CLIO AND KELLER
PSI IN THE HISTORY CLASSROOM

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In the early 1960's at the request of the new University of Brasilia, Fred Keller, J. Gilmour Sherman, and others established a department of psychology which used a radical teaching method--Personalized System of Instruction. Born of Keller's early experiments at Columbia University, the thought of B. F. Skinner, and the uneasy feeling that there must be a better way to teach, PSI's heritage was largely behavioral psychology mixed with a restless curiosity. The adventure at Brasilia abruptly ended in a general political upheaval, but Keller and Sherman retreated and continued their experiment at Arizona State University.[1] From there PSI spread over the United States and into a variety of disciplines including psychology, mathematics, engineering, chemistry, physics, and biology. Like other competency-based approaches, however, it has touched only lightly the humanities and social sciences.[2] As evidence of maturity there exists a Center for Personalized Instruction at Georgetown University, a PSI Newsletter, a new journal entitled Journal of Personalized Instruction, and, since 1974, a series of annual national conventions.

Keller's seminal article, "Goodbye, Teacher . . .," pronounced the basic principles of PSI: self-pacing, sequential mastery of a small unit of material, emphasis upon written information with lectures used mainly for inspiration, and the utilization of proctors to permit repeated testing, immediate scoring, and some tutoring.[3] Although not completely original, the method stressed positive, while minimizing negative, reinforcement.[4] Students could take as long as necessary to master a subject, and with opportunity for repeat testing there was no penalty for failure other than delay. Since people learn at different rates of speed for many reasons other than stupidity, Keller doubted the necessity of punishing them with the lockstep of semesters or quarters so long as they achieved mastery. PSI thus challenged a time-honored institutional mechanism, as well as hoary assumptions about lectures, testing, and grading.

After visits to the campus of Colorado State University by Keller and Billy Koen, who teaches nuclear engineering by PSI at the University of Texas, a PSI course in the history of technology began at CSU in the fall of 1973. It followed Keller principles for 80% of the course, with required lectures once a week for the remaining 20%. The content of the lectures provided the material for the final examination (20% of the grade) and reassured a hopeful but cautious instructor. If PSI failed the class could return to the lecture method at mid-term. The class size of eleven students, moreover, meant that a failure would not be very spectacular on a campus of 17,000. It was like learning to swim with one hand holding on to the side of the pool.

Keller had predicted student excitement, but skepticism remained until one class member commented, "Passing a unit test is like having a natural high." The class, moreover, demanded test hours during the Thanksgiving holidays--an outrageous but nonetheless refreshing request. Following other evaluations in which the students reported learning more and working harder, PSI for history instruction seemed to merit further investigation. This came in the fall semester of 1975, with a large American history survey section, the bread-and-butter course of history departments across the nation.

Course material was divided into 13 units based on textbook reading with the seventh and thirteenth segments reviewing all previous assignments. Students received study questions detailing what they were required to know. They had to achieve 90% mastery before moving to the next unit, and were not given the next study guide until that was attained. When students felt they knew the answers to the study questions, they came to class and took a twenty-minute, combined objective and essay exam. If successful they moved to the

next unit; failure meant taking another test on the same material at another time. Because of administrative burdens, they could work through only one test a day, but there were five test hours each week for the three-credit course. There were no lectures, and, theoretically, a student could finish the course in 13 test days. After passing all units, and thus proving 90% mastery of the material, the students received an A. The only other grades assigned were for incompletes or withdrawals.

The emphasis was upon learning the facts of American history under the assumption that students needed to possess such knowledge before they could deal with analysis and interpretation. Nevertheless, they were given some study questions pertaining to the bias of the author, and, toward the end of the semester, were required to answer questions in which they pulled together certain facts into a written essay--for example: What were the causes and results of the War with Mexico?

