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AESTHETIC VALUE IN UNDERWATER PHOTOGRAPHY

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Abstract

This study focuses on the educational value of photographs and provides discursive methods for employing underwater photography in environmental education. This study will use a qualitative approach to investigate the efficacy of the interaction between photography and the environment. According to the findings, photographic documentation and data collecting may be highly valuable, and knowing the method and basics will substantially improve the application of underwater photography images. In conclusion, it has been discovered that underwater photography has the power to produce a unique dynamic and idea that may be utilised in a Public Service Announcement (PSA) to raise social awareness about the health of the coral reef.

Keywords: Underwater Photography, Scuba Diving, Coral Reef Conservation

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1.0 Introduction

One of the most difficult fields of photography is underwater photography. We must be prepared not just in terms of technical difficulty, but also in terms of physical cleanliness. Underwater photography, in general, is capable of bringing a fresh viewpoint to the photography style. Not to mention the other lives, big and tiny, that go unrecognised practically all of the time. Of course, tourists, both local and foreign, who wish to view or even reproduce this remarkable biodiversity in the form of photographs will generate a lot of business and governmental revenue.

The underwater beauty is simply breathtaking, and anyone who captures it in a photograph would always want to do it again and again. Underwater images are perfect in today's world, when photographers' talent is growing and technology is becoming more advanced to support that capability. Visual activity should be studied in order to understand the nature of picture-based media as a means of communication, as suggested by Paul Messaris (1994). When photographing underwater, it's not always the subject that needs to be focused on, but also the environment.

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2.0 Literature review

According to PADI Manual, 2007, most scientists believe they are the most taxonomically diverse ecosystems in the ocean. As supported by Professional Associate Dive Instructor (PADI), a concern is that global warming may raise temperatures above corals survival threshold. Another threat comes from sedimentation resulting from coastal dredging and construction. The coral reef composed of numerous corals of different families and species. In order to protect our coral reef, it is important to educate the society the important of our underwater ecosystem. More over 70% of the Earth's surface is covered by oceans. Consider the marine conditions, which are mainly unknown to people. The presence of such stunning marine life can elicit a strong desire to share it with others. Photography is one of the simplest ways to communicate stories about underwater aquatic life.

Corals can be affected by diseases especially if they are under stress. For example, corals that survive bleaching caused by heat stress are more susceptible to disease. With the rise of environmental awareness among public, we can see there a lot of campaign from government and NGO through media now's day. Therefore, this campaign serves as Public Service Announcement (PSA) to generate sosial awareness about the state of the coral reef and what we can do to reduce impact and implement positive actions. Based on the article in Dimensions Educational Research Foundation, 2004, in addition to help coral ecosystems through photography, it is important to use an interesting visual to help the researcher to understand the content of the photograph. Visual can educate divers and non-divers to appreciate more about our sea heritages especially coral reefs ecosystem. Rich visual images expose others to layers of knowledge including aesthetics, features/characteristics, and historical perspectives. With this, they would have the opportunity to learn about and understand coral conservation and viewpoints.

This study asks the question how underwater photography images can be utilised in documenting and collecting visual data for coral reef conservation. Underwater photography can be used to estimate the different stage of bleaching and recovery of coral allows the collection of data to be used to track the condition of reef locations over time. This method can contribute to conserving underwater environment through photography and public awareness.

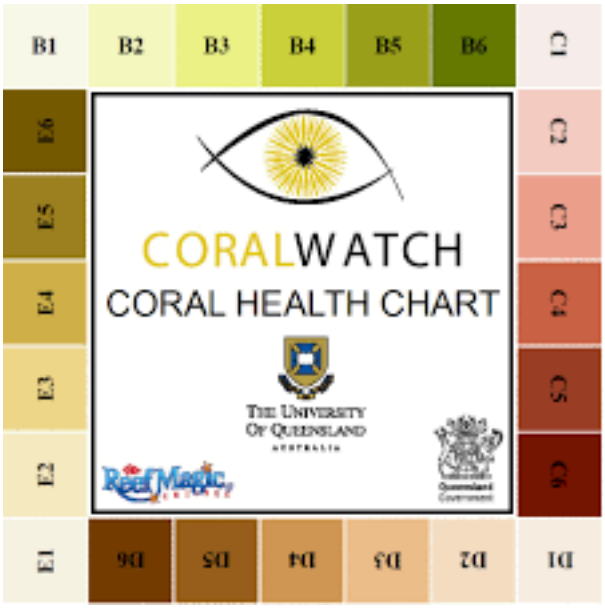


Figure1. Coral Health Chart

In 2002 CoralWatch developed the coral health chart to make it easy for anyone to collect information on the health of corals in a standardised way. The entire collection of data is accessible to everyone online. By using underwater camera it is easier to collect all information required and can be used as a teaching tool and for scientific analysis.

