

# ESL Teaching and Learning Styles: A follow-up study

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## Introduction

In 1989, a study was conducted at the Language Department at the Universidad de las Américas-Puebla (UDLA) by Jacqueline Milman and Thomas A. Bauder (1989) to examine ESL learning and teaching styles as shown by UDLA language students and teachers.

The present paper reports a follow-up study done at the UDLA which was carried out to study the appropriateness of adapting teaching styles to accommodate the preferred learning styles expressed by students at the basic ESL level in the University English Division. This aspect was also considered in the original research questions of the Milman & Bauder study. (p. 2)

In this study, the dimension of the relationship between learning and teaching styles was further explored, especially taking into consideration that students learn best when taught according to their preferred learning style, as attested by several experts (Dunn & Dunn 1979, Kuchinskas 1979, Lawrence 1979, Newman 1980, Maynard 1974). Also these experts and others in the field (Fischer & Fischer 1979, Bennett 1986, Herbster 1992, Sun 1992) have shown that teachers can learn to teach and/or resort to alternative teaching strategies from their repertoires in order to adapt to a variety of learning styles and, consequently, to maximize learning in their students.

## The Preliminary Study (Background)

### *Research Questions*

The original study done at the Language Department at the UDLA was based on the following research questions: (Milman & Bauder 1989: 2)

1. What are the preferred learning styles of the ESL students surveyed?
2. What are the preferred teaching styles of the ESL teachers surveyed?
3. Is there a match or a mismatch among learning and teaching styles?

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4. Is further study of how to adapt teaching styles to accommodate preferred learning styles warranted?

*The Survey, design, subjects and procedures*

Two forty-one item surveys, one for students and one for teachers, were administered in the Language Department of the UDLA-Puebla, during the Fall semester, 1989. A sample of students that was evenly distributed across the ESL Coordinations among males (221) and females (199), completed the survey (a self-reporting questionnaire about their preferred learning styles within the ESL classroom). All students surveyed were Mexican.

At the same time, 28 teachers participated in the survey: 4 were male, 24 female. They answered a 41-item self-reporting questionnaire about their preferred teaching style. This instrument was designed by adapting the categories for teaching styles from the corresponding learning styles, since no set instrument was found in the relevant literature for the former. The teachers were distributed as follows: 14 Anglo-Americans; 7 Mexicans; 2 Mexican-American; 5 from other countries (Germany, France, Poland).

The student questionnaire used in the first study was designed based on the following definition of learning styles (Bennett 1986: 96):

Learning style is that consistent pattern of behavior and performance by which an individual approaches educational experiences. It is the composite of characteristic cognitive, affective and physiological behaviors that serve as relatively stable indicators of how a learner perceives, interacts with and responds to the learning environment.

Expanding this same definition, it was considered that a teaching style is a pattern of behavior or performance by which a teacher approaches teaching tasks and responds in a teaching environment.

The survey was designed to include twelve variables that related to behaviors that could be easily responded to in a classroom situation. They were a combination of the learning styles presented in the Learning Style Inventory (LSI) developed by Dunn, Dunn & Price (1975), together with Reid's (1987) learning preferences for six of the learning styles. These variables included<sup>2</sup>:

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<sup>2</sup>Definitions of these terms and copies of the questionnaires are available from the author upon request.

- Modes of perception: auditory/visual/tactile/kinesthetic
- Social preference: group/individual
- Conceptual time: reflective/impulsive
- Psychological elements: field dependent/field independent  
competitive/cooperative

For the teachers' questionnaire, items related to learning styles were adapted to match teaching behaviors shown in an ESL classroom.

#### *Results of the Preliminary Study: Students*

Regarding the results of the students surveyed, the six most frequently and consistently chosen learning styles were *reflective*, *cooperative*, *visual*, *kinesthetic*, *individual*, and *auditory*, which ranked the highest on the total 12-item list.

Rank	Learning Style	Percentage
1	reflective	92
2	cooperative	85
3	visual	82
4	kinesthetic	79
5	individual	79
6	auditory	75
7	field independent	72
8	group	70
9	tactile	69
10	field dependent	68
11	impulsive	67
12	competitive	47

**Table 1. Preferred Learning Styles (Students)**

As far as the *field dependent* or *independent* modes are concerned, the UDLA students demonstrated considerable cognitive flexibility. These two categories ranked quite evenly on the list, and the distribution showed the flexibility in the categories of "always", "sometimes", "almost never", "never" with a noticeable low number for "don't know." These preferences were expected to be different for the ESL students at the beginning level, together with the element of *individual/group* learning style. This aspect posed some new questions for the present study and will be reported further on

On the other hand, the differences and ranking of the responses of male and female students were not significant, although female students indicated more definite preferences as shown below:

Males		Females	
reflective	79%	reflective	100
cooperative	70%	cooperative	82
auditory	65%	individual	82
individual	64%	auditory	80
visual	59%	visual	79

**Table 2: Top Five Preferred Learning Styles**

Based on grade averages, students continued to choose the same top six styles. Nevertheless, it was apparent that students with a grade averages of less than 7.0, in other words, those in danger of failing English, show a different set of styles, namely *visual, tactile, kinesthetic, group, reflective* and *cooperative*. This raised another question for the follow-up study, and will be dealt with further in this paper.

