# FIELD DEPENDENCE-INDEPENDENCE
## The Implications for ESL Curriculum Design

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**PREFACE**

This research was done as part of my sabbatical study at Iowa State University, Ames, Iowa from August 1986 to August 1987.

**INTRODUCTION**

In "The Modern American College," Arthur W. Chickering and associates write:

> Applying what is known about human development to education will not only strengthen teaching and learning in the disciplines and professions but assure that other institutional services -- from academic advising and career counseling to housing and program evaluation -- contribute fully to learning and development (307).

Therefore, it seems relevant to look at some of the research that has been done on cognitive learning styles and what implications the results of that research have for curriculum development in the field of English as a Second Language (ESL).

"The term learning styles refers to a student's consistent way of responding to and using stimuli in the context of learning" (Claxton and Ralston 1). Extensive

research has been done on these cognitive styles, and that information could be used to help meet the needs of a wide variety of students in the classroom including Japanese students who are studying ESL.

Even at the present time, there is often little attention given to learning style preferences, and Smith and Renzulli feel that this is a significant oversight. They do not feel that teachers should be completely guided by learning style preferences, but that the awareness of them would help the teachers make more informed decisions about instruction.

Freedman and Alley developed the following six principles to assist teachers translate the cognitive style theories into classroom applications:

1. Both the style by which the teacher prefers to teach and the style by which the student prefers to learn can be identified.

2. Teachers need to guard against overteaching by their own preferred learning style.

3. Teachers are more helpful when they assist students in identifying and learning through the student's own style preferences.

4. Students should have the opportunity to learn through their preferred style.

5. Students should be encouraged to diversify their style preferences.

6. Teachers can develop specific learning activities which reinforce each modality or style.

An important point, often overlooked, which is implicit in the first two principles is that teachers often teach not by a method they have developed, but by the way in which they themselves learned (77-78).

Dunn states:

> During the '60s and early '70s evaluations of
> selected innovations consistently yielded
> essentially similar results; group achievement
> scores tended to reflect those of students
> experiencing conventional instruction. Since
> then, however, attribute/treatment/interaction
> where each youngster's scores are compared
> with the individual's own baseline data,
> repeatedly evidenced the statistically in-
> creased academic achievement... and improved
> attitudes toward learning... that emerge when
> students are taught through their personal
> characteristics (14).

One of those characteristics is the cognitive learning
style of field dependence-independence (FD/I).

## BACKGROUND OF FIELD DEPENDENCE-INDEPENDENCE

In the late 1940's and early 1950's, Herman A. Witkin
and some colleagues did laboratory research on "how people
locate the upright in space" (Witkin, Goodenough, Moore, and
Cox 2). That is, they tried to determine how people
perceived the position of their body compared to the visible
surroundings which were tilted or otherwise adjusted, and
thus, how they decided if they were actually in an upright
position or not. Witkin, et al. found that: "There are some
people who perceive their own bodies as upright when they
are fully aligned with the surrounding tilted room... [some]
can be tilted as much as 35 degrees and... will report that
they are perfectly straight." On the other hand, "[some
people] seem able to apprehend the body as an entity discrete
from the surrounding field..." (5). That is, they can adjust
to an upright position with little regard to the visible field
such as the tilted room. However, most people "fall between

the two extremes..." (5). Those who align themselves primarily with the altered visual field are called *field dependent* (FD). Those who are not much influenced by the visual field are called *field independent* (FI).

Since cognitive learning styles are used when someone is dealing with a symbolic representation as in thinking or problem solving, other tasks that require a subject to pick a simple figure out of a complex field were investigated for FD/I influence. From these and subsequent trials evolved the Embedded Figures Test (EFT), a paper and pencil test which is now in common use for testing a person's tendency toward FD or FI. In the EFT, the subject looks at a simple figure such as a square, though it can be any shape, and tries to find that figure in a more complicated figure field. Those who find the figure without being influenced by the surrounding field are FI. Those who are distracted by the field are FD.