Underwater photography has become more accessible to most divers thanks to technological advancements in recent years, allowing members of the public to contribute to scientific initiatives and research. Photo identification, a very significant idea that allows us to distinguish and then track individual aquatic species, is perhaps the most widespread usage of underwater photography as a data-collecting tool. When obtaining good underwater photography photographs, there are three essential factors to consider. Pictures, according to Goodman (1971), are symbols that differ from other representations not because they are visually appealing, but because they are structured differently. When photographing underwater, it's not always the subject that needs to be focused on, but also the environment.

Underwater photographers must comprehend the science of light and colour, as well as what can be done to compensate for the problems they face, even under ideal conditions. It's also critical to find the right dive site in obtaining ideal photography conditions, with visibility and depth being critical issues for colour quality underwater.

2.1 Underwater Light

The key to taking amazing underwater photos is to understand how light interacts with camera equipment while underwater. In underwater photography, light is the most crucial factor. The amount of light available underwater is most affected by depth and visibility. When light goes through water rather than air, underwater photography involves the use of special techniques and equipment since water has quite different qualities than air. The more light accessible underwater, the more visibility there is. Underwater photographers can use natural light in their images if they understand and work with these aspects.

The amount of light accessible underwater is also determined by the sun's angle, according to Edge (2006). When the sun is directly overhead, the majority of the sun's rays will enter the water. There is a large loss of light due to the angle of reflection against the water's surface at times of the day when the sun is closer to the horizon, such as morning or evening. This produces softer, more diffused light, which may appeal to some underwater photographers.

The first thing to consider when planning an underwater photography shoot is that as we dive, we lose light. According to the Professional Associate Diving Instructor (PADIDigital)'s Underwater Photography Manual, the surface refracts light, forcing it to bend, while water absorbs light wavelengths, changing the colour spectrum. The first colour to fade is red, which is followed by orange and yellow.

Many underwater cameras are now equipped with color-correcting firmware. They are sensitive to light and are equipped with simple set-up menus that allow them to adapt automatically while submerged. To achieve the finest colour outcome when shooting underwater images without a strobe or light, keep the sun directly on the subject.

2.2 Colour in Underwater Photography

Color is a term that relates to reflected light in the context of art. To put it another way, colour has an impact on the items around us. Understanding three main areas: the colour wheel, colour value, and colour schemes, is required to use colour effectively in the creation of art: (A principle of art and design element.)

Underwater photographers, according to Antony (2007), experience a severe loss of colour as they go deeper. With increasing depth, seawater absorbs the colours of the visible light spectrum at various rates. The first colours to be absorbed are reds and oranges, followed by yellows, greens, and finally blues. At different depths, colour absorption happens regardless of available light. The use of a light strobe is one of the strategies that can be used to avoid colour loss.

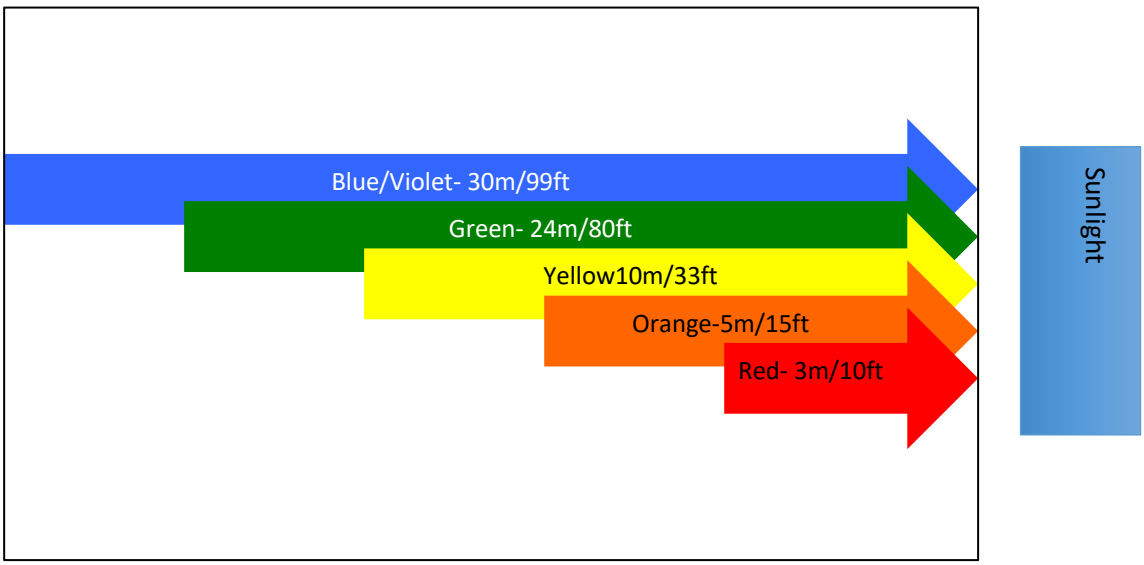


Figure 2. Distance colour loss under water by depth.

