General ISD Guidelines:

- Focus on the learner, not content. Capture their attention.
- Focus on Performance Based Objectives. Knowledge objectives teach facts and rules, Performance Based teach theories, principles and concepts for learning. Learning occurs when the Student applies them.
- Teach skills that matter; base them on real problems.
- Base presentation on learners' prior experience.
- Embed content with authentic context.
- Provide authentic and realistic assessment.
- Use dynamic, non-linear, pre-assessed, and individual learner-controlled strategies.
- Employ tracking, analysis, and corrective feedback.
- Follow the rule of 7; build in practice to assist the transfer (see interactive element) to long-term memory.
- Group similar items together; each learning object is built around an objective.
- Build in expert help and mentoring; recommend other learning.
- Provide Just-In-Time / Learning on Demand support.

Instructional design should be based on these principles:

- Develop a knowledge structure consistent with, and appropriate for, the knowledge and skill being taught.
- Develop a presentation consistent with, and appropriate for, the kind of knowledge or skill being taught.
- Provide an opportunity for exploration and practice of the ideas being taught.
- Provide practice with feedback consistent with, and appropriate for, the knowledge or skill being taught.
- Provide learner guidance consistent with, and appropriate for, the knowledge and skill being taught.
Rules for Content Developers:

- In selecting content: Teach learners to answer their own questions. Resist teaching large amounts of detailed factual information.
- In teaching important associations: Provide rich associations for key concepts you teach. Do not rely solely on simple pick-one tests.
- To avoid overloading learners: Don’t require learners to keep more than a few items in working memory at a time. Group items into meaningful categories.
- In organizing knowledge: Show the organization of any group of more than a few items. Never bury something crucial in the middle.
- Accommodate for different learning styles and approaches: Provide multiple ways to access the same information. Present crucial information in multiple media.
- In focusing learners’ attention: Focus attention on the most important thing you are teaching. Forego meaningless multimedia.
- In setting and clarifying context: Make the context of learning resemble that in which knowledge will be applied. Provide the context for all new information introduced.
- In providing opportunities for practice: Use multiple media to overcome human limitations. Watch out for conflicting messages in simultaneous media.

Key Characteristics Of Learning And Transfer

- Initial learning is necessary for transfer, and a considerable amount is known about the kinds of learning experiences that support transfer.
- Knowledge that is overly contextualized can reduce transfer; abstract representations of knowledge can help promote transfer.
- Transfer is best viewed as an active, dynamic process rather than a passive end-product of a particular set of learning experiences.
- All new learning involves transfer based on previous learning, and this fact has important implications for the design of instruction that helps students learn.
- Expert knowledge is not simply a list of facts and formulas that are relevant to their domain; instead, Expert knowledge is organized around core concepts or "big ideas" that guide their thinking about their domains.

Expert Knowledge

Expert knowledge is not simply a list of facts and formulas that are relevant to their domain; instead, Expert knowledge is organized around core concepts or "big ideas" what guide their thinking about their domains.

We consider several key principles of experts' knowledge and their potential implications for learning and instruction:

- Experts notice features and meaningful patterns of information that are not noticed by novices.
- Experts have acquired a great deal of content knowledge that is organized in ways that reflect a deep understanding of their subject matter.
- Experts' knowledge cannot be reduced to sets of isolated facts or propositions but, instead, reflects contexts of applicability: that is, the knowledge is "conditionalized" on a set of circumstances.
- Experts are able to flexibly retrieve important aspects of their knowledge with little intentional effort.
- Though experts know their disciplines thoroughly, this does not guarantee that they are able to teach others.
- Experts have varying levels of flexibility in their approach to new situations.

The superior recall ability of experts has been explained in terms of how they "chunk" various elements of a configuration that are related by an underlying function or strategy. Since there are limits on the amount of information that people can hold in short-term memory, short-term memory is enhanced when people are able to chunk information into familiar patterns. Expertise in a domain helps people develop a sensitivity to patterns of meaningful information that are not available to novices.