Even though a distinction is made between these learning styles, Witkin, et al. are careful to point out that FD/I does not divide people into two distinct groups; there is simply a tendency in any person toward one mode or the other, and a persons's standing is described by her position relative to the mean.

Three other factors of FD/I should be noted here:

1. The tendency toward the preferred mode remains quite stable over many years.

2. In general, women tend to be more FD than men.

3. Variations in FD/I caused by gender may be uncommon in mobile, hunting societies and prevelant in sedentary, agricultural societies because of the effect of socialization (Witkin, et al.).

## CHARACTERISTICS OF FD AND FI PEOPLE

At various places in their articles, Witkin, et al. and Claxton and Ralston give the following general characteristics of FD and FI people.

Field dependent people:
--are more likely to be attentive to and make use of prevailing social frames of reference.
--have a sensitive radar system attuned to social components in the environment.
--look more at the faces of others for cues about what they are thinking or feeling.
--pay more attention to verbal messages with social content.
--allow outside referents affect them considerably when defining their feelings and attitudes; especially in ambigious situations.
--are drawn to people and like to be with them.
--are perceived as warm tactful, considerate, socially outgoing, and affectionate by others.
--tend to select the academic fields chosen by their peer group.
--change majors more often. Shifts from math-science are common. Shifts from social sciences-humanities are uncommon.
--have more difficulty making career choices.

Field independent people:
--tend to seem more impersonal.
--are more often described as cold, distant, and individualistic.

--are more likely to be interested in the abstract and theoretical.

--are more likely to be aware of the needs and feelings they experience as their own rather than those of other people.

--favor areas of studies that call for analytical skills such as mathematics.

--can be comfortable in some social science areas such as experimental psychology or surgical nursing.

## IMPLICATIONS FOR EDUCATION

Since the above characteristics could affect a student's achievement, several researchers examined FD/I influence on academic performance, on how teachers teach, and how students learn. They found that FD/I does make a differnece in the classroom.

First, there is a difference in the way FD and FI teachers present lessons. FD teachers try for more student involvement and often use class discussion. They are also more likely to get the students involved in setting goals and directing learning. They try to establish a warm and personal learning environment. FI teachers bring more structure to the classroom by directing the learning and using structured classroom activities that have less student involvement (Garlinger and Frank). FI teachers also feel that negative evaluation is often an effective teaching technique. They will inform the student that a response is incorrect and why in the belief that this will enhance student learning. (Note: negative evaluation is often thought to have a detrimental effect on ESL learners.) FD teachers are perceived by the students as teaching the facts, while FI teachers are

perceived as encouraging the students to apply principles (Witkin, et al.).

As well, the students are affected in their learning by different aspects of the presentation depending on whether they are FI or FD. FD students tend to prefer material that contains social content, and they remember that material better. They are also more affcted by criticism than FI students either positively or negatively depending on how the criticism is given. FD students also like to have externally defind goals and reinforcements. On the other hand, FI students tend to set goals themselves and learn more than FD students under conditions where they must set the goals themselves (Witkin, et al.)

As an example of how this can affect classroom procedure, Frank did a study to find out what effect FD/I has on learning from a lecture. Basically Frank found that FD and FI individuals use different cognitive processes in certain situations. After different groups of students listened to a lecture under four different note-taking situations, they were given a multiple choice test. Comparing the results, Frank found no significant differences when the students took no notes, or were given an outline framework, or were given a complete outline of the lecture. However, when students took their own notes, FI students answered significantly more items correctly.

Thus, the typical classroom situation where the teacher lectures and the students take notes may favor the FI individuals. Therefore, teachers may want to consider providing help for the FD students in the form of an outline or something similar.

Another important aspect of FD/I is its effect on teacher-student relationships. Claxton and Ralston state that:

> When students and teachers were matched and mismatched in terms of FD/I, the mismatched described each other negatively. When the teachers described their students' abilities, they valued more highly the attributes of students who were like themselves. Similarly, the students felt more positively about the teachers who were like themselves in terms of cognitive skills (13).