The learning style for which the least preference was shown was competitive. This factor was considered especially in contrasting the students' learning styles and some of the professors' teaching styles.

### *Teachers*

The global results obtained in the preliminary study of teachers' preferred teaching styles are shown in Table 3. As can be noticed, the top six teaching styles preferred by the teachers surveyed were *cooperative, reflective, auditory, group, field dependent,* and *individual*.

Rank	Teaching Style	Percentage
1	cooperative	93
2	reflective	80
3	auditory	65
4	group	65
5	field dependent	59
6	individual	53
7	visual	46
8	kinesthetic	43
9	field independent	38
10	competitive	21
11	tactile	16
12	impulsive	16

**Table 3: Preferred Teaching Styles (Teachers)**

These categories do not coincide totally with those chosen by students. The hierarchies as chosen by both groups studied are shown in Table 4.

Learning Style			Teaching Style		
Rank	Style	%	Rank	Style	%
1	reflective	92	1	cooperative	93
2	cooperative	85	2	reflective	80
3	visual	82*	3	auditory	65
4	kinesthetic	79*	4	group	65
5	individual	79	5	field dep.	59
6	auditory	75	6	individual	53
7	field ind.	72*	7	visual	46
8	group	70	8	kinesthetic	43
9	tactile	69*	9	field ind.	38
10	field dep.	68	10	competitive	21
11	impulsive	67*	11	tactile	16
12	competitive	47	12	impulsive	16

\* = more than 30 percentage point difference. (Milman & Bauder 1989)

**Table 4: Comparison of Student-Teacher Survey Results.**

Several inconsistencies can be seen in Table 4. There is a contrast between the *visual-auditory* modes of perception in the students' and the teachers' rankings. It is actually reversed, with a big point difference in this case; therefore, there is a discrepancy between learning and teaching styles.

Another contrast exists between the *individual-group* social references shown by students and teachers. If each list is considered separately, the preferences are also reversed, and if we look at them in a parallel way, there is almost a 30 percentage point difference between teachers' preferences for individual work as opposed to students' preferences for group work. So, another mismatch was found.

On the other hand, it is interesting to mention that between the elements of *competiveness-cooperation*, although both lists show a match between learning and teaching styles, all the male Anglo-American teachers and 20% of the female Anglo-American teachers marked *competitive*, while in the case of students, both male and female students ranked this aspect very low, and ranked the *cooperative* aspect consistently very high (Table 2) This shows a need for at least an awareness process on the part of the teacher.

The *kinesthetic* mode was also demonstrated to be different between the student and teacher groups, students consistently ranking it as one of the top six learning styles of their preference, while teachers ranked it very low.

In spite of these differing styles, the two aspects at the top of both the learning and teaching styles lists coincided strongly. That is, *reflective* and *cooperative* learning and teaching styles were consistently chosen by both the students and teachers surveyed, with the smallest point differences on the lists.

While these preferences showed consistency in both populations analyzed, the same was not observed in students who were at risk, or had obtained a grade of 7.0 or below. Their top preferred learning styles were *visual, tactile, kinesthetic, group, reflective* and *cooperative*.

### Follow-up Research

Recently, looking at the results of the preliminary research done at the UDLA in 1989, new questions and possible implications suggested the need for a follow-up study. About the same time, a new study, which also throws light on the problem, was conducted for the Lilly Endowment 1992 Workshop on Liberal Arts in Colorado, in which success rates of the Language Department were analyzed. Based on these studies, the researcher found the need to examine several problems prevailing in the basic

ESL levels at the UDLA: The students at the basic levels showed a strong tendency to fail the basic ESL course (48%) in 1992. Out of this percentage, 32% were repeating the course. The global dropout rate was also high during the first three semesters, reaching 35% in 1992.

During their first three semesters, and after a placement exam in English, the majority of students at the UDLA enroll in these basic English courses. Students with insufficient knowledge of English (about 30% of the incoming freshmen) are placed in the basic ESL course. This is actually a remedial course meant to give such students a grounding in English. It is a Pass/Fail course, and is therefore called a "pre-university" ESL course, in the English Division<sup>1</sup> which corresponds to their major.

The present research was conducted over three semesters in the University English Division and included all the students who obtained the fewest points in the placement exam and who were systematically grouped together into classes for the first time.

### *Research Questions*

1. What are the preferred learning styles of the pre-university ESL students surveyed?
2. What are the preferred teaching styles of the pre-university ESL teachers surveyed?
3. Can the use of alternative teaching styles be accommodated to foster learning to its maximum at the pre-university English level?
4. Can a new teaching strategy which matches the learning styles preferred by students reduce or avoid repeaters and/or dropouts in the level surveyed?

