

Welcome to **Inquiry-based Learning**. Start here in the "Explanation" section, which is all about the CONCEPT. Then go on to "Demonstration" and the following sections, where we move from CONCEPT TO CLASSROOM!

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What is inquiry-based learning?

An old adage states: "Tell me and I forget, show me and I remember, involve me and I understand." The last part of this statement is the essence of inquiry-based learning, says our workshop author **Joe Exline**¹. Inquiry implies involvement that leads to understanding. Furthermore, involvement in learning implies possessing skills and attitudes that permit you to seek resolutions to questions and issues while you construct new knowledge.

1. Buzzwords

"Inquiry" is defined as "a seeking for truth, information, or knowledge -- seeking information by questioning." Individuals carry on the process of inquiry from the time they are born until they die. This is true even though they might not reflect upon the process. Infants begin to make sense of the world by inquiring. From birth, babies observe faces that come near, they grasp objects, they put things in their mouths, and they turn toward voices. The process of inquiring begins with gathering information



Part 1 of 2

Part 2 of 2



Tim O'Keefe, a teacher at the Center for Inquiry elementary school in Columbia, South Carolina, explains why he thinks inquiry is a much more effective teaching strategy than traditional chalk-and-talk.

and data through applying the human senses -- seeing, hearing, touching, tasting, and smelling.

A Context for Inquiry

Unfortunately, our traditional educational system has worked in a way that discourages the natural process of inquiry. Students become less prone to ask questions as they move through the grade levels. In traditional schools, students learn not to ask too many questions, instead to listen and repeat the expected answers.

Some of the discouragement of our natural inquiry process may come from a lack of understanding about the deeper nature of inquiry-based learning. There is even a tendency to view it as "fluff" learning. Effective inquiry is more than just asking questions. A complex process is involved when individuals attempt to convert information and data into useful knowledge. Useful application of inquiry learning involves several factors: a context for questions, a framework for questions, a focus for questions, and different levels of questions. Well-designed inquiry learning produces knowledge formation that can be widely applied.



Importance of Inquiry

Memorizing facts and information is not the most important skill in today's world. Facts change, and information is readily available -- what's needed is an understanding of how to get and make sense of the mass of data.

Educators must understand that schools need to go beyond data and information accumulation and move toward the generation of useful and applicable knowledge . . . a process supported by inquiry learning. In the past, our country's success depended on our supply of natural resources. Today, it depends upon a workforce that "works smarter."

Through the process of inquiry, individuals construct much of their understanding of the natural and human-designed worlds. Inquiry implies a "need or want to know" premise. Inquiry is not so much seeking the right answer -- because often there is none -- but rather seeking appropriate resolutions to questions and issues. For educators, inquiry implies emphasis on the development of inquiry skills and the nurturing of inquiring attitudes or habits of mind that will enable individuals to continue the quest for knowledge throughout life.

Content of disciplines is very important, but as a means to an end, not as an end in itself. The knowledge base for disciplines is constantly expanding and changing. No one can ever learn everything, but everyone can better develop their skills and nurture the inquiring attitudes necessary to continue the generation and examination of knowledge throughout their lives. For modern

education, the skills and the ability to continue learning should be the most important outcomes. The rationale for why this is necessary is explained in the following diagrams.

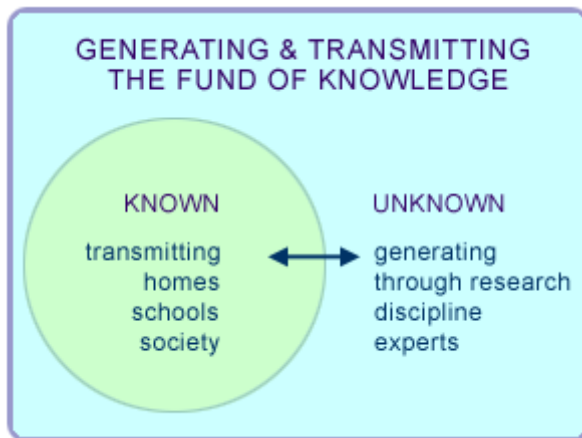


Illustration developed by Joe Exline

This figure illustrates how human society and individuals within society constantly generate and transmit the **fund of knowledge**².

