak splits and falls into Mount Sindoro.	Myth	Mount Sumbing has a height of 3,371 meters above sea level and is a Stratovolcano type. The cleft mountain was formed through a series of geological processes.
13	Lunar Eclipse	Jambewangi Village, Magelang Regency	If there is a lunar eclipse, the pregnant woman must hide under the ground so as not to be eaten by buto.	Myth	A lunar eclipse is a natural phenomenon that occurs when Earth's shadow covers the Moon. This event occurs when the Sun, Earth, and Moon are right or almost in a straight line.
14	Igneous rock formation in the mlahar village	Banjarsari Village, Magelang Regency	This stone is considered a stone that will be made a temple by a "Javanese guardian" with the help of a genie, but there are residents who witnessed the incident so the genie no longer continued to help because it was thought it was morning.	Myth	Igneous rock is formed from magma that cools and hardens, with or without a crystallization process, either below the surface as intrusive (plutonic) rock or above the surface as an extrusive (volcanic) rock.
15	Mount Slamet Eruption	Banyumas Regency	If the slamet volcano is about to erupt, there is a tradition of Gandhulan (cooking papaya). The fruit is cooked and the leaves are hung in	Indigenous Knowledge	When the volcano is about to erupt, the magma activity increases. It causes an increase in temperature around the mountain,



			front of the door. If the slamet mountain is about to erupt, then animals such as monkeys and wild boars descend the mountain.		which causes animals to descend the mountain.
16	Earthquake	Sidorejo Village, Magelang Regency	There is Naga Sosro Kidul (Snake in the South Sea) moving. Like a sleeping person turned around.	Myth	Earthquakes are caused by the movement of the earth's plates. Indonesia is one of the earthquake-prone countries because it is located on three tectonic plates: the Indo-Australian Plate, the Eurasian Plate, and the Pacific Plate.
17	Rain storm	Kalisari, Magelang Regency	When there is heavy rain accompanied by a storm, the parents teach them to throw away the irus and throw the bamboo boards on the bed on the roof tiles, accompanied by the call to prayer. It is used to reject ugliness. It is based on the story of an ancient old man.	Indigenous Knowledge	when there is heavy rain, it will be a good thing to pray to remember God to avoid danger and disaster
18	“Udan Kethek”	Badran Village, Temanggung Regency	If it rains when the weather is hot, a great person (noble) will die.	Myth	Rain occurs because the air rises due to high air heating. This rain is also referred to as equatorial rain because it appears in the tropics, namely areas with a tropical climate

					or traversed by the equator.
19	Mount Tidar "The Nails of the Land of Java"	Mount Tidar, Magelang City	Mount Tidar is considered the nail of the land of Java because the land of Java is considered to be tossed around on the sea.	Myth	Mount Tidar is 503 meters above sea level, so it is included in the hill category. Mount Tidar is located in Magelang district, Central Java, Indonesia
20	Earthquake	The Cleft of Sumbing, Temanggung Regency	The god anantaboga holds the earth. When he is angry, he will shake the earth which will cause an earthquake.	Myth	Earthquakes are caused by the movement of the earth's plates. Indonesia is one of the earthquake-prone countries because it is located on three tectonic plates: the Indo-Australian Plate, the Eurasian Plate, and the Pacific Plate.
21	Caroko Walik	Mertoyudan, Magelang Regency	Thief repellent, reject witchcraft	Indigenous Knowledge	The thief will reject his intention to steal when he hears a human voice. The sound is issued by reading the Javanese letters upside down as a marker
22	Abstinence from wearing green clothes on Parangtritis beach.	Pantai Parangtritis Yogyakarta	The green shirt is Ratu Kidul's favorite dress, if you wear green clothes, you will become a target, you will be dragged by the waves and won't go home. Grandmother said that if you want it, you don't go home, but if you don't want it, the body will be returned.	Myth	wearing green clothes on the beach will make it difficult for rescue teams to find when the current carries people wearing green clothes into the sea