### *Review of the Literature*

The same definition cited by Bennett (1986) and used by Milman & Bauder (1989) was the basis for the present study. As attested by Dunn & Dunn (1979) and Reid (1987), most students are able to "correctly identify their learning strengths, particularly when an element is strongly preferred or rejected." (Dunn & Dunn) At the same time, from the following research techniques: daily observation, error analysis and paper-and pencil instruments, the latter were chosen to identify learning and teaching styles for the present study. It was also assumed that a difference between

<sup>1</sup>The English Division is the part of the Language Department which teaches ESL to students enrolled in the Social Studies and Liberal Arts Schools.

learning and teaching styles can affect learning (Reid 1987, Oxford 1990, Lam 1990, Morgan 1976):

The challenges to education are great [...] and the challenges particularly include a need for experimentation in teaching approaches that could reach individuals whose full potential for learning has scarcely been tapped. (Morgan 1976: 84)

Furthermore, although educators might understand the concept of learning styles and differences, they often have not actually applied these variables in determining appropriate teaching methods and strategies. This was the situation in the University English Division. There is evidence that teachers can be trained to become flexible and teach with a variety of teaching styles. Dunn & Dunn (1979), Oxford (1990), and Nickel (1981) among others have presented evidence that matching teaching styles to the learning styles preferred by the students can be highly beneficial both for the students' achievement, as well as for the increased motivation that results from the process.

In the case of the students surveyed in the preliminary study, those failing ESL courses showed a significant difference in their learning styles preferences. Therefore, the data from similar students surveyed in the follow-up study had to be explored along these lines because

It is precisely those students who are most difficult and who absorb most of our attention whose learning styles do not match the kind of instruction to which they are being exposed--and who most need the organized, sensitive matching of their learning characteristics with an appropriate teaching style. (Dunn & Dunn 1979: 241)

It follows that teachers should resort to, and/or be trained in, a variety of teaching strategies and methods, and become aware of the potentially successful process if they approach their teaching in a rich, flexible way in order to match their students' learning styles.

#### *Survey Design, Subjects and Procedures*

This research was conducted during the following semesters: Fall 1991, Spring 1992, and Fall 1992 in the University English Division of the Language Department at the UDLA-Puebla. The level surveyed was the pre-university basic ESL course.

For the Fall 1991 and Spring 1992 semesters, all the pre-university course sections were scheduled at the same hour, thus allowing for a grouping or "pull-out" system for



those students obtaining the lowest placement scores. These students became the experimental group. For the Fall 1991 semester, the researcher and teacher of the experimental group also taught one of the two control groups, chosen at random from a total of six sections. For the Spring 1992 period, the same grouping procedure was followed. In this case, there were two experimental groups taught by the same teacher, and one control group (chosen at random from the total number of sections) taught by another member of the faculty.

For the Fall 1992 semester there were two experimental groups, one of which was taught by a different teacher who was new to the experiment, one was taught by the previously involved teacher, and there was one control group taught by a third faculty member. Student distribution by semester is shown in Table 5.

The same survey questionnaires used in the preliminary research were applied to students and teachers involved in the follow-up study in order to explore their learning and teaching style preferences.

	Fall 1991		Spring 1992		Fall 1992	
	Experimental Group	Control Group	Experimental Group	Control Group	Experimental Group	Control Group
Number of Students	22*	17*	24*	25	21*	23
		24	21*		21	
Total	22	41	45	25	42	23

**Table 5. Distribution of Pre-University Students Surveyed (\*Sections taught by author.)**

A total of 119 students participated in the experimental groups during the three semester study. After being pulled out of the pre-university sections, and immediately after beginning each semester, these students completed the self-reporting questionnaire, choosing their preferred learning styles.

Based on these results, decisions were made about systematically matching the teaching styles of the teacher in charge. A set of alternative teaching strategies involving specific teaching techniques, materials, timing and sequencing of content, classroom management, group dynamics, and the allocation of other resources were then considered, organized, and implemented in the experimental groups to meet the learn-

ing styles and strengths of the students involved. No questionnaires were completed nor specific strategic decisions made for the control group.

Then, assessment decisions were made. All ESL students in the Language Department, including the University English Division with its pre-university courses, are evaluated on a departmental basis, which means that all sections of one course take the same formal examination every month (four monthly exams per semester). Regarding the pre-university courses, it was decided from the very beginning of the project that the experimental group(s) would have their own examinations to evaluate the first three months, and that they would take the same departmental final exam as would the rest of the students enrolled at that level. Still, the exams for the experimental group(s) were designed following the same format as the regular sections. As with these regular sections, the exams were always accumulative-objective in nature.

### *Results and Discussion*

In this section the most relevant results of the follow-up study will be discussed. Table 6 shows the learning styles preferences chosen by students in the first semester (Fall 1991) in which the study took place.

Rank	Learning Style	Percentage
1	visual	96
2	tactile	90
3	kinesthetic	89
4	group	86
5	cooperative	85
6	reflective	81
7	field dependent	78
8	auditory	74
9	individual	52
10	field independent	50
11	competitive	33
12	impulsive	18

Table 6. Preferred Learning Styles of Students in Experimental Group (Fall 1991)

Of the 22 students surveyed, the division between sexes was practically even: 10 male and 12 female.

