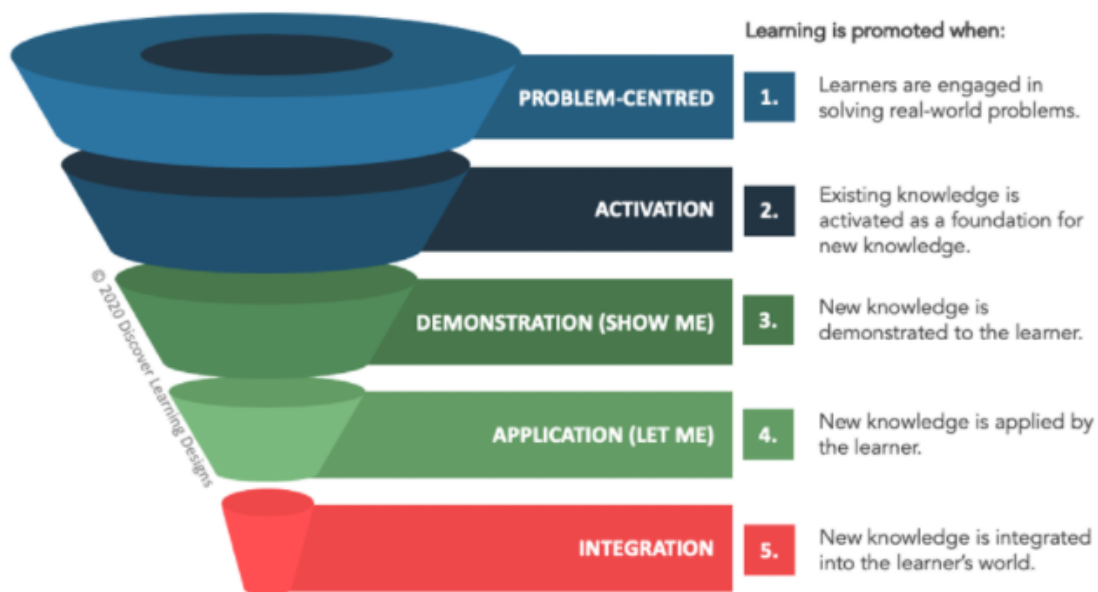


Sakura Science online Seminar

First principles of ID (Merrill)

1. Challenge a real-world problem (Problem)
2. Mobilize knowledge you already know (Activation)
3. Show me, not tell me (Demonstration)
4. Opportunity to apply or learn by doing (Let me) (Application)
5. Opportunity to use in the field and reflect area (Integration)



Adapted from First principles of instruction, 2002.

Figure 1. Merrill's Instructional Design Principle

The First Principle of Instruction, proposed by M.D. Merrill, was published in 2002(2) and has influenced many teachers all over the world since then. As a common strategy (i.e., "first principle") for

many teaching models and theories that have been proposed under the educational theory, it summarizes the five requirements necessary to realize an effective learning environment.

The first principle of ID proposed by Merrill as shown in Figure 1. (shown on the previous page)

The first principle is to start with a real-world problem. Traditionally in ID, it has been good to present learners with a learning goal of "what you should be able to do by the end of this period" and focus their attention on it. It has been thought to be a good idea to focus the learner's attention on this goal. The idea is to extend this, so that learners can have an image of "I see, if I learn this, I will be able to use it in any situation," and think, "If that is the case, I really want to try it". In order to achieve this, it is important to transform "forced" training, which is done without knowledge of when and where it will be useful, into a "self-driven" training. A "self-driven" training has a mindset of "this is useful tomorrow" and "I would love to do it". The key to this is to gradually cultivate the basics by having the students challenge "real world problems".

Dictation vs. Reflection

"Dictation" leaves the teacher to tell the students what to do.

"Reflection" lets the students think for themselves.

The second principle is "activation," which is to awaken the students' past experiences.

The "activation" means to recall the past experiences of the participants. Even children already have a wealth of experiences. Even adults have learned and encountered a variety of experiences in their lives. In order to solve the first "problem," before giving the right answer, ask, "What do you think should be done?" and use all the knowledge you already have. When they realize that they need some new wisdom, this becomes a trigger for new learning. In the early days of ID, the approach of learner-centered design has been taken. The training plan is made with a focus on "what to cover and in what order". There is a danger of leaving out who you are dealing with and what level of knowledge and experience they have. We'll give you the basic information first, and you can figure out how to apply it in the field later. This is the wrong order. What kind of situations can this "basic information" be used in, and what is its significance? In order to find out, we need to look back at what we have learned so far, envision situations where we can apply it, and do basic exercises for new learning. This is what "activation" is all about.

3 The third principle is "Demonstration". When giving "basic information," I tell people to show me examples.

Example of "Demonstration" on how to open a water bottle:

1. The teacher brings a water bottle and shows it in front of the students.
2. The teacher holds and twists the lid counterclockwise to remove the lid. While doing this process, the teacher explains the difference between the counterclockwise and clockwise motions. The teacher will also explain and show how much pressure/power should be applied while twisting the lid.
3. The teacher removes the lid. Now, the water bottle is open.
4. Demonstration means the teacher is the only one doing the action. The students will only observe in this case. This concludes the "show me" NOT ONLY "tell me" example.

First principles advise us to first check that we are focusing on examples, not sermons.

4 - The fourth principle is "Application".

The fourth principle is "Application" which means that, after the example of "Show me", let the children actually try to open the cap, it means, "let me". If the demonstration is to make the learner think "let me do it" then it is successful. The children will want to go and touch the water bottle.

If they fail to remove the cap, they will think about the cause and understand why it happened. That will lead to deeper learning. It was a very good experience.

By trial and error of doing the clockwise or counterclockwise motions, learners experience certain rules for themselves. Some learners may think of other things to help remove the cap. For example, if the cap won't budge, they consider turning the cap to the opposite direction and how many times they need to apply the motion. They may also consider applying more power or getting a towel for a better grip.

After experiencing how to open a water bottle and learning the concepts behind it, the student can have a stock knowledge to apply this on other similar things like how to open a faucet.

NO5

The last principle is "Integration" which means giving people a chance to reflect on the results of their learning in their

daily lives. It is the integration of learning and living. They will be able to turn on the tap with confidence.

If they don't have a chance to apply what they've learned, they will more likely forget what they've learned. It is only when you can actually apply what you've learned that you can really retain the knowledge. The most important thing is to reflect, apply, and be able to repeat what you've learned.

Integration will lead to the development of autonomous learners who can apply new knowledge to similar problems or concepts.

Summary

Examples of teaching strategies based on Merrill's ID first principles

1) Problem:

- Challenging problems that might occur in the real world
- Engage learners in solving problems that might occur in the real world
- Show what kind of problems learners will be able to solve after completing the training course/module.

2) Activation:

- Mobilize knowledge already known
- Remind learners of relevant past experiences
- Remind, relate, describe, and apply knowledge gained from past experiences

3) Demonstration:

- Have an example (Show me, not tell me)
- Don't just "tell" the new learning as information, but "illustrate" it
- Visualize for process learning, and (e) show a model for behavior learning.

(4) Application:

- There is a chance to apply (Let me)
- Let learners solve problems using their newly learned knowledge and skills
- Coach learners to solve problems, including identifying and correcting errors and gradually reducing assistance
- Require learners to solve different problems in sequence

5) Integration:

- Give learners a chance to use and reflect on their life.
- Encourage learners to integrate (transfer) new knowledge and skills into their daily lives.