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Be The Light: Creating a Space for the Next Generation of Lighting Designers

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Bridgewater State University

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Departmental Honors- Designer Concept

Be The Light:

Creating an Educational Space for the Next Generation of Light Designers

Abstract- This presentation will highlight my departmental honors thesis. During the Fall and spring semester I researched, programmed, and assisted in the installation of the light lab in the Theatre Design and Technology Studio. This presentation will go over the first stages where I researched different intelligent lighting fixtures to find their different properties and ways to install. This presentation then visits the process where I programed the lighting fixtures into a computer software for them to be used and assist in the system installation of the lighting fixtures in the space. This presentation will show examples of lighting paperwork made by computer drafting software and technologies and lastly show how I was able to use this knowledge in my design process for Blood at the Root by Dominique Morisseau as a light designer and assistant light designer for the musical Godspell by John-Michael Tebelak.

The first step in starting my thesis required me to become familiar with certain words that I would come across during my research. Some of these words or phrases were Address, intelligent lighting fixtures, Attributes, and DMX. All these words or phrases were essential for me to fully understand before I started to even work with the lights in this space. I created a vocabulary list for myself so that I could always look back whenever I needed to.
Once finding definitions to these key terms, I was then able to begin my research on how these lights work. This research first included inventory work, making sure I knew how many lights there were to use and how they needed to be plugged in and if there were enough adaptors for them to be plugged in. I spent time finding instrument manuals for each light so that I could know how to program, address, and hang the fixtures. This process took the longest because these lights did not have clear manufactory labels on them. This information was needed to patch the light into the software. While some lights were easier to find than others, having to find their user manuals was hard to find because even if the light was a older or updated version of that light, that certain manual would not be valid. These fixtures ranged from moving lights, to still strobe lights that each had their own attributes that needed to match the programing. While finding this information I created a document that showed the name of these lights, as well as their attributes, if they required an adaptor for power, and how to address them. This phase took the longest, however helped me really gain an understanding on how these lights differ from conventional theatre lighting fixtures like what we use in our auditorium. These lights are more complex, and it is important to know what they can do before you try to control them. During this process I was able to really learn about each light which helped me for the next step.

The next part of this project was learning how to address the lights. This process was my favorite part of the project because I had to learn how to troubleshoot with these lights. With the use of software technology called ETC EOS Family, my next step was to patch the lighting fixtures into the computer for use and control. During this process I learned how to address the lighting fixtures through DMX. DMX is a abbreviation for digital multiplex and essentially is the
language that the lights and dimmer use to communicate with one another. With DMX, there are 512 different possibilities to address a light to. This process was very tedious because you had to make sure that the lighting fixture and the computer had the same number listed. During this process I was able to learn why my research in what attributes each light had matters because each attribute has its own DMX number. So, if the light can only pan and change the colors blue, red, and green, each color and pan will have its own number. This part of my thesis allowed me to see how differences like hard patching and soft patching were different in a hands-on way, as well as how different Conventional lights work vs. Intelligent lighting fixtures.

From my work in the Design and Technology studio, I have achieved my goal of learning real world/industry standards for lighting. From my thesis, I have been able to apply my learning into my design process for our theatre department here at BSU. In my designer process for Blood at the Root by Dominique Morisseau, I was able to take my knowledge of patching and hanging/focusing lighting fixtures and use that knowledge when it was time for me to do so during Student Repertory Theatre at BSU. I was able to read from a light plot and know exactly what and why a certain light was facing a direction and or why there was a different degree in light being used.

During this process I was able to get familiar with industry standard software and during the patching phase I had to learn how to troubleshoot when lights would not work. From my honors thesis work, I was also able to use my research work in my role of assistant lighting designer in BSU’s production of Godspell. Since I had experience in finding the information needed for intelligent lights, I knew what I needed to find and where to find it.
Aside from my design process, I have gained an excess knowledge about myself. As someone who loves to say they hate making decisions, I had to learn quickly with this project that even the smallest decision is a big one. With the help of this project, I gained confidence in my skill tool kit and was able to use that confidence in my design process. The outcome of this year long thesis has been rewarding especially when I was able to participate in the lighting design class final this semester and watch other students create cues to the same lighting fixtures that at the very beginning of this process, did not know what they were or capable of. I have become a better designer from my thesis and hope that this light lab helps future BSU students continue to Be The Light.
**Abstract**

This presentation will highlight my departmental honors thesis. During the Fall and spring semester I researched, programmed, and assisted in the installation of the light lab in the Theatre Design and Technology Studio. This presentation will go over the first stages where I researched different intelligent lighting fixtures to find their different properties and ways to install. This presentation then visits the process where I programmed the lighting fixtures into a computer software for them to be used and assist in the system installation of the lighting fixtures in the space. This presentation will show examples of lighting paperwork made by computer drafting software and technologies and lastly show how I was able to use this knowledge in my design process for Blood at the Root by Dominique Morisseau as a lighting designer and assistant light designer for the musical Godspell by John-Michael Tebelak.

