

Feuerstein's Instrumental Enrichment I

Integrated into a Developmental Class

at Pikes Peak Community College

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Abstract

In the academic year 1992-93, four faculty members of the Developmental Studies Division at Pikes Peak Community developed a block course incorporating study skills, English, reading, and critical thinking in an effort to meet the academic needs of students identified as needing more attention than most in order to succeed at the college level. The result was a 12-hour block course that was team-taught and that used the Feuerstein Instrumental Enrichment 1 materials. The class was offered for the Fall of 1993, the Spring of 1994, and the Fall of 1994. Altogether, 41 students enrolled in and completed those courses. Most of the students who were pre and post-tested progressed as measured in English and Reading Placement and the Raven's Matrices. However, only two students actually eventually earned a certificate and Associate's Degree. This writer believes that (1) there is a population in community colleges who would definitely benefit with Feuerstein's materials, but that (2) to be accepted at the community college for developmental students, Feuerstein's IE would need to be integrated with course material as opposed to being presented on its own. Presently the climate of encouraging students to complete programs quickly is a barrier to using Feuerstein's Instrumental Enrichment I program with community college students. Currently Pikes Peak Community College successfully uses Feuerstein's IE materials with deaf students.

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In the Fall of 1992, several faculty in the developmental studies division at Pikes Peak Community College in Colorado Springs noticed that students who tested into more than one developmental course were less likely to succeed in their college courses than those who tested into only one developmental course. We also noticed that those students needed more attention and that they did not respond to instruction as readily as most students; in fact, they seemed to be operating with a different understanding of education than that of faculty and even that of other, more prepared students.

The very underprepared students seemed to have a different ethic for education. They made unrealistic time commitments, filling their time with work, school, and parenting commitments without allowing themselves time for any out-of-class school work. They made commitments to their education without planning for back-up day care or reliable transportation. In fact, they seemed to think that if they were absent for a perceived *unavoidable* reason, there would be no consequence in their grade, which, by the way, seemed to be their one and only definition for "learning." Some thought they could miss more than half of the classes and still pass.

These students also faced obstacles in interacting with the content of their classes. Many processed information on the concrete level and would have to move to abstract thinking, not an easy task. Some weren't clear on how to organize ideas. When asked for a definition, they might give an example. They didn't understand levels of generality: they would find a minor

detail in a story and present it as the main idea. Their responses to questions were as brief as possible, sometimes lacking the most important part of the answer. For example, when asked why an author might have chosen to write in a narrative as opposed to third person voice, a student might reply "to tell the story." And these students tended to have difficulties remembering what seemed to instructors to be obvious details, such as always capitalizing the word "English," or remembering which words to capitalize in a title, or to double space their paper. Also these students did not seem to notice relationships. If they had trouble with chapter two in math, they couldn't wait to get that over with because they thought chapter three would give them a chance for a new start, not realizing that mastery of chapter two information would be critical to success in chapter three. We didn't know it at the time, but our target population of students were prime candidates for Feuerstein's Instrumental Enrichment.

Four of us requested from the college and were granted time to investigate models to help bolster those students. We gave ourselves one semester to explore models of critical thinking and models of instruction. One of the biggest barriers we saw was the inability of students to make connections: connections between sections of a course, between disciplines, and between their studies and their lives and experiences. We wanted to integrate the instruction so that the students could transfer information between disciplines (1) so that the information would be reinforced with students and (2) in the hopes that students could begin to notice such connections on their own. We settled on a 12-hour block class that integrated reading, English, study skills, and critical thinking. A conversation with the college's grant writer introduced us to the Feuerstein model, and after she spoke with the four of us, we decided to invite Larry Emerson from Farmington, New Mexico, to give us an instruction in Feuerstein's Instrumental Enrichment.

Larry Emerson came to Pikes Peak Community College for a week in the spring of 1993 and returned for a week in the summer of 1994. The training was made available to the entire faculty, and about fifteen faculty attended each time, but only two of us ended up using the material in the course that was developed as a result. We knew we wanted to try the materials and ordered them for the fall class of 1993 and subsequently for the spring and fall classes of 1994. The course ran for those three semesters with some success, but has not been offered since.