Several aspects are interesting. The *visual*, *tactile*, and *kinesthetic* preferences strongly coincided with the results of the preliminary study concerning the relationship between lower academic average and styles preferred by students. Interestingly enough, this semester there were no repeaters in the experimental group; all were first semester students. A further aspect is that the *visual* and *kinesthetic* perception modes match the control groups' extrapolated data and the preliminary research findings.

On the other hand, there was a very consistent and close relation between the *group* and *cooperative* styles preferences in the top six learning styles chosen by the experimental group. These also match the data found in the preliminary study for the students at risk. But the more successful students did not show the same rankings in the base study. So, this may imply that these styles may not be as productive in the ESL courses at the UDLA.

A more striking contrast is the one between these learning styles and the typical teaching styles preferred by ESL teachers surveyed in the base study (see Table 3).

So, in the follow-up research a systematic attempt was made to match the students' preferred learning styles. The first step was to analyze the preferred teaching style of the experimental teacher. The results are listed in the following chart:

Teaching Style	%	Teaching Style	%	Teaching Style	%
Visual	97	Reflective	88	Auditory	63
Kinesthetic	95	Field Dependent	85	Individual	50
Group	91	Competitive	71	Field Independent	45
Cooperative	89	Tactile	65	Impulsive	25

Table 7. Experimental Teacher's Teaching Styles (Fall 1991)

Except for the *tactile* mode, there was a match between the students' preferred learning styles and the teacher's teaching styles. Nevertheless, and taking into account that the students' styles should be matched as much as possible by the teacher's teach-

ing styles, decisions were made to enhance their learning through specific teaching strategies.

1. Visual materials such as wall charts, flash cards, and materials which students could manipulate were systematically included in a large number of class sessions.
2. Some TPR techniques were employed, such as physically responding to directions, mimicry, silent dramatizations followed by spoken-acted dramatizations, and some games like *Simon Says*, *Memorana* and *Concentration* with activities, verbs action cards. TPR responses were adapted too.
3. Taking into consideration the *group + cooperative* modes chosen by students, numerous small group activities were implemented with the experimental group, especially those using problem-solving or jigsaw puzzle approach (Kagan 1985, Johnson, Johnson & Johnson-Holubeck 1987, Aronsen 1978).
4. A conscious and systematic effort was made to allow enough time for students' *reflective* time, using appropriate questioning techniques, always establishing the objectives for the activities conducted in class, and explicitly sub-dividing students in subtasks so as to give them a sense of achievement.
5. Based on the *field dependent* learning style, consistent reinforcement was provided permanently by the teacher and peer reinforcement was welcomed.
6. In the weekly lesson plans, a balance between inductive and deductive teaching techniques was established in order to train students to be exposed to a variety of approaches in class and with the intention of letting them experience flexibility in their own learning styles for their future academic life.

Two teaching assistants, who matched the learning styles of the students and who were also very committed to learning and experiencing innovative teaching approaches, participated in the experiment as resource TA's. Two sub-groups were formed within the experimental group: the more *kinesthetic-tactile* students worked an additional hour with a highly *kinesthetic-tactile* TA, who used a highly participatory approach and TPR. The other sub-group was formed of those students who ranked the *group-cooperative-field dependent* categories very high. They worked for an extra hour with a TA whose own teaching style showed a high tendency for the *group-cooperative*. The extra sessions were held in various locations (library study cubicles, outdoor sessions, the cafeteria, etc.) and were not limited to a typical classroom setting. Both TA's and the experimental teacher met once a week throughout the semester. All kept daily journals of their classes, and all activities were planned and organized together. Table 8 lists the teaching styles of the teacher in charge of the experimental groups (Column 3) and those of the two TA's involved in the Fall 1991 semester (Columns 4 and 5).

Rank	Teaching Style	Percentage: Experimental Teacher	Percentage: TA 1	Percentage: TA 2
1	Visual	97	92	97
2	Kinesthetic	95	96	89
3	Group	91	93	87
4	Cooperative	89	90	90
5	Reflective	88	89	89
6	Field Dependent	85	85	87
7	Competitive	71	84	75
8	Tactile	65	82	86
9	Auditory	63	60	65
10	Individual	50	51	54
11	Field Independent	45	43	40
12	Impulsive	25	32	11

**Table 8. Preferred Teaching Styles: Experimental Teacher and TA's (Fall 1991)**

Results of the experimental group grades are listed in Table 9 and Table 10 shows these results compared with those of the control groups.

