

Conference Strand Strand 1 Developing the EE Profession

Research on Staff Development in Environmental Education

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Abstract

This article presents a summary of research relevant to staff development in environmental. Some of the research reviewed concerns earlier findings on staff development in general while two more recent articles reviewed focus on environmental education. A cognitive model for staff development is presented. Recommendations are made for effective strategies and staff development based on the research presented.

Introduction

This article will summarize research relevant to staff development in environmental education. The first section will summarize findings from earlier studies relevant to staff development. Although these studies did not focus on environmental education they provide important information about staff development in education that should be taken into consideration. The second section deals with two more recent studies that focus on environmental education in particular.

Earlier Findings

Fullan and Stiegelbauer in their study of educational change found that teacher decision-making is essential in bringing about educational change. "Educational change depends on what teachers think -- it's as simple and complex as that."¹ They go on to point out that all change involves loss, anxiety and struggle. The process of making meaning of change is essential. Until teachers make a new material will not become an integral part of what they do.

Berman and McLaughlin found that successfully implemented projects have certain fairly consistent characteristics. Successful projects require change from traditional practice. If projects do not require teachers to change they will not be implemented.

The more effort by teachers in the first year of implementation, the more likely the program is to become institutionalized and retained in the long run. Programs that require more work in the first year are more successful than are projects that require less work. The finding may seem counter intuitive but we will see later why this is true.

Program adaptation is mutual. If teachers are to use a program successfully, they must not only adapt their teaching to the new program. They must also be able to adapt the program to the needs of their classroom.

At the classroom level, the crux of the matter is the extent to which teachers have *assimilated* project methods or materials into their regular classroom practice; unless this assimilation takes place, continuation will amount to no more than ritual.²

This in turn means that strict "fidelity" may not be ideal. Programs that are too rigid in their expectations and format tend not to be retained in the long run.

Berman and McLaughlin identify strategies that do not increase the likelihood of successful implementation. These strategies may well be useful for other goals but are not relevant for implementation purposes.

THINGS THAT *DO NOT* WORK

- Packaged approaches
- One-shot implementation training
- Pay for training
- Outside consultants
- Formal evaluation
- Comprehensive projects

EFFECTIVE STRATEGIES

Berman and McLaughlin also identify strategies that have proven effective.

THING THAT WORK

- Concrete, teacher specific, on-going training
- Classroom assistance
- Observation in other classrooms
- Regular project meetings
- Teacher participation in decisions
- Local materials development
- Principal participation

Recent Studies Involving Environmental Education

The two studies here focus specifically on environmental education. One is by Paul and Volk.³ The other is by Winther, Volk and Shrock.⁴ Both of these articles make use of the Issue Investigation and Evaluation Model developed by, Litherland, Volk, Ramsey, and Peyton.⁵

This model departs from tradition instruction in three ways: it focuses on skill application; it incorporates much more student direction; and it encourages much more real-world involvement than is usually found in classroom instruction. Any of these might present difficulties for teachers. All of them taken together can require considerable change in classroom practice.

The Paul and Volk⁶ study used both quantitative and qualitative data to study training and implementation over a ten-year period. They found that effect implementation and training corresponded to certain training strategies and to support provided during implementation. The effect strategies included extended or repeated training and increased support during implementation. This support included: on site visits; group interactions of all kinds including computer networking, providing course materials, and team implementation.

Winther, Volk, and Shrock⁷ followed eight teachers during their first year of implementation of the program. Theirs was a qualitative study.

As they examined the teachers' initial motivation for undertaking the training they found that the teachers identified two factors consistently: stipends and graduate credit. Note that these responses differ from earlier findings by Berman and McLaughlin.⁸

As time passed and the teachers engaged with the material they reported that their motivations changed. They reported that he work with the program revitalized teaching. Many also noted that it enabled them to meet goals that had previously been established as their schools such as using cooperative learning, authentic assessment, authentic instruction, and grad level team building.

The Implementation Process

What happened as teachers when through the training and implemented the program? They reported feeling “overwhelmed” and that they “Don’t know what is going on.”

One response they had to these feeling of anxiety were to try to make it fit into models they already understood, such as “hands-on science.” Another was to want to “read everything again” before they implemented the program.