23	Earthquake	Muntilan, Magelang Regency	If there is an earthquake, pregnant people must wipe the ashes on their stomach so that nothing happens in the stomach.	Myth	Earthquakes are caused by the movement of the earth's plates. Indonesia is one of the earthquake-prone countries because it is located on three tectonic plates: the Indo-Australian Plate, the Eurasian Plate, and the Pacific Plate.
24	Rain Mods	Karangmalang, Sragen Regency	Spreading salt in the sky (above) to ask for rain or sticking red chilies and shallots on a stick placed in front of the house to repel the rain.	Indigenous Knowledge	Rain can be made with the help of salt. Salt sprinkled on the clouds will affect the clouds to condense and form more significant clouds and accelerate the occurrence of rain.
25	Lintang kemukus (Comet)	Pancuran Emas, Magelang Regency	The people of Pancuranmas Village believe that the latitude of the cube is a sign of impending disaster (many people are sickly)	Myth	Meteor showers or the movement of comets are common. Every time of the year, there is a meteor shower. It is fine. There is no relationship between meteor showers and those that occur on Earth.
26	Lunar eclipse	Sikunang Sejajar, Wonosobo Regency	People in the village bathe pregnant people using a cone-shaped steamer which is believed to prevent the child from being deformed in the womb. Then another tradition during a solar eclipse is that people beat iron or fight	Myth	A lunar eclipse is a natural phenomenon that occurs when Earth's shadow covers the Moon. This event occurs when the Sun, Earth, and Moon are right or almost in a straight line.

			iron so that the village is crowded and the iron makes a sound to scare the dragon that will eat the moon.		
27	Lightning	Karang Seneng Village, Temanggung Regency	Lightning or if in the past it was bledek, it was hostile to Lesus or the bald devil. Whirlwind during the dry season scatters dust, destroying roof tiles. Then the thunderbolt said to Lesus that when it was time for the rainy season he would take revenge. Well, if the rain of bald devils climbs into the trees, the lightning will strike the trees. If it is during the dry season and there are many strong winds, it is when Whirlwind and lightning are arguing.	Myth	Lightning is the process of releasing electric charges (electrons). The release of electrons does not only occur from the cloud to the earth but can also occur from the cloud to other clouds.
28	Full moon	Malebo, Temanggung Regency	It is forbidden to cut bamboo on a full moon night.	Indigenous Knowledge	The full moon is a phase of the moon in which the moon is behind the earth from the sun. At the full moon, seawater rises so that groundwater increases. Bamboo is a plant with fibrous roots that quickly absorb water. Therefore, the sugar content in the bamboo stems increases. With high sugar

					content, bamboo becomes susceptible to pests.
29	Lunar eclipse	Purbalingga Regency	Butho Ijo fell in love with the Moon Goddess, but his love was rejected, so Butho Ijo swallowed the Moon Goddess. Butho Ijo provoked the Goddess of Rembulan to scream, if the Goddess of Rembulan screams, it means that the Goddess of Moon still loves Butho Ijo. Finally, the Goddess of the Moon screamed for help and Butho Ijo slowly took out the body of the Goddess of the Moon.	Myth	A lunar eclipse is a natural phenomenon that occurs when Earth's shadow covers the Moon. This event occurs when the Sun, Earth, and Moon are right or almost in a straight line.
30	Yellow Sky in the Afternoon	Pulosaren Village, Wonosobo Regency	The yellow sky event created a myth that developed in society. People believe that if this event occurs, it will bring disease to farmers' plants in the garden. They believe that their plants will turn yellow on the leaves and prevent plants from growing optimally due to the yellow light in the afternoon, so people have a habit of sowing ashes in front of their doors or in front of their houses.	Indigenous Knowledge	When the sun is on the east or west horizon, the sun's angle is smaller relative to where we are than when the sun is above us. So light has to pass through a thicker atmosphere, where more gas and dust particles are ground up. Then the more extended the refracted wavelength will be. The light that has the longest wavelength, namely red and orange, will

undoubtedly  
reach our eyes.