It should be recognized here that the major thrust of this PSI experiment pertained to the applicability of the method. The number and type of tests, as well as the nature of the questions, can vary within the methodological framework. What is basic on this point is that the instructor must clearly inform the students about what they are expected to learn, require students to teach themselves by reading, and then be prepared to reward them when they demonstrate mastery.

Phi Alpha Theta, the history honorary society on campus, was the recruiting ground for proctors, who received two upper-division credits for two hours work per week. They received instruction about grading tests, handling bookkeeping, and responding to students. When a student appeared in class a proctor would pull one of the five tests prepared for each unit, administer it, and immediately grade it. A dialogue focusing upon missed items then ensued between proctor and student. If a student could prove a test question incorrect or subject to misinterpretation, the proctor possessed the authority to judge the merit of the argument and pass the student. The sharp intensity of dialogues, and the fact that they were concerned about historical questions and debated with knowledge on a one-to-one basis, stands in stark contrast to the passive atmosphere of the traditional lecture class.

With no preselection or announcement about the method of instruction the PSI class started with 76 registrants. During the add-drop period, as news spread, the number rose to 130. It became the largest of the four sections of the American history survey, and included 44% from humanities and social sciences, 26% from business, and 14% from natural sciences. Only 7% were history majors. Five students eventually withdrew, 30 received I's, and 95 finished by the end of the semester with A's. In three more months four of the I's completed the work and received A's. The first person through the course finished in five weeks, but the great majority wound up the effort during the last week of class. Most had to take repeat tests on some units, but the record was 37 over the entire course.

An education professor at CSU, Douglas Sjogren, ran an independent evaluation. He reached 70 of the participants. Their attitudes are reflected in the following table (numbers are percentages):

	Very Favorable	Favorable	Neutral	Unfavorable
Studying history	47	32	18	3
PSI	50	34	6	10
Content of tests	19	41	16	24

	Very Favorable	Favorable	Neutral	Unfavorable
Way tests were graded	50	41	4	5
Fairness of tests	32	43	15	10
Length of tests	57	31	9	3
Questions used in tests	28	31	23	18
Grading procedures of course	66	21	9	4
Help from proctors	35	34	28	3
Usefulness of study questions	71	21	7	1
Contact with professor	22	32	34	12
Number of test times	56	22	12	10
Difficulty of tests	19	41	35	5
Feelings about taking more history courses	29	43	21	7
Taking another PSI course	56	22	9	13
Amount learned	44	40	13	3
Taking PSI instead of traditional course	52	18	16	14

Sjogren also tracked each student through the course and compared the rate of progress with SAT scores. He found no correlation. A study at the University of Texas, in contrast, found that the PSI students who procrastinated had a lower SAT score than others.[5] The Texas sample was broader and involved more students. At CSU in the survey history class as it now stands, however, motivation seems to be more significant than intelligence as reflected by SAT scores. As several students explained, they became obsessed with PSI and concentrated upon the course until it was over. This enthusiasm was also reflected and confirmed in the student attitudes of Sjogren's survey. More dramatically, the PSI section in the second semester of the American survey increased 24%, while the other sections declined by 14%.

Five weeks after the end of the fall term on the first day of the spring semester a test for general history knowledge was administered to two hundred seventy students in the second semester American history survey classes. There was no warning, and no preparation allowed. The test covered material usually presented during the first semester of American history. The only source of contamination was that the PSI students had been given the same test on the first day of the fall semester. However, they did not get it back, they did not find out their scores, and they were not drilled later on the same questions. After five and a half months the contamination would appear slight. The test scores, moreover, correlated highly with the verbal scores of the SAT. It appears to be a fair test of history knowledge.

