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It is quite clear that teaching research in physical education has or is about to come of age. The evidence for this comes not only from research that has been completed in the past five years, but also from the degree to which current job descriptions for teacher education personnel specify teaching research competencies as primary criteria for candidate selection. It has been a long time coming and it is a most welcome addition to the research base in physical education and sport.

Among the most important areas we need to investigate is that of teacher change. There are two ways in which research on teacher change could be conceptualized. First, studies could be conducted to describe and analyze the ways in which teachers change across time as a function of being in schools. This research task would fit the descriptive/analytic tradition and would be a valuable contribution to our research literature. It is quite clear that teachers change when they enter the work force. The work setting changes them more quickly and more endurably than most imagine. Regardless of what they learn about teaching as undergraduates, regardless of the degree to which any undergraduate program currently attempts to produce teachers who operate with definite, recognizable styles, there is strong evidence that what a teacher is to become is learned during what is now called the impact stage, that time from student teaching through tenure, when the forces and daily contingencies of the specific work setting shape the behavior of the teacher and make it highly resistant to change. We know very little about that process as it occurs in physical education. We have almost no data that I know of which has observed that process directly across time. If we take Larry Locke’s (1977) definition of teaching research -- one part of which is that teachers have to be observed directly doing their jobs -- then there is very little of a systematic nature that one can point to in order to describe changes that occur in the teaching behavior of physical educators during the impact period (Note 1). Even less is known about the forces which produce those changes, although each of us may have some hunches.

The second way in which research on teacher change might be conceptualized is to view it as experimental research in which teacher behavior is the dependent variable and some context or supervisory variable is defined as the independent variable -- research where one sets out to change teaching. There is not much of this kind of research in physical education either, although the literature is slightly ahead of where it is when viewed from the first perspective. At the Ohio State University we have completed over 20 experimental studies in which teacher or coach behavior served as a dependent variable (Siedentop, 1982). Each of these studies was completed in real world settings of school physical education, interscholastic athletics, or age group sport programs. It is this second notion of research on teacher change to which I will address myself. I am a
confirmed interventionist -- and I tend to push graduate students in that direction. That should not be interpreted in any way as a prioritizing of those two approaches. It quite simply reflects the choice we have made in our research program.

For a number of years now, the progress of teaching research has been conceptualized within the descriptive-correlational-experimental-loop proposed by Barak Rosenshine (Travers, 1973). There is evidence in the larger world of teaching research that this grand research strategy is being followed -- at least to a slight degree. Where the loop tends to break down is at the point of the experimental link. There are many studies describing teaching. There are large, well conceived, and thoroughly productive studies using the correlational approach -- what is referred to commonly as process/product research. A great deal has been learned about effective teaching from these two important research links. But, there are still few experimental studies in which change in teaching, and subsequently change in student performance, has been produced through intervention in the form of defined, independent variables.

It is my purpose here to explain why I feel more experimental teaching research is needed in physical education and what I see as the major impediment to achieving that goal. First, let me make it clear that I am not talking about "methods research" where Method A is compared with Method B, one usually labeled as traditional and the other someone's version of a trendy technique. As far as I can tell, experimental efforts utilizing that paradigm have contributed nothing to our understanding of teaching nor, indeed, to the quite important task of helping teachers to teach more effectively.

Several important leaders in our field have, from time to time, cautioned us to understand the world of teaching physical education before we rush in to change it. That is sound advice -- an ordinary language restatement of the logic underlying the descriptive-correlational-experimental loop. Over the past several years there has been a great deal of descriptive/analytic research in physical education and more being done each year. This is useful research and I in no way want to criticize it. As Larry Locke (1975) has pointed out, the most striking feature of teaching physical education is its complexity. Thus far, the descriptive-analytic-effort has only scratched the surface of that complexity. There is much more for us to learn from continually more sophisticated descriptive systems and from more imaginative ways of analyzing and integrating descriptive data. Yet, that fact does not preclude the concurrent need to use what we know and begin to do more experimental research to effect change in teacher behavior and then to verify that changed teacher behavior results in greater student achievement.

I have no doubt that there are a large number of highly complex interactive factors which will someday be amenable to systematic observation and from which we will extend our understanding of teaching physical education. Currently, in teaching research there is interest in the investigation of aptitude-treatment interactions (ATI's). This knowledge too will aid us in a more thorough understanding of classroom processes. Still, does anybody really believe that the investigation of ATI’s and such interaction effects will somehow render less important what we already know about main effects? I take it as reasonably well demonstrated that a main outcome of teaching research to date can be summarized as follows: Teachers who find ways to increase the time their students spend appropriately engaged in relevant and meaningful content will produce more achievement (and, better attitudes and self-growth too!) (Note 2). Certainly, there will be variations on that main theme -- but does anyone really believe that the main theme will change? I for one do not. And, I believe it is imperative that we begin to find ways to effect changes in teacher