31	Earth Alms	Bangkleyan, Blora Regency	Alms of the Earth that is done in the old well as a form of gratitude for the harvest.	Indigenous Knowledge	Alms of the earth is a form of human gratitude for the results of nature. Alms of the earth is a form of nature conservation.
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From the above data, it can be seen that most of the local wisdom in the community is largely in the form of a myth. From the results of the analysis, it can be concluded that the myths that are built upon natural phenomena in society occur because people try to explain these phenomena with acceptable explanations based on limited facts that are known to be related to these phenomena that are linked to their limited knowledge. For example, the phenomenon of the rainbow is explained as the process of a dragon coming down to earth to drink. This happens because the rainbow looks like a giant arch. The giant arch shape is associated with similar creatures in everyday life. However, creatures similar to these are not found in people's lives. Creatures that approach these conditions are mythical creatures called dragons. The pattern of reasoning is as follows.

Premise 1: Curved rainbow shape (limited fact)

Premise 2: The shape of a dragon that is drinking curved downward (fact - false / myth)

Conclusion: A rainbow is a dragon that is descending to earth to drink. (wrong conclusion)

Judging from the reasoning patterns above, it can be concluded that the reasoning patterns used are inductive reasoning patterns. The formation of a myth occurs because of reasoning with inductive reasoning patterns that use the wrong premise. In this case, the premise used is a

myth, so the conclusion used is also a myth. This causes misconceptions to form.

Local wisdom is formed as a result of human experience when interacting with nature and produces knowledge that is in harmony with nature. For example, when a mountain is about to erupt, animals near the top of the mountain will descend because of the temperature near the top of the earth increases. By seeing this phenomenon repeated, knowledge is formed by the residents on the slopes of the mountain. Local wisdom can also occur when a scientific product is no longer believed to be a product of science but is believed to be a tradition so that people no longer question the logic used in building the product. For example, in the phenomenon of weather modification. The ancients already understood that salt could be used for seeding rain. With the passage of time, the scientific explanation of this is forgotten so that the basic principle is abandoned, but the tradition of using salt to invite rain is still firmly held by the community.

Local wisdom and myths are related (Fitri, 2012). The myths believed by the ex-residency community of Kedu and its surroundings about the earth and space phenomena for many years shaped local wisdom that influenced the people's perspective and way of life so that they could live in harmony with nature. This is consistent with the results of research by Manuaba et al., which states that public trust in the myths that exist in the Baluran and

Gilimanuk forests encourage communities to preserve the environment (Manuaba *et al.*, 2012).

Myth on the local wisdom of the community about earth and space phenomena in the ex-residency of Kedu and the surrounding area is a temporary explanation of the phenomena that occur in nature. The myths found in this research are pseudoscience and non-science. Pseudoscience is an understanding/knowledge that seems to have logic like science, but the process of acquiring data does not use correct scientific rules (Jakovljević & Ostojić, 2016).

Local people's wisdom about earth and space phenomena in the ex-residency of Kedu and the surrounding area also exists in the form of Indigenous Knowledge. Indigenous Knowledge is knowledge that is developed in the community and continues to develop, which is usually based on the community (Carm, 2014). Indigenous Knowledge forms p-prims

Humans instinctively try to use the process of building narratives to create stories that make sense from the world around them (Geertz, 2011). Society tries to explain natural phenomena with limited knowledge to form conclusions in the form of non-science and approach science. Non-scientific conclusions form myths, while conclusions that approach science form Indigenous Knowledge.

## CONCLUSION

This study produced 31 research data on the local wisdom of the community about earth and space phenomena in the ex-residency of Kedu and surrounding areas in Central Java. Data analysis shows that most local wisdom about earth and space phenomena in the ex-residency of Kedu and surrounding areas in Central Java is a myth that has developed in the community and is believed to last for years, and some are in the form of Indigenous Knowledge. Local wisdom in the form of myth forms misconceptions, while local wisdom in the form of Indigenous Knowledge forms P-

Prims. From the results of the analysis, it can be concluded that the myths that are built upon natural phenomena in society occur because people try to explain these phenomena with acceptable explanations based on limited facts that are known to be related to these phenomena that are linked to their limited knowledge. Society tries to explain natural phenomena with limited knowledge to form conclusions in the form of non-science and approach science. Local wisdom is formed as a result of human experience when interacting with nature and produces knowledge that is in harmony with nature. Local wisdom can also occur when a scientific product is no longer believed to be a product of science but is believed to be a tradition so that people no longer question the logic used in building the product. Non-scientific conclusions form myths, while conclusions that approach science form Indigenous Knowledge.

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