Student Number	Month 1	Month 2	Month 3	Month 4	Final Grade
1.	83	78	88	80	82 / AC
2.	62	70	73	74	69 / NA
3.	72	80	85	79	79 / AC
4.	73	85	88	80	81 / AC
5.	80	88	92	87	87 / AC
6.	84	89	87	80	85 / AC
7.	86	92	95	90	91 / AC
8.	94	95	98	89	94 / AC
9.	86	91	93	85	89 / AC
10.	81	87	88	74	82 / AC
11.	90	80	82	81	83 / AC
12.	89	81	90	87	87 / AC
13.	92	88	94	80	88 / AC
14.	92	83	78	77	82 / AC
15.	91	82	85	73	83 / AC
16.	78	70	78	67	73 / NA
17.	94	90	92	85	90 / AC
18.	91	89	88	89	89 / AC
19.	100	95	93	89	94 / AC
20.	84	78	67	60	72 / NA
21.	80	72	74	65	72 / NA
22.	83	70	80	72	76 / AC

Passing (AC-Acreditado): 18 Students (81.82%)

Not Passing (NA-No Acreditado): 4 Students (18.18%)

**Table 9. Monthly Grade Results of First Experimental Group (Fall 1991)**

Student Number	Experimental Group	Control 1	Control 2	Control 3
1.	<b>82</b>	72	<b>88</b>	68
2.	69	<b>84</b>	65	DROP
3.	79	65	34	<b>83</b>
4.	<b>81</b>	<b>79</b>	71	66
5.	<b>87</b>	67	<b>79</b>	<b>81</b>
6.	<b>85</b>	<b>80</b>	<b>76</b>	<b>90</b>
7.	<b>91</b>	73	<b>77</b>	75
8.	<b>94</b>	<b>77</b>	72	<b>85</b>
9.	<b>89</b>	64	69	DROP
10.	<b>82</b>	50	72	<b>80</b>
11.	<b>83</b>	<b>82</b>	56	<b>77</b>
12.	<b>87</b>	73	<b>86</b>	54
13.	<b>88</b>	<b>76</b>	<b>75</b>	<b>75</b>
14.	<b>82</b>	72	<b>80</b>	<b>89</b>
15.	<b>83</b>	60	64	61
16.	73	71	DROP	60
17.	<b>90</b>	73	<b>94</b>	<b>80</b>
18.	<b>89</b>	-	77	65
19.	<b>94</b>	-	DROP	<b>82</b>
20.	72	-	66	<b>88</b>
21.	72	-	72	35
22.	<b>76</b>	-	<b>89</b>	63
23.	-	-	DROP	<b>80</b>
24.	-	-	DROP	-
Passing (AC)	<b>81.82% (18)</b>	<b>35.29% (6)</b>	<b>35.71% (10)</b>	<b>54.17% (13)</b>
Failing (NA)	18.18% (4)	64.71% (11)	50% (14)	37.50% (9)
Drops	0	0	14.29% (4)	8.33% (2)
Total Number of Students	100% (22)	100% (17)	100% (28)	100% (24)

**Table 10. Comparison of Results (Final Grades): Experimental vs. Control Groups (Fall, 1991)**

From the results presented in the previous tables, one can see that the number of students passing (AC) the pre-university course in the experimental group is by far greater than the control groups. After working with and observing both the experimental group and control groups this first semester of the research project, some elements demonstrated the positive effect that using teaching styles that match the learning styles preferred by students at the beginning levels, leading them to higher and more consistent achievement.

When looking at the monthly grades of all groups, there was a pattern showing that students who passed the first monthly departmental exam, but did not pass the rest of the departmental exams were putting themselves at high risk of not passing the course, and becoming potential repeaters and/or dropouts.

Another interesting element that was observed was that there were several cases of students dropping out in the control groups. This might be an indicator of their not being able to cope with the course content, the teaching styles used by the teachers, the working-learning styles thus expected from students, among other factors. This was different in the experimental section as can be seen in Table 10. Even the students who failed the course stayed in it and worked during the whole semester without getting so discouraged that they dropped the course.

All students in the experimental group knew what their monthly goal was, including the final month, which included the regular departmental final exam. It is noticeable that the results obtained on this exam were very consistent with the rest of the results throughout the semester, a fact which allowed them to pass the course. On the other hand, a contrasting pattern exists in which students in the control groups pass the first and/or second monthly exams, but fail the final. This very often makes them fail the course and, as a result, repeat it.

In the second semester of the follow-up research (Spring 1992), there were two experimental groups and one control group chosen at random from the rest of the sections being offered that semester. This distribution was changed not by chance, but with specific intentions in mind. There was a need to verify if the first semester had been successful because of the type of students received in their first semester or because of the combination of resources, including the experimental group teacher and the two TA's involved or because of their will to make it work, etc. So, the second semester, the combination changed. Also, it must be kept in mind that at the beginning of the semester all the students in the experimental group(s) had to answer the self-reporting questionnaire of their preferred learning styles. Therefore too, some of the elements of the course were changed to better accommodate them to the students' styles.



The researcher taught two experimental groups and a second member of the faculty taught another section of the pre-university course which was used as the control group for that period.

As can be seen in Table 5, there were 45 students involved in the two experimental groups (24 and 21 in each one), while 25 other students were in the control group.

The preferred learning styles selected by the experimental group students are shown in Table 11 below.

Rank	Learning Style	Percentage
1	visual	96
2	tactile	93
3	kinesthetic	89
4	group	84
5	reflective	81
6	cooperative	75
7	field dependent	61
8	individual	59
9	competitive	55
10	auditory	32
11	field independent	21
12	impulsive	10

**Table 11. Learning Style Preferences for Students in the Experimental Groups (Spring 1992)**

These choices and preferences closely correspond to what the preliminary research found about students with a grade of less than 7.0 (that is those failing the course). In fact, for the Spring 1992 semester, the majority of the students in the experimental groups had failed the pre-university courses the previous semester, and only a minority (5) were first semester students. The challenge of proving that by accommodating teaching styles to students' preferred learning styles was great.

