

MAGNETIC OR ELECTRONIC BALLASTS?

*Taken from the Green Schools Tool Kit Manual to be used in conjunction with the tool kit

Objective:

Students will use the Flicker Checker to determine whether the classroom's fluorescent lighting has magnetic or electronic ballasts.

Grade Level: 9 – 12

Equipment: Flicker Checker (from Green Schools Tool Kit)

BACKGROUND INFORMATION

Newer fluorescent light fixtures use electronic ballasts that are much more energy efficient than the older magnetic ones. They also have fewer problems for people who sensitive to fluorescent lights.

Fluorescent fixtures with magnetic ballasts actually turn on and off 120 times per second. For many people (approximately 16 percent of the U.S. population) this cycling causes some level of discomfort, headaches or nausea. Electronic ballasts, which cycle thousands of times per second, do not have the same effects.

Businesses that have converted from magnetic to electronic ballasts have seen dramatic decreases in sick days and increases in productivity. Stores that have converted have noted that sales increase because people feel more comfortable and spend more time in the store. They also benefit from the energy savings that come with electronic ballasts.

ADVANCE PREPARATION

Prepare how you will handle the results. If it is discovered that the classroom lighting has magnetic ballasts, it is quite likely that some students will say that the lights have always bothered them. Be ready to respond to this situation.

LEADING THE INVESTIGATION

1. Turn on the room's fluorescent lights.
2. Find a flat surface underneath the light that is to be tested.
3. Spin the Flicker Checker like a top on the flat surface.
4. Observe the top of the Flicker Checker. If a pattern is visible, the ballast is a magnetic. If the top of the Flicker Checker only looks like a blur (there is no discernable pattern), the ballast is electronic.

FOLLOW-UP

- If the lighting has magnetic ballasts, the class may lobby the administration to upgrade the school's lighting. They could cite studies showing that improved lighting in schools raised grades and test performance.
- Students find out more about the stroboscopic effect and whether it has other applications.