Design of the Course

To enroll in this class (called the DST class), students had to test into the middle level of the three levels of Developmental English and Reading and the lower of the two levels of Study Skills. We decided on a block class with a concerted effort to make connections between the disciplines. The class was offered for 12 hours of credit and 3 hours a day for four days a week, 9am to 12pm, Monday through Thursday. The class was structured with time for the Feuerstein materials (50 minutes) coming during the first hour for three of the four days, resulting in an average total of 45 hours of instruction in the Feuerstein materials during the semester. The remaining instruction was dedicated to reading, English, and study skills blended together, allowing for integration of math concepts as appropriate.

The class was divided into four units to deliver the content: (1) the self as a learner, (2) appearances, (3) the media, and (4) the world. We decided to use the newspaper, handouts, and Reader's Digest for reading material along with a novel and a computerized reading program. We emphasized vocabulary development. We also used team teaching and a lot of group activities.

Special projects included a high interest novel (we used a different one each semester), a ballot proposal unit (for the two fall semesters) where students presented arguments for or against ballot issues coming up in the November election, a video taped group presentation, and a geography unit involving a detailed report about a country.

We found that integration of the Feuerstein materials took a little planning, but after we became familiar with the materials, it went well. Also, students were interested and seemed eager to participate in the discussion and bridging. We never seemed to have time to complete any one of the four sections of the materials, but made the most progress in Organization of Dots. While students were comfortable in discussion, some were less enamored with the actual worksheets.

Student Improvement

Students coming into the class were pre and post-tested with a writing sample for English and reading class placement and with Raven's matrices. While not all records are currently available, the following information summarizes what we still have in the files.

Over the three semesters, 41 students enrolled in and completed the course. The following table shows the grades earned by those students by semester:

Table 1

Grades Earned by DST Students

Semester	<u>Grade Distribution</u>				
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>U</u>
Fall 1993	3	6	3	2	1
Spring 1994	3	4	2	1	0
Fall 1994	6	4	3	0	3
TOTAL	12	14	8	3	4

For the first semester's class in the Fall of 1993, we measured student improvement in reading and English by having students retake the placement test. Of nine students taking pre and post reading tests (six students did not take both the pre and post test), only four raised their scores enough to raise their placement level. However, more students improved than didn't in reading speed and comprehension. Sixteen students took the English pre and post placement tests with only six of the sixteen testing at the next level of English instruction. The table below shows improvement in speed, vocabulary, and comprehension:

Table 2

Improvement for Reading and English of DST Students

<u>Skill</u>	<u>Number of Students & Change</u>		
	<u>Improve</u>	<u>Unchanged</u>	<u>Decrease</u>
Reading Speed	7	1	1
Vocabulary	4	3	1
Comprehension	8	0	1
<u>English</u>	<u>6</u>	<u>10</u>	<u>0</u>

Note: Sixteen students took pre and post English Test as opposed to 9 students taking pre and post Reading Test.

We decided to pre and posttest students with Raven's matrices for the critical thinking component of the class. The reason we chose Raven's was because Larry Emerson in our training had mentioned he had used Raven's with his work. Raven's matrices consists of 60 problems in which students need to observe a pattern and predict what the next representation would be following the same pattern from a choice of patterns. Since the Feuerstein materials build pattern thinking, it would seem appropriate to measure progress with Raven's matrices. The table below contains a summary of the pre and post scores for the Raven's test for all students taking the both the pre and posttest over the three semesters (36 of the 41 students who completed the class with a grade).

Table 3

DST Student Change on Pre to Post Raven's Matrices

<u>Change</u>	<u># Students</u>	<u>Average Gain/loss</u>
Improvement	21	+4.9
No Change	3	0
Decline	12	-3.33
<u>Total</u>	<u>36</u>	<u>+1.75</u>

More than half of the students (58 percent) improved in their scores on Raven's matrices. Also, on the average, scores were higher on the posttest than on the pretest. If the Raven's matrices is indeed an appropriate measure of student progress in critical thinking, then the results of one semester's work of about 45 hours per student might not seem impressive for most of the students. However, eight of the students made remarkable improvement (6-12 points higher from pre to post test), while 25 students improved or declined by only 1 to 5 points.