**Cue 1: Vocab**

- **Hard Patching** – putting physical cables into a dimmer
- **Soft Patching** – setting up channels through the light board virtual
- **Dimmer** – mechanical or electromechanical devices used to vary the amount of electrical power being sent to each lighting instrument
- **Address** – To control multiple fixtures independently, they must be addressed to a different starting address that is not in the group of channels for another fixture.
- **Conventional Lights** – Light fixtures that uses a filament
- **LED lights/ Intelligent lighting fixtures** – Light emitting diode (how it works). As electricity passes through these materials the electrons in the compound become excited and emit photons of light.
- **Attributes** – what a light can do. An individual quality lighting has 4 (color, intensity, quality, and direction)
- **DMX** – 512 Digital Multiplex – Travels in one direction (from the controller to the light) language / talks to the lights and dimmers - control a dimmer to conventional light or control a moving light
- **Daisy Chain** – you can plug one cord into the other end, so everything is coming from the same dmx cable
- **DTS** – Theatre Design and Technology Studio – Moakley 120

**Cue 2: Research**

Once finding definitions to these key terms, I was then able to begin my research on how these 10 lights actually work. I spent time finding instrument manuals for each light so that I could know how to program, address and hang the fixtures. These fixtures ranged from moving lights, to strob light fixtures that each had their own attributes. While finding this information I created a document that showed the name of these lights, as well as their attributes, if they required an adapter for power, and how to address them. This phase took the longest, however helped me really gain an understanding on how these lights differ from conventional theatre lighting fixtures like what we use in our auditorium. These lights are more complex and it is important to know what they can do before you try to control them.

**Cue 3: Address**

With the use of software technology called ETC EOS Family, my next step was to patch the lighting fixtures into the computer for use and control. During this process I learned how to address the lighting fixtures through DMX (Illustration image above). With DMX, there are 512 different possibilities to address a light to. This process was very tedious because you had to make sure that the lighting fixture and the computer had the same number listed. During this process I was able to learn why my research in what attributes each light had matters because each attribute has its own DMX number. So, if the light can only pan and change the colors blue, red, and green, each color and pan will have its own number. This part of my thesis allowed me to see how differences like hard patching and soft patching were different in a hands on way, as well as how different Conventional lights work vs. Intelligent lighting fixtures.

**Cue 4: Hanging**

Now that the fixture and computer are communicating, it is now time to hang the lights in the space. During this stage, decisions like, which light to use, and where to put it had to made. Since this space is for educational use, many of the lights that were patched would not be useful. After looking over what attributes each light had, it was found that the Stage right stage wash led moving head was the best fit for the space. This intelligent moving light allows the control to pan, tilt, strobe, and change colors.

Creating a light plot is the next step in the process where this allows you to strategically place lighting fixtures on the pipes. In lighting design, you must place lights places for a reason; for the lights in DTS, lights were placed at certain points so that every angle could be reached on the mini stage in the space. With the introduction to software like Vectorworks and lightwright, I was able to take this into my design process as well.

**Cue 5: Obstacles**

I came across many obstacles during my year long honors thesis. One struggle that I came across was at the research point of the process because of how difficult it was to find the correct manufacture of the fixtures. This information was needed in order to patch the light into the software. While some lights were easier to find than others, having to find a user manual was also hard to find because even if the light was a older or updated version that light, that certain manual would not be valid.

**Cue 6: Outcomes**

From my work in the Design and Technology studio, I have achieved my goal of learning real world/industry standards for lighting. From my thesis, I have been able to apply my learning into my design process for our theatre department here at BSU. In my designer process for Blood at the Root by Dominique Morisseau, I was able to take my knowledge of patching and hanging/ focusing lighting fixtures and use that knowledge when it was time for me to do so during Student Repertory Theatre at BSU. I was able to read from a light plot and know exactly what and why a certain light was facing a direction and or why there was a different degree in light being used.

During this process I was able to get familiar with industry standard software and during the patching phase I had to learn how to troubleshoot when lights would not work. From my honors thesis work, I was also able to use my research work in my role of assistant lighting designer in BSU's production of Godspell. Since I had experience in finding the information needed for intelligent lights, I knew what I needed to find and where to find it. I have become a better designer from my thesis and hope that this light lab helps future BSU students continue to Be The Light.