From the very beginning of the semester, it was interesting to see the mismatch between the regular teaching styles expressed by the faculty in the preliminary study

and the learning styles selected by the students now surveyed. Could that be one of the reasons for their academic failure?

As was done in the first semester, students completed the learning styles questionnaire. Then the results were analyzed and decisions made accordingly. These involved the following:

1. Visual materials (wall charts, flash cards, maps) were included in class and *visual-tactile* materials which students could manipulate were implemented as much as possible.
2. Some TPR techniques were employed, such as physically responding to directions, mimicry, dramatizations, following directions, etc.
3. Class sessions systematically used a stimulus variation including seating arrangement, materials, combination of language skills and types of tasks, interaction styles. Not all class sessions were held in the same classroom, and some sessions took place outdoors.
4. Taking the *group-reflective-cooperative* modes into consideration, and given that most students had already been exposed to the topics of the syllabus, numerous small group activities were included. This allowed students to help each other use their previous knowledge and build knowledge from there.
5. A strong and motivating warm-up period was always present at the beginning of each class session since some students showed low motivation and/or frustration as a consequence of having failed the previous course.
6. An effort was made to teach both inductively and deductively, allowing students to discover facts about language and its mechanisms for themselves. Also, some problem-solving and jigsaw puzzle cooperative techniques were used in class.
7. The combination and sequencing of topics to be covered were different from their previous courses, so as to try new ways of reaching the same goals.
8. A "think-aloud" report for each group or for each individual in conferences with the teacher were included, so as to help students identify their strengths and weaknesses in the learning process *per se*. ("How? Why? Explain it to me in English or Spanish." were used a lot.)
9. During the semester, the *cooperative-competitive* modes of learning changed. This was observed to be connected with the fact that more male students were repeating the course. As we recall, the *competitive* preference was more consistently marked by male students and ranked high by the male Anglo-American teachers involved in the preliminary study. It was also observed that this strategy could change in close connection with the immediate results obtained. Students became more competitive when more differential grades were obtained. This mode was also task-connected. Therefore, this time, both *cooperative* and *competitive* activities were implemented in and out of class.

10. Instead of the extra human resources used in the first semester of the study, a new element was introduced in this second semester: A computerized Basic English program, which could be used outside class and in conference with the teacher. The program included numerous exercises, gave immediate feedback and orientation according to student's responses and gave the user his/her score. This was kept in a weekly scorebook for each student, and was also used as a competitive element.

The grade results of the experimental groups are listed below (Table 12). Table 13 shows the experimental groups' results compared with those of the control group.

Tables 12 and 13 show some interesting results. Both experimental groups practically duplicate the passing percentages in comparison to the control groups. On the other hand, this time there were practically the same number of students dropping out regardless of whether they were in the experimental or control groups, although, as a whole, the dropout rate was reduced in comparison with the previous semester.

Although not used as a formal instrument for the purpose of this study, the evaluation and feedback questionnaires all students have to complete as part of the faculty evaluation system at the UDLA provided interesting data. In the Spring 1992 semester, more students expressed positive feedback as far as their opinions being taken into account, understanding the English class, becoming motivated by the variety of activities, material and group dynamics used in class, practicing out of class more via the English computer program, etc. This confirmed what students reported throughout the semester in the "think-aloud" sessions.

The researcher as a teacher, having rated the *competitive* element rather high, had to systematically balance each weekly lesson plan so as to be sensitive to students' preferences. Towards the end of the course, students expressed preference for the *cooperative* mode, although they reported that the *competitive* style made them more immediately aware of their strengths and weaknesses in a one-shot exposure, instead of in a longer process. This aspect seemed to be very relevant to teachers who needed to become aware of students' needs and learning style preferences to be able to adjust their teaching styles to their students'. This requires a lot of self-control, as can be attested to by the researcher.

Student Number	Experimental Group 1	Experimental Group 2
1.	91	75
2.	47	78
3.	98	69
4.	91	DROP
5.	86	79
6.	92	83
7.	84	75
8.	DROP	53
9.	69	83
10.	78	80
11.	90	86
12.	49	66
13.	78	77
14.	76	75
15.	84	80
16.	89	79
17.	48	80
18.	77	90
19.	31	71
20.	81	90
21.	81	75
22.	84	-
23.	90	-
24.	51	-
Passing (AC)	68.00% (17)	76.19% (16)
Failing (NA)	28.00% (28)	19.04% (4)
Drop outs	4% (1)	4.77% (1)
Total number of students	100% (25)	100% (21)