Table 4

Range of Student Gain/Loss on Pre/Post Raven's Matrices

<u>Point Range</u>	<u># Students Gaining</u>	<u># Students Declining</u>
10-12	3	0
6-9	5	0
1-5	13	12
<u>Total</u>	<u>21</u>	<u>12</u>

Student Retention

We also followed students from the Fall of 1993 for three semesters and from the Spring of 1994 for two semesters and compared their retention to students who were potential candidates for the DST class but chose to take one or more developmental courses on its own rather than our combined class. The table below shows the results of that research.

Table 5

Comparison of Retention of DST 080 and Students With Nondevelopmental Students with Comparable Placement Scores

<u>Group</u>	<u>Enrolled Fall 93</u>	<u>Return Spring 94</u>	<u>Return Summer 94</u>	<u>Return Fall 94</u>
DST	16	94% (15)	44% (7)	44% (7)
Control	50	80% (40)	24% (12)	42% (21)

<u>Group</u>	<u>Enrolled Spring 94</u>	<u>Return Summer 94</u>	<u>Return Fall 94</u>
DST	10	50% (5)	80% (8)
Control	10	30% (3)	30% (3)

According to the research, the DST students in the Spring of 1994 returned at a higher rate in the following summer and fall than a control group of similar students. DST students in the Fall of 1993 returned at a higher rate than a control group for the next two semesters, but returned at the same rate as the control group a year later.

Recently I looked up the academic records of all students finishing the DST class. Although only two of the 41 for whom we have grades for the DST classes achieved a certificate or diploma, eight earned over 61 credits, which would have brought them close to a certificate or degree. All but three continued for additional coursework. The following table shows the number of credits completed and the GPA at the time of separation for the 41 DST students:

Table 6

Total Credits Earned by DST Students and GPA at Time of Separation

<u>Credits</u>	<u>Number of Students</u>	<u>GPA</u>	<u>Number of Students</u>
12	3	0-.99	6
13-24	13	1.0-1.99	8
25-36	6	2.0-2.99	17
37-48	7	3.0-3.99	9
49-60	4	4.0	1
61 +	8		

The information we have on the success of the students taking the DST class is on the whole positive. Considering that this group of students would not have been expected to persist or maintain a high GPA, they have been successful at both, even with only two achieving a degree and certificate. At present we have not updated the control group's progress since Fall of 1994 for comparison.

Students' Evaluation of the Class

We surveyed the Fall of 1993 and Spring of 1994 students in the Fall of 1994. Fifteen students returned the surveys. Fourteen of the fifteen said they would recommend the class to others. Nine students ranked the critical thinking component as very helpful, four as somewhat helpful, and two as not helpful. Three surveys included a voluntary comment on the critical thinking component: two recommended devoting less time for the critical thinking component, and one praised the critical thinking component.

This spring we sent another follow-up survey to the 25 students for whom we have addresses. To date, four surveys have been returned to us because the student was no longer at that address, and four surveys have been returned with responses. Of the four completed surveys, two remember the critical thinking activities and said they were helpful. One student said he or she uses the Feuerstein material in his or her life every day. The other two students do not remember the Feuerstein materials.

One student for whom we did not have an address called in to request a survey after speaking with a friend who was in the class and received a survey. This student reported that the critical thinking materials made a big difference in her life (phone conversation 5/15/01). She said that while she used to just react, she now thinks before reacting. She said that before taking the class she felt dumb and stupid, but now she sees herself as competent in not only thinking, but also her social interactions and "ways of doing things." She says she still talks about the class and feels it has had a significant and positive effect on her life. This student completed a total of 37 hours at PPCC with a GPA of 3.361, earned a grade of A in the DST class, and improved her Raven's score by three. She now works in a delicatessen at a discount store.