What the teachers are going through at this stage is Piaget calls cognitive disequilibrium. They are overwhelmed and confused. Their initial attempt at resolving this is to make the new concepts they are learning fit into the cognitive structures they already have.

As the teachers implement the program in their classroom they began to grapple with it mentally; what Piaget refers to as operating on it. This operation is the key to creating a new cognitive framework.

Initially the teachers focus on technical aspects of implementing the program. They consider such issues as time, space, and the scope of the implementation. As they do so they gain mastery of the program. They come to understand it more deeply. Later, they begin to reflect on their decisions. They begin to weigh alternatives and plan for changes in future implementations.

Many of the teachers begin to rethink what they are doing in their classrooms. At the most basic level they consider logistical and technical questions. Many teachers go further. They begin to more deeply reconceptualize what they are doing in their classrooms. Teachers who reach this stage continue to change they teach and manage their classrooms.

Cognitive Change

What we can see happening here is a process of cognitive change. The teachers adapt the materials to fit their needs, while simultaneously adapting themselves to the new program. In doing so they acquire ownership of the material. They master it. They begin to comment that peers and administrators “don’t really understand” what they are doing. They integrate the new methods into their cognitive network. They reestablish cognitive equilibrium.

We have all seen students cram for tests. They might get immediate results and pass the test, but they do not gain any long-term understanding of the material. Real leaning is much harder. That requires lots of effort, it’s slow, and it’s uncomfortable.

What is true of students is also true of teachers during staff development. That's the significance of Berman and McLaughlin's earlier findings the programs that require little effort during initial implementation tend not to be retained. Such programs do not promote cognitive change. They don't produce real learning and change.

Training Recommendations

Based on the review of findings presented here a number of recommendations can be made.

Strategies that are most likely to be effective include:

- Long-term and on-going training
- Materials adaptable to teacher needs
- Teachers should be in on decision-making
- Ongoing contact with project staff
- Local materials development
- Ongoing meetings among teachers
- Teacher networking should be developed
- Broad philosophical statements, program goals, presented at the end of the training
- New materials & strategies should be linked to state goals

There are also some recommendations that can be made with respect to how to present training programs to teachers and administrators. Marketing recommendations if you will.

These include:

- Graduate credit or stipends
- Relate environmental education programming to other goals
- Relate materials to state goals

Notes

¹Fullan, M. G., and S. Stiegelbauer. 1991. The new meaning of educational change: 2nd edition. New York: Teachers College Press.

²Paul Berman and Milbrey Wallin McLaughlin, Federal Programs Supporting Educational Change, Vol. VIII: Implementing and Sustaining Innovations (Santa Monica: Rand, 1978), 6.

³R.J. Paul and T.L. Volk, “Ten Years of Teacher Workshops in an Environmental Problem Solving Model: Teacher Implementation and Perceptions,” Journal of Environmental Education 33, no. 3 (Spring 2002).

⁴Austin A. Winther, Trudi L. Volk, and Sharon A. Shrock, “Teacher Decision Making in the 1st Year of Implementing an Issues-Based Environmental Education Program: A Qualitative Study,” Journal of Environmental Education 33, no. 3 (Spring 2002): 27–33.

⁵Harold R. Hungerford, et al., Investigating and Evaluating Environmental Issues and Actions: Skill Development Modules: A curriculum Development Project Designed to Teach Students How to Investigate and Evaluate Science-Related Social Issues (Champaign, IL: Stipes Publishing Company, 2003).

⁶R.J. Paul and T.L. Volk, “Ten Years of Teacher Workshops in an Environmental Problem Solving Model: Teacher Implementation and Perceptions,” Journal of Environmental Education 33, no. 3 (Spring 2002).

⁷Austin A. Winther, Trudi L. Volk, and Sharon A. Shrock, “Teacher Decision Making in the 1st Year of Implementing an Issues-Based Environmental Education Program: A Qualitative Study,” Journal of Environmental Education 33, no. 3 (Spring 2002): 27–33.

⁸Paul Berman and Milbrey Wallin McLaughlin, Federal Programs Supporting Educational Change, Vol. VIII: Implementing and Sustaining Innovations (Santa Monica: Rand, 1978).

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- Winther, A. A., T. L. Volk, and S. A. Shrock. 2002. Teacher decision making in the 1st year of implementing an issues-based environmental education program: A qualitative study. Journal of Environmental Education 33(3), Spring: 27-33.