



# Examining the Fossil Record: A Fun Look Back at some of the Earliest Energy Education Research

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## BACKGROUND: THE "ENERGY CRISIS"

- 1973 Oil Embargo
- 400% oil and gasoline price increase
- Crisis atmosphere (gas station lines, rationing, shortages)
- Ripple effect in natural gas markets
- 1978 Powerplant and Industrial Fuel Use Act, prohibited the use of natural gas for electricity generation
- Three Mile Island nuke accident (1979)

# ENERGY ~~EFFICIENCY~~ CONSERVATION RESEARCH [circa 1978]

- Virtually all energy research was by academia and government
- Academics primarily running 4 legged and 2 legged rats through classroom experiments
- Some early research on energy attitudes & behavior  
(Winett, 1976, etc.; Seligman & Darley, 1977, etc.; Becker, 1978, etc.)
- Ecological Psychology: “A PhD Program Aimed at Survival” Founded 1970, at MSU
  - Required applying social science tools to social problems in actual community field experiments
  - I entered 1975, went to work at the newly formed Michigan Energy Administration in 1977

# RESEARCH CHALLENGES

- Basically a brand new field
- “Primitive” data handling capabilities (see props)
  - Paper rather than digital
  - Mainframe computers only
  - “transparencies”

## GOVERNMENT POLICY CONTEXT

- Jimmy Carter....national Energy Extension Service (modeled after historically successful “Cooperative Extension Service” in agriculture)
- 10 ‘pilot’ states selected in 1977
- Michigan named as the lead state in the area of youth education. Goals:
  1. create an “energy conservation ethic” in 50,000 high school students
  2. Examine various strategies for achieving energy education objectives
- Implementing agency: Michigan Energy Administration (created 1975)

# THE RESEARCH

- Develop an instrument to measure attitudes and behaviors of youth (first high school, later middle)  
After considerable test development and pilot testing:
  - The “Youth Energy Survey” (YES)
    - 45 item likert-type attitude scale (highly reliable and valid)
    - Self-report behavior index
    - Optical scan enabling large-scale use

# MICHIGAN FIELD RESEARCH

- 2-phase longitudinal research to test different intervention strategies
- Population of 124 high schools in 15 targeted counties

## Phase I (1977-78)

- Teacher training workshops
- Student to student presentations
- Student drama (theater) presentations
- Large scale assembly (“Energy Today and Tomorrow”)
- Control group

# MICHIGAN FIELD RESEARCH

## Phase II (1978-79) (my dissertation research)

- Teacher consultation change agent (co-op extension)
- In-school conservation committee
- Teacher workshops
- Teacher workshops plus “task oriented” module
- Control group

## 3 dependent variables

- ❖ Teacher response (teaching lessons on energy)
- ❖ Student attitudes
- ❖ Student self-reported behavior



# NATIONAL RESEARCH FOR DOE

Based on promising Michigan work, DOE tasked us to develop a national data set using the YES

- States sorted into 4 strata based on HDD
  - 8 target states selected (2 per strata)
  - Over 100,000 students surveyed for the study
- Eventually opened up a clearinghouse service and scored tests for teachers in nearly 20 states

# HIGHLIGHT RESULTS FROM MICHIGAN RESEARCH

- School participation: over 80% participated fully
- Teacher response: all 4 conditions signif. more likely to teach an energy unit, & signif. more hours taught
- Student response:
  - Attitudes not quite signif. vs. control group in aggregate
  - Very significant relationship to hours taught
  - “Task oriented” group very signif. on behaviors, not quite on attitudes as a group, but strong relationship on hours taught

# MOST INTERESTING RESULTS

- Promising results for ‘task oriented’ education

Classic paradigm: Attitudes >>>Behavior

So change attitudes

‘Task-oriented’ approach:

Behavior>>>Attitudes>>>more behavior>>>

(a ‘virtuous circle’)

- ❖ Rather than just lecturing students on the importance of conservation, have students engage in conservation behaviors (at school and at home), and attitude changes will follow
- Mini-scandal on “Energy Today and Tomorrow” pro-nuke industry show. Negative results on conservation attitudes. (Business Week 1980 interview)

# REFERENCES

[Note: nothing digital back then, so documents are scarce]

Kushler, M. & Davidson, W., “*An Experimental Examination of Alternative Strategies to Promote Energy Conservation in High School Youth*”, paper presented at the 87<sup>th</sup> Annual Convention of the American Psychological Association, New York, 1979

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