The medium
The physical means by which the instructional message is communicated, such as television, print materials, teacher, or computer.

Attributes of a medium
Its capabilities of efficiently delivering the conditions that facilitate learning for particular kinds of outcomes and particular learners.

DO NOT DECIDE ON THE MEDIA BEFORE ANALYZING THE INSTRUCTION (Smith & Ragan, 1999, p. 286)
When designing the instruction, the designer should avoid making an a priori decision as to the medium that will be used to deliver instruction. In other words, do not have a technology that is a “solution looking for a problem.”

The media selection decision should be made after the instructional analysis and at the same time that the instructional strategy is being developed.

Examine the demands of the instructional situation first, and then decide which medium or combination of media will best meet the needs of the situation.

APPROPRIATENESS OF A MEDIUM FOR A LEARNING SITUATION (Smith & Ragan, 1999, pp. 286-287)

No one superior medium for all instruction
“Past research on media has shown quite clearly that no medium enhances learning more than any other medium regardless of learning task, learner traits, symbolic elements, curriculum content, or setting” (Clark & Salomon, 1986, p. 474).

A medium’s attributes can make it more appropriate for a specific learning situation
Some media are more capable than others of efficiently delivering the conditions that facilitate learning for particular kinds of outcomes and particular learners.

FACTORS TO CONSIDER WHEN SELECTING INSTRUCTIONAL MEDIA (Smith & Ragan, 1999, p. 287)
Learning Task and Conditions -- The learning task along with the instructional conditions that facilitate the learning of this task.

Learners -- The characteristics of the learners.

Context -- The learning context and other practical matters that influence the
appropriateness of the medium.

**Media attributes** -- The attributes of the potential media (what each potential medium can and cannot do with regard to factors #1-3).


**People**
- **Interactive** -- Teachers are highly interactive (depending on the mood and wishes of the person).
- **Expensive** -- Humans are extremely expensive to employ.
- **Adaptable & flexible** -- Teachers are highly adaptable and flexible (depending on the skills and attitude of the person).
- **Not perfectly reliable** -- Humans are unreliable for doing the same thing over and over in exactly the same way (such as repeating the same lesson on acid-base reactions 25 times for 25 individual students).
- **Empathetic** -- Teachers possess and reflect empathy. Humans are the only medium that has this ability, and for certain learning tasks and situations, it is an invaluable one.
- **Multiprocessing** -- Teachers appear able to simultaneously process multiple sensory inputs from various sources and select those that are most critical to the current situation.

**Print**
- **Inexpensive** -- Is relatively inexpensive to produce and duplicate. (The range of cost for production and duplication can be quite wide.)
- **Individualized** -- Supports individual student use.
- **No equipment required & very portable** -- Does not require equipment for use and is very portable.
- **Permanent record** -- Is a permanent record of instruction, and accessing it requires no equipment.
- **Easy random access** -- The book format, as supported by page numbers and conventions such as the table of contents and index, is excellent for providing easy random access by individual users.
- **Fairly interactive** -- Can be developed to provide a fair degree of interactivity.
- **Annotatable** -- Can be annotated by learners to reflect their personal elaborations and emphases.
Requires user literacy -- Is sensitive to learners’ literacy skills (i.e., the student must be literate to use it).

Computers
Rapid & accurate information manipulation -- Can hold a great deal of information in its memory, manipulate this information rapidly, and never make a mistake in this manipulation of data.

Access vast information -- Can access a seemingly limitless amount and range of information over networks.

Dynamic graphics -- Can deliver dynamic graphics, and the character of these graphics can be changed by input from the learner.

Highly interactive -- Can foster a high level of interactivity. It can ask for student response and can respond to the student’s response in a relatively individualized manner.

Individualized -- Can adapt to the learner, either through supporting exploration by hyperlinks or actively by adjusting the content to the needs of the learner.

Variable control -- Can maintain a high level of control over what the learner is allowed to attend to at one time, or it can put this control in the hands of the learner.

Adjustable feedback -- Can adjust the type of feedback that it gives to the type of response that the learner makes.

Adapt instruction to learner needs -- Can retain and analyze records of the progress of the learner and use this information to adapt future instruction sequences to the needs of the learner.

Controls other media interactively -- Can control other media, and use these media in an interactive way.

Transferable instruction -- Allows exact duplication of instruction at remote sites.

Video (without attached computer)
Audiovisual -- Is an audiovisual medium. Although video can depict text, the medium’s primary strength lies in its ability to display images, in motion and color, along with sound.

Alters apparent time -- Can appear to compress time (i.e., time lapse) or expand time (i.e., slow motion) to support learner’s attention.

Zooms -- Can “zoom in” for enlarged close-ups or “zoom out” for a telephoto view.

Little interactivity -- Active, individualized learner interaction is difficult to support
with video, unless it is used with a computer.

Prearranged sequence -- Presentation occurs via a prearranged sequence, which is difficult and awkward to modify by individual learners, unless it is used with a computer.

REFERENCES