**Project Title:** ECRL (Eye Comfort Reading Light)  
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**Project Progress Update**

Since the previous update, no physical construction of the primary project has taken place. However, substantial progress has been made in preparing the required components for prototyping. Notably, the Arduino UNO R3 module has been received from transit, along with other essential components such as a breadboard, Arduino software, and a photocell.

To align with the planned incremental testing strategy (as outlined in Report 1), a minor project was developed to implement light adjustment using voltage division via a photocell, with the Arduino serving as the processing unit. The prototype was enhanced such that the LED remains continuously active as long as power is supplied. The LED adjusts its brightness based on ambient light levels and remains faintly illuminated even in complete darkness.

**Challenges Encountered**

One of the key challenges encountered during preliminary testing was the limited brightness variation range of standard LEDs. The maximum intensity appears to be capped at level 5, and Arduino does not support values below 1—it defaults these to zero. This restricts fine-grained control over light intensity, which is critical for our project's user experience. This limitation must be addressed moving forward.

**Future Objectives**

Our near-term objective is to implement a dual-LED configuration, wherein each LED adjusts independently based on ambient light intensity. Upon successful completion of this phase, the focus will shift to color blending. Specifically, the goal is to combine yellow and white LEDs to produce a visually comfortable and biologically appropriate reading light.

To inform this phase, we will revisit and analyze previously collected survey data regarding optimal lighting conditions for eye comfort.

**Projected Milestones for Next Update**

The following milestones are targeted for completion prior to the next report:

* Achieve independent intensity adjustment for two LEDs based on environmental light (1–2 days).
* Review and incorporate insights from prior survey data to inform system refinement (1–3 days).
* Address the LED intensity range limitation to allow smoother and more sensitive light transitions (1–3 days).

Based on this timeline, we anticipate submitting the next project update approximately one week from today.