Arduino-Controlled LED Output

Discover
Rather than using a button to control an external LED, you can program the Arduino to turn on/off the external LED with just a few lines of code.

Learn
The Arduino has digital outputs that you can control to go high/low (+5V/GND). In ARD1-Develop, the code uses pin 13 to go high/low because it is also connected to the LED on the Arduino.
The simple LED circuit built in ELEC1-LED_Out was connected to the constant +5V pin, for this task the +5V will be the controlled digital output pin 13.

Apply
Open the Example Blink in the Arduino IDE (as done in ARD1-Develop). Upload the sketch to the Arduino, and the on board LED should be blinking.
Make the simple LED circuit as per ELEC1-LED, but instead of connecting to the 5V, connect to “13”. The external LED should now blink with the on board LED.

Change the led variable to be 12 (`int led = 12;`), then upload the sketch. The on-board LED will no longer be blinking. Change where your circuit connects to the Arduino to make the external LED blink.

Teach
Any other ideas of your own to try? Share them with another, or try one of the following.

Light pair
Work with another to make one board control two LED's. The two coding changes are:

- setup the pin mode of your desired pin number to be an output eg “`pinMode(14, OUTPUT)`”
- loop a digital write of your desired pin number high/low with a delay afterwards

Basically you can copy the existing code but change the pin number, and add to the existing circuit.

Flicker
To make a LED flicker on/off for a random amount of time, we'll need the help of a random delay.
Try find a random function in the reference documentation (Help → Reference). Before setup, define a new variable “`int duration = 1000;`” and use this variable “duration” in the delay function.
Now just before each delay function is called, set “duration” to equal the result of the random function. “duration = ra...”

Discover
Now you can combine the input and output to do some smarter logic (ARD3-InOut).