**RESEARCH**

**ABSTRACT**

Light is a dynamic element of any space. When correct lighting elements are used effectively, the productivity and well-being of inhabitants in a space increase. Efficient and effective lighting, or the lack thereof, can have a great impact on the well-being of inhabitants. In order to more fully understand the influence of lighting on these decisions, research was conducted in the following areas:

1. The construction process of lighting fixtures:
   - What considerations need to be made during the design, construction, and implementation of a light fixture?
   - What is most important in the eventual function of the light fixture?

2. How to maximize efficiency in a light fixture:
   - What materials can be used in a light fixture?
   - What are the implications of using various materials in the final design of a light fixture?

3. Various forms of lighting and types of fixtures:
   - What are the different types of lighting fixtures available?
   - What are some of the advantages and disadvantages of each type of fixture?

**FINDINGS**

Multiple books and articles were consulted during the research process. While this is not a comprehensive list of all that was learned, the following are some key highlights of the research that was completed:

1. The construction process of lighting fixtures:
   - There are many considerations that go into the design, and eventual implementation, of a lighting fixture. Those who design light fixtures must have a thorough understanding of how the physical properties of light work, as well as how those properties will come together with the mechanical aspect of the design. The most important factor to consider during the design process is what the light fixture will be used for. If the purpose of the light fixture is not understood at the beginning of the design phase, it is highly unlikely that a successful lighting fixture will be created.

2. How to maximize efficiency in a light fixture:
   - There are countless materials that can be used to construct a lighting fixture. In “Illuminate: Contemporary Craft Lighting,” author Hannah Nunn explores a wide variety of these materials and shares some of the strengths and characteristics of each. Some of the more common materials include wood, metal, ceramics, and glass, but there are numerous others that can be used. Some non-conventional materials that have been utilized in lighting fixtures include cardboard, shoji paper, recycled materials, textiles, ribbons, and even rocks.

3. Various forms of lighting and types of fixtures:
   - There are two main types of lighting—direct and indirect. Direct is the natural light from the sun on the walls, while indirect light is reflected light from clouds as well as man-made lighting structures. A combination of direct and indirect lighting is often used for quality lighting in a space. There are many different types of lighting available, some of which include incandescent, halogen, fluorescent (or compact fluorescent), and LED's.

Choosing the best type of lighting fixture will depend on the purpose of the space and what activities or functions will be performed there. In general, there are three categories of lighting fixtures: fall-under—general lighting, task lighting, and accent lighting. For general lighting fixtures, it is best to choose a combination of direct and indirect lighting to create the desired level of illumination. For task lighting, it is best to choose direct lighting to create the desired level of illumination. For accent lighting, it is best to choose indirect lighting to create the desired level of illumination.

All of the researched information was helpful during the design process. It was decided that the primary purpose of the Kinetix fixture would be for general lighting, but it would also be able to adapt for task lighting as well. The materials chosen would give it a streamlined, contemporary look.

**DESIGN**

**DESCRIPTION**

KINETIX is a ceiling mounted light fixture that is able to be arranged in multiple configurations. With a simple, streamlined profile, KINETIX embodies the main principles for effective lighting in order to create a light fixture that is both functional and aesthetically pleasing.

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**HOW IT WORKS**

The KINETIX lighting unit is an interactive approach to a traditional lighting fixture. It comes with two main parts—a power rod, and a base unit.

The main power rod supplies all necessary electricity to the base unit. This rod connects to the ceiling, with electrical wiring running down the length of the rod. At the end of the connector segment, it is used to attach the base units to the power supply.

The base unit is geometric in form, and was designed to have a wide array of connecting points. These connecting points, which will be called “interconnecting channels”, are essentially small holes in the outer casing where an electrical contact is located. Electrical contact comes in two forms (or other electrically conducive material) that allows current to flow in a circuit. The two contacts complete a circuit when touching, acting as a switch.

Each interconnecting channel in the base unit is equipped with an electrical contact. This allows for multiple base units to connect in various patterns and configurations.

To use, one must simply attach the first base unit to the connector segment of the power rod which also contains an electrical contact. Each additional base unit that is connected to the first unit will light up as the circuit is completed.

The simple geometry of the base unit allows the Kinetix lighting fixture to look stunning no matter how it is deployed—as a single pendant, a cluster pendant, or a chandelier configuration. This flexibility allows for the user to adapt the lighting to the location and the specific needs of any situation. The diagram to the right shows the dimensions of the base unit with some sample configuration plans. A rendered view of the proposed lighting fixture is also shown.

**RESOURCES**