In the context of photography, understanding the concept of colour is critical since the effect of colour may produce something beautiful. Color has the ability to convey emotional aspects as well as their social significance. Color, according to Agnes, can be employed as the main focus on how colours affect the overall image. Every colour, for example, can influence human vision and trigger taste. Color can also elicit emotional responses, allowing each person to convey feelings differently while remarking on a colour. Color became a common symbol of or used to identify something, as well as a symbol of or used to symbolise a purpose.

Color can be divided into three groups based on the colour wheel chart: primary colours, secondary colours, and tertier colours. A photographer may easily resolved and manage all difficulties when taking a photo shoot if they grasp colour theory. In order to create anything as lovely as this in photography, the photographer must overcome unfavourable lighting conditions. Photographers must grasp how colours function beneath the sea and use all strategies and ideas to counter all color-related circumstances while on site.

Color also has a monetary value. The value of a colour is a metric that specifies how light or dark it is. The color's proximity to white defines it. Mastering colour value and terminologies can help us grasp photographic quality as well as the emotional and psychological influence of photos on viewers. Color temperature describes how we experience a colour, whether it is warm or cool.



On the colour wheel, warm hues go from red to yellow, while cool colours extend from blue to green and violet. Annie Leibovitz (2020) claims that when establishing the white balance on their camera, photographers who want complete control over the colour temperature of their photos utilise the Kelvin scale. The Kelvin scale imparts temperature gradations to the colour white, which then informs the temperature of all other colours (since white is the synthesis of the entire colour spectrum reflecting back to our eyes).



Figue 3. Color Temperature Wheel

Cameras, on the other hand, have superior technology that enables photographers to adjust for colour casts by choosing the optimum colour temperature mode for the scenario. The white balance choice merely informs the camera about the type of illumination present in the picture (daylight, shade, tungsten, etc.) and the camera will use the appropriate colour temperature.

2.3 White Balance

To ensure that the final image can be turned into pleasing designs, capturing photographs on the seabed demands a high level of expertise. While this process is in place, a photographer must concentrate on numerous areas of photography in addition to scuba diving skills. Color, lighting, composition, and, of course, correct white balance can all help to make a work more engaging to watch.

White balance is the term used to describe the colour temperature of a photograph. Color temperature refers to the ratio of blue to red light in an image. A light with a higher colour temperature (more blue) will have a higher Kelvin value, while a light with a less colour temperature (more red) will have a lower Kelvin value. The colour temperature of average daylight is 5500–6500 K. White balance, to put it another way, is a camera setting that adapts for actual lighting conditions in order to make white objects seem white in images (PADI 2007).

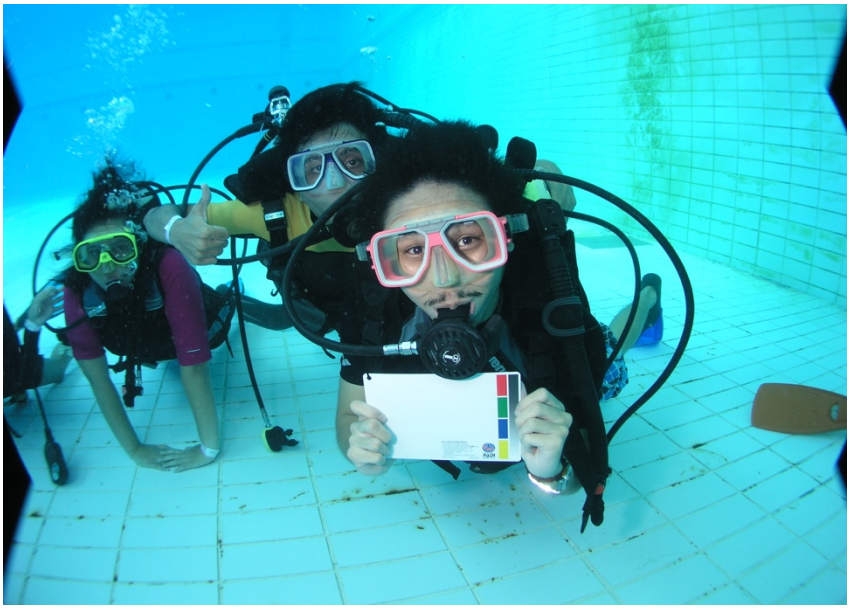


Figure 4. PADI white slate digital underwater photography

2.4 Coral Reef

Coral reefs are one of the most diverse ecosystems on the planet. Coral polyps, the invertebrates that build reefs, exist in a wide range of shapes and sizes, including massive reef-building colonies, beautiful flowing fans, and even tiny, lonely species. The coral reef is made up of a variety of corals from various families and species. Coral reefs support marine life by providing a reef system in which life can thrive while also relieving strain on natural reefs that have been over-fished and over-visited. These corals come in a variety of shapes and architectural designs, which can be linked to the crab's living environment, such as the ability to hunt for food.