2. Buzzwords

Human society and individuals within society constantly generate and transmit this fund of knowledge. Experts, working at the boundary between the known and the unknown, constantly add to the fund of knowledge.

It is very important that knowledge be transmitted to all the members of society. This transmission takes place through structures like schools, families, and training courses.

Certain attributes are necessary for both generating and effectively transmitting the fund of knowledge. The attributes that experts use to generate new knowledge are very similar to the qualities essential for the effective transmission of knowledge within the learners' environment. These are the essential elements of effective inquiry learning:

- 1 Experts see patterns and meanings not apparent to novices.
- 2 Experts have in-depth knowledge of their fields, structured so that it is most useful.
- 3 Experts' knowledge is not just a set of facts -- it is structured to be accessible, transferable, and applicable to a variety of situations.
- 4 Experts can easily retrieve their knowledge and learn new information in their fields with little effort.

(The list above was adapted from "[How People Learn](#)," published by the National Research Council in 1999.)

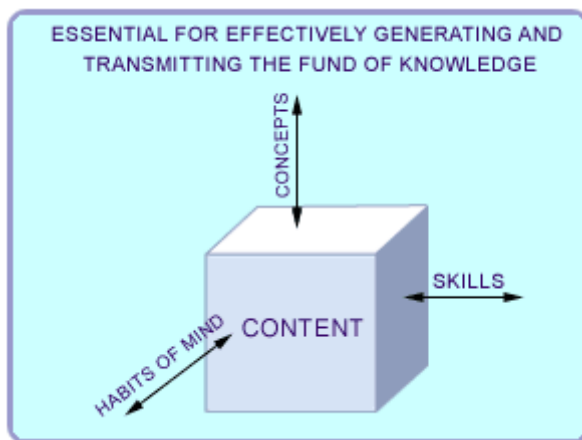


Illustration developed by Joe Exline

This figure illustrates the attributes necessary for both generating and effectively transmitting the fund of knowledge.

We propose that the attributes experts use to generate new knowledge are very similar to the attributes essential for the effective transmission of knowledge within the learner's environment -- the essentials of effective inquiry learning.

Inquiry is important in the generation and transmission of knowledge. It is also an essential for education, because the fund of knowledge is constantly increasing. The figure below illustrates why trying to transmit "what we know," even if it were possible, is counterproductive in the long run. This is why schools must change from a focus on "what we know" to an emphasis on "how we come to know."

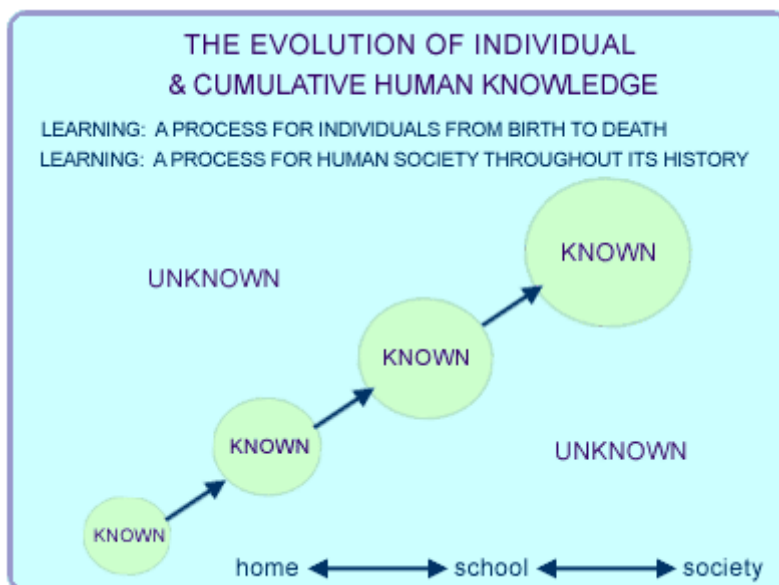


Illustration developed by Joe Exline

This chart illustrates that while knowledge is constantly increasing, so is the boundary of the unknown.

