

Media Comparisons

What difference does media
play in instruction?

Clarks Main Points

- ▶ “...media are mere vehicles that deliver instruction but do not influence student achievement...” any more than the choice of delivery truck affects the nutritional value of the food (from ‘83 article)
- ▶ Media comparison is confounded
- ▶ Drop “enthusiasm” for these studies

Confounding Factors

- ▶ “Check box” Studies
- ▶ Same/Different Designer
- ▶ Novelty
- ▶ Small Population Size
- ▶ Length of Study
- ▶ Measurability of Groups

NSD

- ▶ Few studies show dramatic gains
- ▶ Negative results not reported
- ▶ Is NSD a failure of research design?
- ▶ [NSD Web Site](#)

Clark's Recommendation

- ▶ Can be helpful in:
 - *The evaluation of particular products*
 - *Measuring a medium's overall cost effectiveness*
 - *Monitoring of a medium's employment in practice*
- ▶ Isolate and study specific media attribute
 - *The effects of panning*

Clark 1994

- ▶ **Media attribute not causal**
- ▶ **Replace-ability Problem**
- ▶ **Design Decisions**
 - *Cost effectiveness*
 - *Available Resources*
- ▶ **Confusion of Technologies**
 - *Design Technologies*
 - *Delivery Technologies*

No “well-designed study” has shown a specific media attribute uniquely responsible for learning gains

Replace-ability Problem : could similar results be found using other media or sets of media?

Design Decisions

Cost effectiveness : Since this always happens, designers should choose the least costly method

Available Resources : What is there?

Confusion of Technologies

Design Technologies are those methods used to select information and objectives needed to teach. In other words, this is instructional design

Delivery Technologies: Those things needed for efficient and timely access to the methods and environments

Clark's Responses to Critics

- ▶ Usual Uses
- ▶ Meta-analytic Evidence
- ▶ Empiricism Envy
- ▶ Necessary Media Attributes
- ▶ Instructional Methods are delivered by Instructional Media

Usual Uses - Clark answer's the McLuhan "Medium is the Message" argument by showing is lack of understanding of that theory. Here is says that people say television does a unique thing because of the way we are used to seeing it - it's usual use. This is not McLuhan's point at all, but is perhaps a telling answer for many of his critics.

Meta-analytic Evidence : They remain confounded, meaning the effects of design are not controlled for and probably responsible for learning increase rather than media.

Empiricism Envy : Here Clark apparently categorizes some critics that the empirical nature of the argument. In other words, the research question was the problem rather than the results. I am in sympathy that Clark was judging the wrong question - trivial learning goals

Necessary Media Attributes

Claims learning goals can be achieved by using many different media, so there is no unique learning accomplishment that can be traced to a single media attribute.

Any effective instructional strategy can be delivered with similar effectiveness by a "variety" of media

Kozma

- ▶ Agrees there is no evidence that media causes learning
- ▶ Feels one will exist some day

But feels one will exist when we frame our questions better. This is a design science, not a natural science

Reframing questions

- ▶ **Beyond behaviorism**
- ▶ **Account for structure of media**
- ▶ **Learning is an interaction between cognition and environment**

New theoretical framework : Most research is based in behaviorist stimulus and response - need to include mentalist accounts.

Also, media structures and functions are not richly described, as in anthropological studies

Learning is not about delivery, but rather Interaction between cognitive processes and environmental characteristics

The Big Question

- ▶ Do you agree with Kozma that ThinkerTools or Jasper Woodbury were successful because of the media they employed?
- ▶ Or is Clark right, and the effect would be the same if different media were used?

Kozma's Conclusion

- ▶ **Not “Do media influence learning?”**
- ▶ **How can capabilities of media “... influence learning for particular students, tasks and situations?”**

Kozma sees attributes as its capabilities, or potentials.

And sufficient is sufficient, rather than necessary. Sufficient is enough to go for.