This ability is based on the present pattern that surrounds them, as well as the competition for space and sunlight. The astetic value of this arrangement of many natural shapes and designs in the surrounding environment. It has the power to attract not only other marine life, but also human interest. Divers thought they were breathtakingly gorgeous. The vast diversity of species that rely on coral reefs for reproducing and feeding is similarly astonishing, as is their value to their natural ecosystem.

However, according to a report conducted by Reef Check Malaysia (2019), the Malaysian coral reefs analysed had a fair amount of surviving coral, with an average of 41.32 percent. While the average covers a broad range, the data has showed a persistent reduction in the total coral reef health since 2015.

Percentage of live coral cover	**Rating**
0-25	Poor
26-50	Fair
51-75	Good
76-100	Excellent

Figure 5. Coral Reef Criteria table developed by Chou *et al*, 1994.

3.0 METHODOLOGY

The application of underwater photography photos in documenting and gathering visual data for coral reef conservation will be utilising a qualitative method in this study. According to H. Sidky, utilising this methodology makes it much easier to research people in their own context using methods like observations and interviews. Under the correct circumstances, the participant could utilise their scuba diving expertise and knowledge in a way that is relevant to this study.

This study will be carrying out by multidisciplinary method and a wide photographic technique such as underwater photography to collecting data needed for the research purpose. The qualitative research involved the use of data, observation and analysis of documents and material. Greater understanding through the data analysis and photography documentation allows us to recognize and monitor coral reef conservation.

Photographing this incredible underwater panorama necessitated a wide range of photographic approaches. The goal of this study is to figure out how a scuba diver can take a high-quality underwater photograph. However, from an educational standpoint, the findings of this study can be used as instruments for future data collection.

It is critical to select a specific sampling method to analyse all data collected in order to answer the research topic. Non-probability sampling is typically associated with qualitative research and case study research design. Case studies, on the other hand, appear to concentrate on small samples and are intended to investigate a real-life occurrence rather than make statistical assumptions about the general population (Yin, 2003).

The researcher will initially investigate the study's variation before composing an intensity sampling. The researcher will subsequently be able to sample appropriate intensive cases as a result of this method. In order to assess scuba diving skills and playboating knowledge, the researcher will pick a sample of participants and interview them to acquire all of the data needed to complete the study. This sample method can be used to investigate distinct aspects of a case, occurrence, scenario, or behaviour with varying degrees of intensity.



Figure 6. Image result by participant on a healty coral

4.0 Findings

At long last, the researcher will provide a recommendation that is based on the results of the investigation. Nevertheless, in terms of educational practise, the results of this research may be used in the future as tools for reference. According to the findings of the research, underwater photography has the potential to be a significant tool for recording and collecting visual data for the purpose of coral reef conservation. Because of this study, a novel approach and concept to underwater photography have been uncovered, both of which have potential applications in further research.

5.0 Discussion

If we have a good understanding of the situation, we may be able to determine whether or not it presents an opportunity for us to enhance the quality of the material being discussed. It is about working together to create changes and concentratingon major topics in order to generate demonstrably beneficial results for a better future via collaborative effort. To put it another way, become involved in

the spreading of information about education and awareness, as well as the organising ofconservation efforts. According to Dimensions Educational Research Foundation (2004), a good visual should have an aesthetics value including characteristics and contextual of the images.

6.0 CONCLUSION & Recommendations

The advancement of technology, particularly in the last few years, has made underwater photography accessible to the majority of divers. This has opened the door for members of the general public to participate in scientific endeavours and research by contributing their own photographs. Photo identification is one of the most typical applications of underwater photography as a tool for data gathering. Photo identification is a really significant idea because it enables us to distinguish and then track specific members of aquatic life.

For the recommendation, the researcher would explain on suggestion for the future research. The recommendation for future research is:

a) What are the best methods and techniques for attaining acceptable colour reproduction when working in the field of underwater photography?

b) A lighting professional must work closely with the underwater photographer. It will streamline the data collection procedure. Underwater photography presents unique challenges due to the properties of water and its effect on light. Water absorbs light in ways that air does not. Therefore, it is important to understand the ramifications of this fact and to compensate and capture good images while underwater.

c) The study strongly advises that colour reproduction solutions using digital cameras, software applications, and colour correction tools should be implemented. The digital revolution has changed the way photographers manage color, with the use of digital cameras and computer software, they are able to achieve color quality more quickly and efficiently. This means that the color values in the underwater camera should match color values of the computer display.

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