**Table 12. Student Results: Two Experimental Groups (Spring 1992)**

Student Number	Experimental Group 1	Experimental Group 2	Control Group
1.	91	75	73
2.	47	78	68
3.	98	69	51
4.	91	DROP	71
5.	86	79	65
6.	92	83	81
7.	84	75	74
8.	DROP	53	81
9.	69	83	DROP
10.	78	80	67
11.	90	86	84
12.	49	66	73
13.	78	77	85
14.	76	75	67
15.	84	80	80
16.	89	79	86
17.	48	80	87
18.	77	90	80
19.	31	71	68
20.	81	90	59
21.	81	75	74
22.	84	-	69
23.	90	-	52
24.	51	-	69
25.	-	-	57
Passing (AC)	68.00% (17)	76.19% (16)	32.00% (8)
Failing (NA)	28.00% (28)	19.04% (4)	64.00% (16)
Drop outs	4% (1)	4.77% (1)	4.00% (1)
Total number of students	100% (25)	100% (21)	100% (25)

**Table 13. Comparison of Results between Experimental Groups and Control Group**

Let us look at the third semester of the follow-up study, Fall 1992.

As can be seen in Table 5, 42 students were involved in two experimental groups, and 23 belonged to the control group. The majority of the students were first semester students. There were only three repeaters in the two experimental groups.

All students in the experimental groups completed the survey about their learning style preferences. The results are presented in Table 14.

It is interesting to observe that at the beginning levels, all three semester pre-university ESL courses surveyed ranked *visual* at the top. On the other hand, it is noticeable that in this last semester the students selected *reflective-cooperative* with a high percentage, thus making their profile more similar to that of the students in the preliminary study at all levels and across the English Divisions. In fact, the latter chose *reflective-cooperative-visual-kinesthetic* as the top four learning styles they preferred. This time, the order of *visual* is reversed, but the top four are the same and with very similar percentages.

Rank	Learning Style	Percentage
1	visual	92
2	reflective	90
3	cooperative	89
4	kinesthetic	83
5	group	80
6	auditory	71
7	field dependent	66
8	individual	49
9	tactile	35
10	field independent	22
11	competitive	17
12	impulsive	11

**Table 14. Preferred Learning Styles of Students in the Experimental Groups (Fall 1992)**

In the third semester of the study, there were two experimental groups, taught by the teacher/researcher, who was involved from the very beginning of the study, and another member of the faculty. The teaching styles of both experimental teachers are listed in Table 15.

Teacher #1			Teacher #2		
Rank	Style	%	Rank	Style	%
1.	visual	97	1.	cooperative	96
2.	kinesthetic	95	2.	reflective	95
3.	group	91	3.	visual	90
4.	cooperative	89	4.	group	89
5.	reflective	88	5.	kinesthetic	87
6.	field dependent	85	6.	field dependent	85
7.	competitive	71	7.	auditory	72
8.	tactile	65	8.	individual	60
9.	auditory	63	9.	field indep.	53
10.	individual	50	10.	competitive	40
11.	field indep.	45	11.	tactile	39
12.	impulsive	25	12.	impulsive	37

**Table 15. Experimental Teachers teaching Style Preferences (Fall 1992)**

This semester it was considered interesting to see the feasibility and practicality of having another teacher conduct one of the experimental groups in order to analyze the impact that trying to adapt to students learning styles has on teacher's planning, course and classroom management, decision making, etc. At the same time, it was time to examine if any teacher could adapt his/her teaching styles to his/her students' learning styles if made aware of them early in the semester.

This third semester there seemed to be a closer match between the new experimental teacher and the students surveyed than the connection between the former experimental teacher and students involved during that period. So, it was relevant to confirm that teachers who are made aware of their students' preferred learning styles early in the semester can really match their teaching styles with those of their students. Could this really be practical and viable?

Looking at students' and teachers' style preference lists, several aspects lend themselves to discussion. For instance, the top four learning styles selected by students were very similar to those of students in the preliminary study, namely *reflective*, *cooperative*, *visual*, and *kinesthetic* for the preliminary study, and *visual*, *reflective*, *cooperative*, and *kinesthetic* for the follow-up study.

*Visual* was always at the top of the list, but this might be due to the more extensive use of media in general, as well as in the academic field. Students might be coming to us now with more exposure to visual materials (videotapes, for instance). The combination of learning styles so consistently chosen by students is very interesting. For the correlation between these and the teaching styles preferred by UDLA teachers, the match exists with the *cooperative-reflective* modes of teaching. In the case of the second teacher conducting an experimental group this time, her preferences for *cooperative*, *reflective*, *visual*, and *group* (*kinesthetic* was her fifth preferred style) more closely matched students' preferred learning styles. There was also a close correspondence between the preference of *field dependent*, highly ranked by both teachers, and the same style marked by students. Note that this is a close match with UDLA ESL teachers too.

After students and teachers completed the survey questionnaires, the information was analyzed. The decisions about working with the new students were then made.

1. The same visual materials were used in both experimental groups (most were the same ones used throughout the research period).
2. The *cooperative-reflective-group* modes were taken into account by including small group activities, careful timing to allow for reflection time, and input from all students involved.
3. Students were given consistent reinforcement and feedback were given students by both teachers and peers.
4. Each teacher discovered that they preferred either an inductive or a deductive teaching method, but a conscious effort was made by both to plan their lessons together, and to maintain a balance between these two in order to better accommodate students' learning differences.
5. No additional tutors were included this time, but students were encouraged to have periodic conferences with their respective teachers.
6. The computerized English program was used again both outside class and during some conferences with the teachers.
7. The two experimental groups never met during the semester, but their teachers had weekly meetings.

