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### PERSONALIZED SYSTEM OF INSTRUCTION (PSI): AN ALTERNATIVE

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# PERSONALIZED SYSTEM OF INSTRUCTION (PSI): AN ALTERNATIVE

JAMES G. BUTERBAUGH  
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*Buterbaugh and Fuller discuss the Personalized System of Instruction—what it is, how it can (or cannot) be evaluated, and some problems which may be encountered with its use.*

If the lecture-taught course has instructors meeting the students as adversaries, continually answering redundant questions, haggling over half-credit for half-correct answers, and generally finding most students being inhibited by the lock-step timing of a lecture course, then PSI is an alternative.

Extensive acceptance and employment of this alternative mode of instruction should cause instructional developers to take another look at the essential features of the system. PSI has been widely employed by instructional developers in the physics field. Other disciplines where PSI has been adapted and classroom tested include art, history, astronomy, anthropology, medicine, nurses training, geology, religion, and philosophy. PSI (also known as the Keller Plan) is self-paced, mastery-oriented, student-tutored for junior college or university instruction, with classes of all sizes. This relatively low cost system has also been tested at the high school level.

While the elements of PSI vary from list to list, most authors will agree that several points constitute the essential aspects of PSI. Even wider variation exists among lists of learning principles prepared by various psychologists. While some arbitrariness is inevitable, the principles offered in support of each element of the PSI approach were chosen in an attempt to represent at least a modicum of consensus among psychologists concerning the way humans learn. These principles are offered here primarily as a means of showing how the Keller Plan (PSI) incorporates some of the basic concepts of learning.

First, PSI is a *self-paced program*. Sharing with the student responsibility for learning increases his involvement in the learning process. The student has a large part of the responsibility for learning in PSI; if he does not complete a unit, the course does not move ahead automatically as is the case in the traditional approach.

The more similar the learning situation resembles the situation in which the learning is to be used, the more likely the student is to transfer his learning. The self-paced, individually-initiated PSI course resembles more

closely the situations an adult will typically encounter than does the traditional lecture course.

Learning progresses more rapidly when up to 80 percent of the learner's time is spent reciting what he has read or heard. The self-paced features, as well as others in PSI, place emphasis on the learner's demonstrating his skill/knowledge rather than on his passively assimilating information.

The student is expected to *master 100 percent of the content* on the examination signalling completion of each unit. To facilitate maximal learning, rewards should be presented in a variety of forms. One of the most important of those forms seems to be the sense of satisfaction achieved by mastering a test or problem.

Next, *lectures and other techniques are used as vehicles of motivation* rather than as sources of critical information. Rewards are most effective when they follow directly the actions they are meant to reinforce. Group discussions and other program experiences recognizing student achievement are employed *after* the student has completed one or more units.

The next major element involves *proctors*, usually students who have recently mastered the course units in an exemplary manner. Proctors administer tests, provide tutoring assistance, and are available for personal sessions with the students. Feedback, or the knowledge of results of one's performance, is an essential ingredient in the learning process. The proctor makes frequent feedback feasible.

The final basic element in PSI *stresses the written word*. Establishment with the individual of objectives for his learning can facilitate his learning. Each written unit begins with an explicit statement of the objectives for that unit. Both recall of learning and insight into new ideas are facilitated by organization of facts and concepts within the larger framework. The explicit presentation in writing of the material to be learned in unit form provides a coherent organizational scheme in which to place the learning.

Again in this feature, as well as in the first one, the similarity to the most typical adult learning situation increases the likelihood that the learning habit will be continued in adult life. Since a large percentage of adult learning centers on the written word, PSI should enhance the transfer.

#### **A Break with Tradition**

Since PSI involves a break with a



tradition, some means should be developed to explain it to colleagues. One approach is to combine two techniques: supply information about the colleges that already use PSI, and be able to discuss the evaluation of PSI.

PSI courses typically have been evaluated in several ways:

1. The distribution of course grades is compared with the distribution in the same course that is taught traditionally. The typical PSI grade distribution includes about 50 percent *As*, a large number of incompletes, and small numbers of *Fs*, *Ds*, and *Cs*.
2. The performance of students in the PSI courses is compared with the students in the traditionally taught course on a common examination.
3. The students' own evaluations of the course are obtained.
4. The performance of PSI versus traditional students is examined in further course work in the same field.

The best evaluation, of course, would entail all of the above points, plus others. One of the obvious difficulties in obtaining methodologically sound data on which to base an evaluation of PSI has to do with the odds against getting

two classes in which the students and the conditions are comparable enough to permit a sound comparison. This difficulty has not stopped instructors from trying to get whatever information is available concerning the performance of PSI students and to compare the information with data gathered from more traditional courses. Nor should the difficulties prevent the effort, in our view, to approximate as nearly as possible in real life the ideal sort of evaluation one might like to see done with PSI.