The Feuerstein Materials in the Class

I was more involved in actually working with the Feuerstein materials than the other instructor for the class. I really liked the materials from the beginning – I felt that Feuerstein's list of cognitive functions/deficits speaks to exactly what weaker students need in order to be successful. I see the cognitive functions as the building blocks for anyone's structuring of their world in a way that facilitates their learning and brings it in line with the expectations of school. As I became more familiar with the materials, I found myself looking for a cognitive function or

deficit that would explain a student's response in any given situation. Here are some highlights of what I learned and found interesting in working with the materials:

1. Students giving tautological definition – students use the word itself for a definition of the word. I guess I'd been aware that students sometimes do that, but I never looked at it is something that needs to be corrected. Now I notice when students do that and try to get them to give the definition in other words.
2. Bridging – although some students had a hard time, it became easier for them. This really helps students transfer information. One day one student started making connections, and he even surprised himself and said, “Hey, that just popped into my head – what do you know?”
3. The dot pages - Some students really had a hard time visualizing the items. (Some of our instructors taking Larry Emerson's Feuerstein class did, as well). A few were resistant. I think all got better to some degree. It felt like an accomplishment to those who did well.
4. Headaches – A few students consistently complained of headaches when doing the worksheets, especially the dots. One student in particular who complained of headaches had had a head injury when a child. In 1998 I went to a presentation by Marian Diamond at Colorado College, and she was talking about how adults can grow neural connections in their brains. After the presentation I went up and mentioned the Feuerstein sheets and the headaches, and Diamond said that probably those students were growing connections.
5. Terminology – I feel the terminology really opened the door to concepts in ways that helped students become efficient processors of information. Even the first

lesson's discussion of imaginary lines was fantastic. It opened the door to the fact that we go by what we see, but we also interpret what we see. Some imaginary lines are easily agreed upon (like the lines connecting the stars of the big dipper), while others would seem to be clear cut but can become controversial (the strike zone). The words "arbitrary" and "salient" I think were very beneficial to students, as well as to myself! Thinking that some parts of a message are "salient" helps students begin to evaluate text for levels of importance, such the thesis of an essay as opposed to an example for a minor point!

6. Elements of a plan – In each of the three classes, when we went over this, the students found it boring, and I have to say that at the time I didn't see its significance. It seemed that we were talking about a concept that everybody already employed, but in retrospect I found that not to be the case. It was only recently that I finally came to an important realization of that section. My insight relates to one very puzzling class experience. We divided the class into groups to do a newspaper project, and this time we divided the students homogeneously with the weaker students in one group, average students in another, and the strongest students in the third group. Don't ask me why we decided to do it this way. However, as we watched the students approach their assignment, there were surprising differences between the strongest and weakest groups. The strongest group had an organized approach and was efficient in its activities. The weakest group engaged in a flurry of unproductive activity. They were the busiest, but they were also the least productive. The other instructor and I were baffled. Now, years later I see that that weaker group did not take time to develop a plan.

All their activities were random, and it was easy for them to be busy, but there was no plan to their business. I wish I could go back and work with that group on developing a plan with them. The interesting part is that when we talked about developing a plan in the Feuerstein materials without a project, it just didn't seem relevant.

7. The kangaroo sheet in "Comparisons" is my favorite because to me it produced the most rich and interesting discussion. Also, I saw a kind of "magic wand" effect on students writing summaries after discussing this sheet. Often when students first learn to write summaries, they do not grasp the concept of *only* including the author's ideas, and they are tempted to go off in their own direction, as in a response. In the course of discussing the kangaroo sheet, we discuss that we know things by (1) directly observing them, (2) hearing about or reading about them from others, and (3) drawing conclusions from what we observe and/or hear/read about second hand. After discussing the kangaroo sheet, it becomes clear to the student how to only include what the author is saying (# 1 in the list), not what he or she already knows or has heard from other sources about the subject (#2 and #3).
8. I see the spatial relationships section as capable of helping students expand their abilities to see from the perspective of others. When we teach argument papers, we ask students to identify an opposing viewpoint and refute it as part of developing their own argument. For some students this is very difficult. I think that the pages in spatial relationships can begin in an easy way to help students move from only their own perspective to that of someone else. The pages ask

students to report what two figures in a picture see when they are facing different directions. From there, the concept of different views can be bridged to ideas.

Feuerstein at PPCC Since the DST Class

The DST class was last offered in the Fall of 1994. It became difficult to recruit for the class –fewer students seemed to want a block class. Also, they were being encouraged by the advising office to take a combination of developmental and college level classes, even if they tested into several developmental courses. Besides the recruiting difficulties, the course was expensive to teach with its team teaching approach. Finally, the Welfare to Work Act imposed a time period for students to complete their college work, and therefore students were less interested in taking developmental courses. Because Colorado did not require students to follow placement advice, students could waive out of developmental courses, and many did.