One hundred and fifty-one students had not taken the first semester of American history; they scored 64.77 average on the one hundred point test. Seventy had taken the traditional lecture course and made 71.98. The forty-nine former PSI students made 75.71. Obviously, the PSI students performed

better. They learned and retained one-third more than students in traditional lecture classes. This superior rate of performance parallels the results of other non-history PSI courses across the nation.[6]

J. Gilmour Sherman, however, has raised an important point: "The contention is that the A earned in a PSI course is equivalent to the A earned in other courses. If true, then we face some new problems. Large numbers of students, performing at superior levels, produce very serious dislocations in an education system geared to a selection model . . . but neither our schools nor our social structure are prepared to deal with large scale success."[7] PSI creates grade creep with a vengeance, and this is bound to disturb many academicians, even though the validity of grades has long been questioned.[8] As a CSU administrator commented when told about PSI grades, "That's absurb! A C-student is always a C-student. If he cooks a dinner, it'll be a C-level dinner!"

Beyond such attitudes of administrators and colleagues, there are other difficulties. PSI costs more. In this class there were five contact hours per week instead of the normal three hours. The instructor had to be there to settle disagreements between proctors and students, to clarify interpretations, and at times to handle instances of cheating. The class used about three to five times more paper and typing time than a regular course. Proctors had to be trained. When repeated the course will probably take less time, but it will be no easier than a traditional lecture course.[9] There are, in addition, the relatively large number of incompletes that require later processing by instructor and administration. The school may not be ready to accept such numbers. At CSU, incomplete forms are processed by hand labor, a costly procedure.

The greatest cost, however, may be to the ego of the instructor. PSI requires the teacher to become a manager, a producer of tests and study guides, a facilitator, cheerleader, and arbitrator. Gone is the spotlight of student adulation, the echo of a hundred voices laughing at academic jokes, and the flattery of scratching pens recording assumed professorial wisdom. PSI, to be sure, is no panacea. Such courses fail, and PSI cannot meet all needs.[10] The 10% of the faculty who are superb lecturers are still worth hearing and witnessing for the grace of their performance. Subjects that require student action other than reading or the example of an academic model probably should not use PSI. For the delivery of information, and the gratification that students are working hard and learning more, however, PSI offers much to offset the costs. For history, a reading-writing discipline in an oral-visual age, PSI with its emphasis upon learning through reading could become an important tool for Clio's survival.

NOTES

[1]Fred S. Keller, "Goodbye Teacher . . .," Journal of Applied Behavior Analysis, I (Spring, 1968), 80; Keller, "New Reinforcement Contingencies in the Classroom," PSI, Personalized System of Instruction, 41 Germinal Papers, J. Gilmour Sherman, editor (Menlo Park, California, 1974), 212. For a general review of PSI, see Ohmer Milton, Alternatives to the Traditional (San Francisco, 1972), 67-77.

[2]See convention abstracts, "Conference Program, Los Angeles, California, March 20-22, 1975," Center for Personalized Instruction, Georgetown University, Washington, D.C.

[3]Keller, "Goodbye, Teacher . . .," 83.

[4]There is some evidence of a similar system in California in 1912 and in Illinois in 1919. J. Gilmour Sherman, "The Theory Behind PSI," PSI, 41 Germinal Papers, 223; James A. Kulik, Chen-Lin Kulik, and Kevin Carmichael, "The Keller Plan in Science Teaching," Science, 183 (February 1, 1974), 379.

[5]James E. Stice, "Progress Report on the PSI Project at the University of Texas at Austin," PSI Newsletter, III (September, 1975), 4.

[6]James Kulik in an address at the Second National Conference on Personalized Instruction, 1975, reported that in 30 of 31 cases, final examination performance was better with PSI. PSI Newsletter, III (June, 1975), 1.

[7]J. Gilmour Sherman, introductory remarks to "Section III: Problems," PSI, 41 Germinal Papers, 115.

[8]Milton, Alternatives to the Traditional, 47-49.

[9]Stice, "Report on PSI," 4.

[10]Ben A. Green, "Fifteen Reasons Not to Use the Keller Plan," PSI, 41 Germinal Papers, 117-119; J. Gilmour Sherman, "PSI: Some Notable Failures," ibid., 120-124.