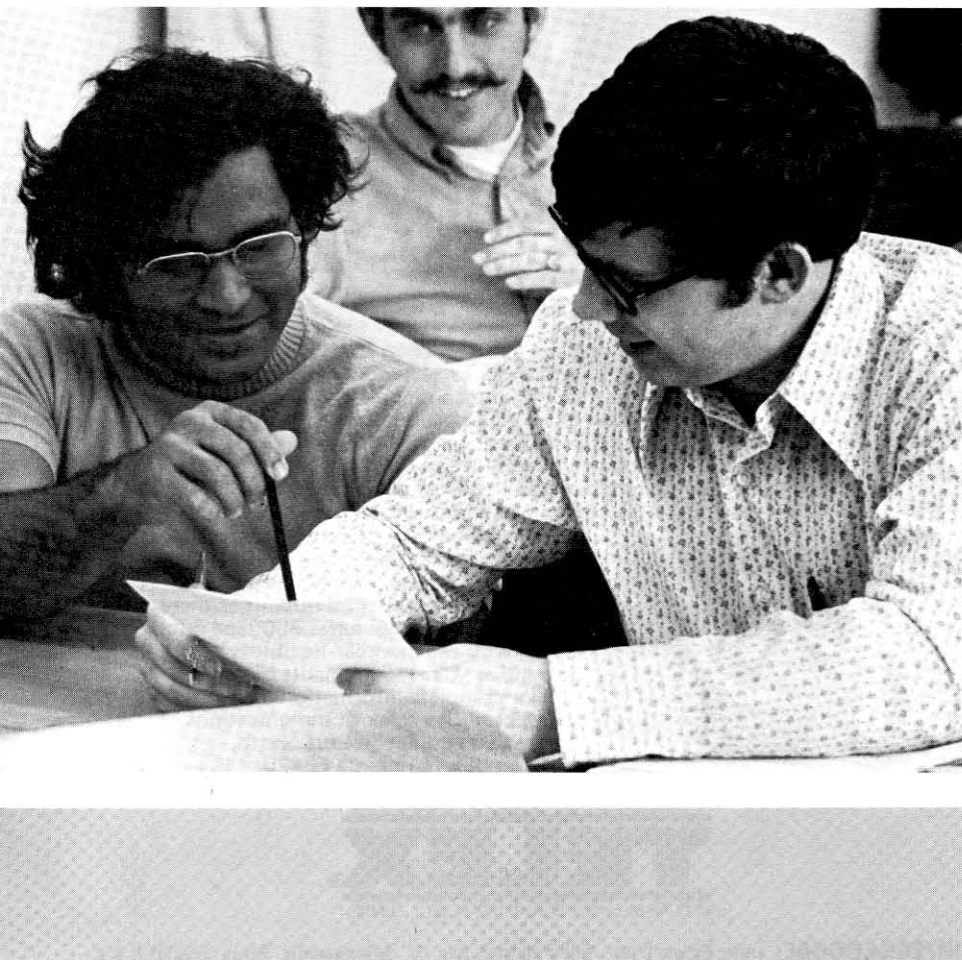
Because the instructional tasks involved in PSI are quite different from those of the lecture method, a person will need to be resourceful to make it succeed on the first attempt. While PSI has produced sufficiently consistent results to assure many observers that it can be superior to more typical lecture courses, several factors which are difficult to control may contribute to the failure of any particular PSI effort. They include: the instructor's lack of familiarity with the method; inadequate advance planning so that a student does not know what to expect; unclear instructions to students; insufficient or faulty examination questions; inordinately large and difficult units. It is probably unusual if at least one of these factors is not operating the first time one does use PSI. However, by understanding the essential features of PSI, and by appropriate use of student feedback in managing a PSI course, one can turn early indications of potential failure into success.

Although PSI has met with a number of successes, it is not heralded as the answer to all of education's ills, nor even as a panacea for any teaching problems. Those who have tried it and like it may not be reliable witnesses.

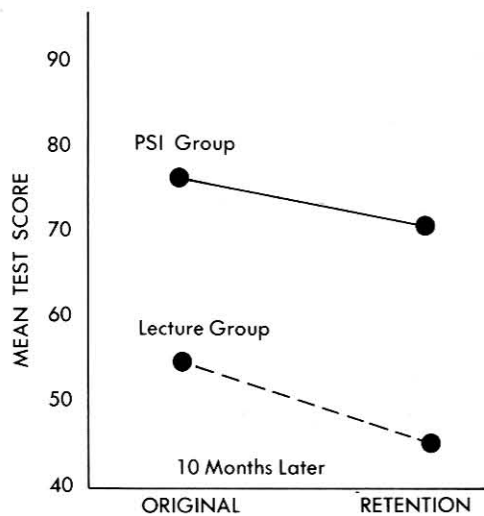
Professor B. A. Green Jr., a PSI advocate, has written with tongue-in-cheek a list of objections to PSI:

You should not use the Keller Plan if:

1. Mastery is not the object of your course.
2. There is not adequate text for your course.
3. Your subject changes too fast.
4. You have 500 students with no help and no time off to prepare material.
5. Your students can't read, at least not well enough to do without the lectures.
6. You are legislatively required to lecture for a large number of hours.
7. You don't have the energy to try



Test scores\* as a function of instructional method and retention interval



\*Corey, J. R., McMichael, J. S., and Tremont, P. T. Long term effects of personalized instruction in an introductory psychology course. Paper presented at EPA, Spring, 1970.

something new at the time.

8. Good teaching isn't rewarded at your school.
9. You can't get undergraduate tutors for love, credit, or any money.
10. One undergraduate cannot judge proficiency in your subject on the part of another undergraduate.
11. Your administration will not tolerate the larger fraction of As.
12. You object, in principle, to specifying detailed objectives in your course.
13. You cannot specify objectives in your specific course.
14. You are too soft-hearted to withhold privileges from a student who has not earned them.
15. You are satisfied with your present methods.

Workshop Conference, Rice University, Houston, Texas.

"Personalized System of Instruction: An Alternative." A 14-minute, black-and-white, 16mm film introducing the concepts of PSI. Available for purchase or rental from: University of Nebraska, Instructional Media Center, University Extension Division, Lincoln, Nebraska 68508.

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