

Introduction

It is our belief that nothing can or should be used to replace the traditional "hands-on" approach to learning experimental techniques. The intent of the interactive laboratories is not to create a substitute for hands-on training but, instead, to supplement it.

The interactive laboratories allow for

1. **Repetitive practice in techniques that would normally be experienced only once in the traditional setting of the teaching laboratory.**

The interactive laboratories force the user to think about experimental setup and technique. If a step is forgotten or performed out of sequence, an error message will appear. Similarly, if the experiment is not set up correctly, incorrect data will be obtained. Because one of the goals of the interactive laboratories is to teach experimental technique, the labs can be repeated as many times as necessary. To avoid tedious repetition, users are not required to perform all of the steps in an experimental procedure. However, whenever correct experimental protocol is compromised, the user is made aware of this fact.

2. **Exposure to techniques that are too time-consuming, hazardous, or costly to deliver in introductory biology labs.**

3. **Development of data-interpretation and problem-solving skills.**

Like the physical sciences, many areas of biology rely on quantitative reasoning. Usually, in the traditional lab format only one set of data is generated and this data is often not ideal. Using the interactive labs, multiple sets of data easily can be generated, allowing the user to develop his or her data interpretation and problem-solving skills.

4. **Exposure to real-life applications of modern biology techniques.**

By using real-life case scenarios, the interactive labs illustrate how essential biomolecular techniques are used in the applied fields of medicine (for disease diagnosis) and forensics (to generate genetic fingerprints).