An effective and well-rounded education gives individuals very different but interrelated views of the world. All disciplines have

important relationships that provide a natural and effective framework for the organization of the school curriculum, as shown in the chart below. The subject matter of disciplines can be set in the larger context of a **conceptual framework**³. This framework is crucial for understanding change and also for the organization of the discipline and its application to the natural and human-designed worlds.

3. Buzzwords

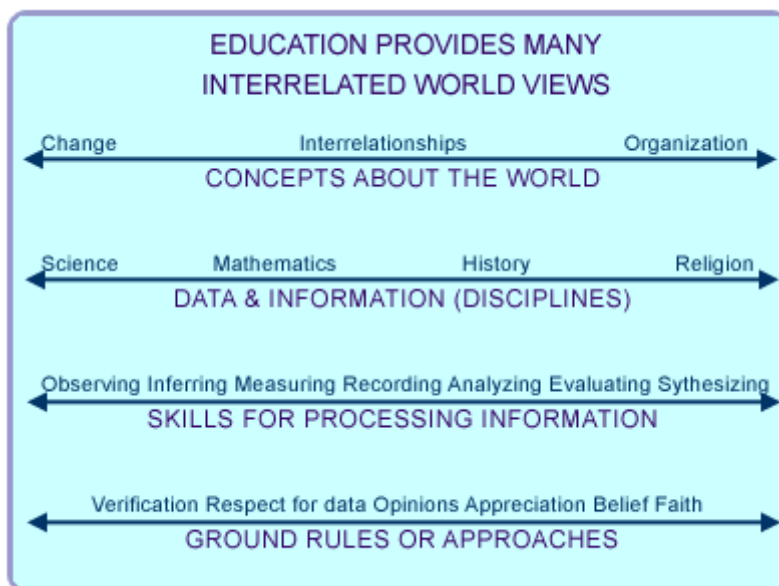


Illustration developed by Joe Exline

This chart illustrates that skills for processing information are similar across all disciplines.

The habits of mind⁴, values, or "ground rules" of a particular discipline provide that discipline's unique perspective. The sciences, for example, demand verification of data, while the study of literature often relies on opinions and subjective interpretations as a source of information. Habits of mind vary in their rigidity across disciplines. This doesn't mean that one is right and the other is wrong, but simply that the "ground rules" are different.

4. Buzzwords

The Application of Inquiry

While much thought and research has been spent on the role of inquiry in science education, inquiry learning can be applied to all disciplines. Individuals need many perspectives for viewing the world. Such views could include artistic, scientific, historic, economic, and other perspectives. While disciplines should interrelate, inquiry learning includes the application of certain specific "ground rules" that insure the integrity of the various disciplines and their world views.

Outcomes of Inquiry

An important outcome of inquiry should be useful knowledge about the natural and human-designed worlds. How are these worlds **organized**? How do they **change**? How do they **interrelate**? And how do we **communicate** about, within, and across these worlds? These broad concepts contain important issues and questions that individuals will face throughout their lives. Also, these concepts can help organize the content of the school curriculum to provide a relevant and cumulative framework for effective learning. An appropriate education should provide individuals with different ways of viewing the world, communicating about it, and successfully coping with the questions and issues of daily living.

While questioning and searching for answers are extremely important parts of inquiry, effectively generating knowledge from this questioning and searching is greatly aided by a conceptual context for learning. Just as students should not be focused only on content as the ultimate outcome of learning, neither should they be asking questions and searching for answers about minutiae. Well-designed inquiry-learning activities and interactions should be set in a conceptual context so as to help students accumulate knowledge as they progress from grade to grade. Inquiry in education should be about a greater understanding of the world in which they live, learn, communicate, and work.

There are several variations on inquiry-based learning. Among the most widely used are the **Future Problem Solving Program**⁵ and the **Problem-based Learning Approach**⁶. See the "[Resources](#)" section for more on these approaches.

5.  Buzzwords

6.  Buzzwords

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