**Chapter 1 Questions**

1. Name the usability measures that can be used to produce a practical evaluation of a system. Keep the goals of efficiency and satisfaction in mind with these measures. Time to learn, rate of human errors, speed of task completion, subjective satisfaction, sales, human retention over time.
2. Describe how interface researchers apply the scientific method (controlled experimentation) to validate their designs.
* Understanding of a practical problem and related theory
* Lucid statement of a testable hypothesis
* Manipulation of a small number of independent variables
* Measurement of specific dependent variables
* Careful selection and assignment of subjects
* Control for bias in subjects, procedures, and materials
* Application of statistical tests
* Interpretation of results, refinement of theory, and guidance for experimenters
1. What are the weaknesses of controlled experimantation? It may be difficult or expensive to find adequate subjects, and laboratory conditions may distort the situation so much that the conclusions have no application. Controlled experiments typically deal with short-term usage, so understanding long-term consumer behavior or experienced user strategies is difficult. Since controlled experiments emphasize statistical aggregation, extremely good or poor performance by individuals may be overlooked. Furthermore, anecdotal evidence or individual insights may be given too little emphasis because of the authoritative influence of statistics.
2. Give examples of how accommodating diversity results in better design for all. Text example was sidewalk cutouts for wheelchair users also benefit delivery people pushing carts, bikers, and people pushing strollers. Allowing users to adjust screen font size helps the vision impaired but also useful for elderly. Accept similar.
3. Describe how workplace design considerations such as furniture ergonomics and physical environment affect human computer interaction. The most elegant screen design can be compromised by a noisy environment, poor lighting, or a stuffy room, and that compromise will eventually lower performance, raise error rates, and discourage even motivated users.
4. Describe the special interface needs of children, older adults, and people with disabilities. Children: Their evolving dexterity means that mouse dragging, double-clicking, and small targets cannot always be used; their emerging literacy means that written instructions and error messages are not effective; and their low capacity for abstraction means that complex sequences must be avoided unless an adult is involved. Other concerns are short attention spans, limited capacity to work with multiple concepts simultaneously, and potential exposure to Internet dangers.. Older Adults: Providing users with control over font sizes, display contrast, and audio levels. Interfaces can also be designed with easier-to-use pointing devices, clearer navigation paths, consistent layouts, and simpler command languages. People With Disabilities: Keyboard or mouse alternatives, color-coding, font-size settings, contrast settings, textual alternatives to images, and web features such as frames, links, and plug-ins. Screen magnification to enlarge portions of a display and text-to-speech conversion for visually impaired. Conversion of tones to visual signals for hearing impaired.
5. Suggest ways interface design can alleviate the concerns of reluctant users. Simplify the interface. Increase the size of screens and fonts. Non-hostile and specific error messages. Avoid using a deceptively anthropomorphic style. Don’t require users to remember a complex sequence of actions.

**Chapter 1 Terms and Concepts to Know**

1. Time to learn
2. Speed of performance
3. Rate of Error
4. Retention over time
5. Subjective satisfaction
6. Design Plasticity
7. Life critical systems
8. Controlled Experiment
9. Universal Usability
10. Ergonomics
11. Anthropometry
12. Principle of Least Astonishment\*
13. Cognitive Directness\*
14. Modality: Use modes cautiously\*

\*From assigned article [Ergonomic Guidelines for User Interface Design](http://ergo.human.cornell.edu/ahtutorials/interface.html)