Table 16 lists the results of the students' in the three groups considered for the Fall 1992 semester.



Student Number	Experimental Group 1	Experimental Group 2	Control Group
1.	78	Drop	Drop
2.	82	53	80
3.	90	50	79
4.	77	83	Drop
5.	85	86	79
6.	73	76	79
7.	54	83	76
8.	76	88	75
9.	80	78	75
10.	92	85	81
11.	85	78	77
12.	69	94	40
13.	88	73	75
14.	84	88	84
15.	72	70	Drop
16.	73	82	86
17.	87	92	87
18.	73	89	Drop
19.	92	83	Drop
20.	62	81	Drop
21.	77	73	Drop
22.	--	--	Drop
23.	--	--	Drop
Passing (AC)	66.66% (14)	71.43% (15)	52.00% (12)
Failing (NA)	33.33% (7)	23.80% (5)	47.83% (11)
Drop outs	0	4.77% (1)	30.43% (7)
Total number of students	100% (25)	100% (21)	100% (25)

**Table 16. Comparison of Final Grades of Experimental Groups and Control Group (Fall 1992)**

As can be seen in the table, passing students (AC) obtained higher grade averages in both experimental groups. Comparing both of these groups, this time the new teacher's group obtained better results. Although constant efforts were made by both teachers to meet students' preferred learning styles, this might indicate that the matching of styles proves beneficial, but that better results may be obtained if the match is natural. This could limit the practicality of matching teaching styles to learning styles, but the results obtained here still seem to indicate that the effort is worthwhile. It is considered that this could be overcome through a well-thought-out in-service training program for the UDLA ESL teachers.

There were no dropouts in experimental group No. 1 and only one in group 2, while there were 7 students who dropped out of the control group. This high number of dropouts had happened previously during the experiment and may be further evidence that when students are accomplishing something and feeling accommodated regarding their learning styles, they tend to maintain their efforts to get to their goal, of passing their basic ESL course.

### Conclusions and Suggestions

Both the preliminary research (Milman & Bauder 1989) and the follow-up study here presented dealt with the preferred learning and teaching styles selected by both the students and teachers of the ESL program in the Language Department at the Universidad de las Américas-Puebla.

The preliminary research explored the preferences expressed by a sample of students and teachers across the English Divisions in order to analyze whether a match or a mismatch existed between them. A strong match was found only in two of the specific elements considered: *reflective* and *cooperative*, while mismatches to various degrees were found in all other elements (Table 4). It was also discovered that a different set of learning styles was selected by unsuccessful students. These elements posed new questions which were the basis for the follow-up study, namely whether an attempt should be made to meet students' preferred learning styles and whether this would prove to be practical.

The follow-up study concentrated on the pre-university (basic) ESL course taught in the University English Division, UDLA, in which the profile of students was anticipated to be different.

1. The pre-university students surveyed consistently chose *visual*, *tactile*, *kinesthetic*, *group*, *cooperative*, *reflective*, and *field dependent* as their preferred learning styles. This did not coincide with the teaching styles preferences expressed by the teachers surveyed in the base study.

2. Assigning a teacher whose preferred teaching styles matched the pre-university students' typical learning styles, seemed to be conducive to better achievement and higher student motivation.
3. Obtaining students' information about their preferred learning styles early in the semester helped adapt the styles with which they would be taught and helped the teachers make better low-cost decisions (i.e., more teacher awareness > better planning > less student frustration > better student achievement > more student motivation > a decreasing number of dropouts and also more teacher involvement and a positive impact on their teaching.)
4. In order to further validate these studies, another instrument could be applied, such as the Learning Styles Inventory (LSI) developed by Dunn, Dunn & Price (1975) or the Group Embedded Figures Test (GEFT) by Witkin, Oltman, Raskin & Karp (1971) or the Strategy Inventory for Language Learning (SILL), Version for Speakers of Other Languages Learning English (Oxford 1990).
5. A first step for matching teaching styles with learning styles is not only to inform teachers about its theoretical beneficial effects, but also to make them aware of these ideas and give them tools to start using the information about their students and also about themselves as input in their lessons and/or curriculum planning.
6. A sensible approach to matching teaching styles to learning styles is to expand the teachers teaching repertoire. This should include not only specific teaching techniques, but also foundations in group dynamics, classroom management, leadership, ESL material and resources, among others.
7. A special effort could be made to help students increase their learning style preferences and to become more flexible.
8. A replication of the present study could be done in the ESL Divisions of other departments not included in it, such as the Administrative and the Technical English Divisions.
9. A cost-benefit survey could be carried out in order to verify if taking specific steps in the early ESL course at the UDLA could reduce the dropout rates in the short run as well as in the long run. This could be done across Divisions, that is in the Administrative, Technical, as well as in the University English Divisions.

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