While the DST class has not been offered for developmental studies students, the deaf prep program has been using the Feuerstein materials with its students. The person using the materials is very pleased with the results for her students. She says the best part is the bridging, and she says the materials are great in uncovering areas of conceptual thinking that the students need to strengthen.

While I no longer use the Feuerstein materials as such, I found that the time I spent using them has contributed to my skill as a teacher. I find that I think of my students' confusions in terms of the list of cognitive functions. I especially notice impulsive behavior, and I can encourage students who exhibit such to "Stop and think." I also use continuums in class discussions to help students think along lines of comparison. As a result of my experiences with

Feuerstein's material, I pay more attention to levels of generalization and vocabulary discussions in class.

The Future for Underprepared Community College Students

Today, people in Colorado and across the United States enjoy great opportunities in pursuing an education beyond high school, and never have they needed it more. In his book No One to Waste, Robert McCabe (2000) reports that by the year 2020, 80 percent of the jobs will require some postsecondary education. At the same time, he continues, over half (67%) of today's high school population either choose not to continue their formal education or enter college underprepared. McCabe predicts that if this trend were to continue, in 2020 almost half (47%) of skilled jobs would go unfilled due to the lack of a qualified workforce, leaving as many as 67% of future job-seekers competing for the remaining 20% of jobs that will not require a postsecondary education. Sadly, many predict that the number of high school graduates underprepared for college work will only increase each year (Roueche and Roueche, 1999).

Community colleges open their doors to underprepared students and provide developmental (also called "remedial") coursework to enable them to succeed in college. Sometimes very capable students who did not take college preparatory classes in high school or who have been out of school a number of years decide to enroll in college. These students only need a brush-up of basic skills to get them ready to move ahead with their education, and they typically test into only one developmental course such as English or math. A study of 182 students in a Colorado postsecondary institution in the Fall of 1988, half of whom took a developmental basic skills class and half of whom did not, found that students taking developmental classes had higher rates of persistence than those taking only nondevelopmental

courses (Van Etten, 1997). These students fall into the Robert McCabe's (2000) category of "deficient": developmental education serves as a refresher to get them ready for college level work.

While developmental education affords most underprepared students access to higher education, for too many others it is not enough. McCabe (2000) identifies another group of underprepared students whom he calls the "seriously deficient student," a group comprised mostly of minorities, one requiring more attention to remediate, and one whose needs are not being met. Seriously deficient students bring an array of complicating factors to school with them: unrealistic work schedules; single parenthood; rocky marriages; histories of drug and alcohol abuse; lack of awareness of expectations of attendance, homework, and classroom behavior; and inexperience in theoretical and conceptual thinking. A seriously deficient student would likely place into several developmental courses, such as reading and math and English.

The seriously deficient students often experience challenges in a number of areas of their lives. A significant number have come from the lowest socioeconomic quartile, were raised in single-parent families, achieved average grades of C or lower from 6th to 8th grade, repeated a grade between first and eighth grade, and had a sibling who dropped out of school (Data, Definitions, 1998). Still others are new to the country and limited in their command of the English language and/or have a history of learning problems, whether a diagnosed learning disability or not. Most do not have a family member who graduated from college to help them negotiate the unfamiliar territory of postsecondary education. Even though this group has more difficulty moving from developmental education to college level work, for them, a postsecondary education can be life-changing.

I think the Feuerstein materials address what the very underprepared community college students need. At Pikes Peak Community College, however, it seems unlikely that a Feuerstein component will be added to developmental studies or any program other than deaf prep. First, it would take a lot of hours, and students are being encouraged to take fewer courses that don't count toward a degree. Second, the materials that we used did not have an apparent and clear purpose from the students' point of view. Even with the bridging, in the amount of time we spent with the materials, some students did not see how connecting dots translated into "college learning." Third, faculty and administrators need to be trained to see the benefit for students. The current business model approach to education looks for quick results. Feuerstein's IE takes time, and though it is time well spent, many decision makers just look at the bottom line.

It does seem possible to integrate some of the Feuerstein ideas into existing developmental studies course curriculum. This would also take training. In the meantime, community colleges will continue to encourage students to take advantage of the opportunity to improve their skills and thus advance their career options.

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