This idea is supported by the results of some other FD/I research which indicates that students achieve better when they are matched with teachers who have the same cognitive learning style.

For example, Hansen and Stansfield studied 236 students enrolled in an introductory Spanish course at the University of Colorado. Both the students and the teachers were tested for FD/I. A graph of Final Exam Mean Scores shows the mean performances of the four subgroups of students (FD females, FI females, FD males, FI males) with FD and FI teachers. Basically, the FI female group had the highest achievement with either FD or FI teachers, though they did better with FI instructors, while the FD males did better with the FD teachers. The most marked contrast was between the FI females and the FD males with FI teachers. The FI female mean score was more than one standard deviation higher than that of the FD males. Hansen and Stansfield believe the results may show the effects of mismatching of teacher-student cognitive styles, but they also note that since the FI females scored at the highest level with FD or FI teachers, and the FD males scored the lowest, that the students' cognitive styles seem to have had a greater effect on their

achievement than the teachers' cognitive styles. In general, though this study shows that there is some beneficial effect on achievement from matching teacher and student styles.

However, contrary to Hansen and Stansfield, a meta-analysis done by Garlinger and Frank on several studies shows that matching is slightly detrimental to the performance of FD students and slightly beneficial for FI students. Also, they say, it is quite likely that other variables such as curriculum content, teacher and student gender, and grade level might moderate the effect of matching and mismatching. Somewhat contradictorily, they then say that it might be beneficial to match or mismatch students in various courses depending on whether the student needs the challenge of the mismatch or the comfort of the match.

Whether to test all the students and teachers for FD/I and match them is thus controversial. Certainly, the research seems to indicate that it is beneficial for all students in certain types of courses, or, if a student is having difficulty in a course, it might be wise to determine if a mismatch is adding to the difficulty.

In sum, the FI individuals' ability to analyze and restructure probably gives them an advantage over FD individuals in unstructured learning situations. In these situations, FD individuals could be helped by explicit instructions, definite learning objectives, and clear problem-solving instructions.

As well, teachers must be aware of possible FD and FI mismatching because some degree of personality or learning style conflict may exist between teacher and student or student and teaching procedure.

## IMPLICATIONS FOR ENGLISH AS A SECOND LANGUAGE (ESL)

As with education in general, several ESL researchers recently have tried to isolate particular learner characteristics and cognitive strategies that influence the learning of a second language. FD/I is one of the characteristics studied.

Hansen and Stansfield state that FI "has been shown to play a helpful though minor part in the development of second language proficiency in a formal environment" (263) primarily because of the cognitive analysis and restructuring abilities mentioned earlier. In fact, in Hansen and Stansfield's study of an introductory Spanish class, the FI student group scored more than one-third of a standard deviation higher than the FD group on each of three language proficiency measures.

Since they treated the instructor as a fixed, rather than a random, factor, Hansen and Stansfield limited the discussion to the student participants of the study. Even so, they felt that the results implied that the learner factor is of far more greater importance than the teacher factor, that cognitive style mismatching may affect the way the teacher evaluates the student, and that college foreign or second language curricula may be placing more emphasis on linguistic accuity and manipulative skill which the FI students would find easier to master than on the social and interpersonal communicative competence that the FD students would find easiest.

Another aspect of FD/I was the subject of a study by Chapelle and Roberts. They investigated the possibility of using FD/I as a predictor of proficiency in English as a second language. Their subjects were 61 adult international students, including 13 Japanese, taking intensive English courses at the University of Illinois. The Japanese were dropped from the analysis because statistical tools used

showed that "the Japanese students were significantly different on all predictors..." (36).

However, Chapelle and Roberts found that of the other students those "who were highly FI did better on all the language measures..." (36), and "for all but one of the language measures, FI was a significant predictor..." (39). As well, contrary to what Stansfield and Hansen suggested, FD was not found to be related to performance on communicative competence. Chapelle and Roberts suggest that "it may be appropriate to match teaching approaches to students," and that "it is one of the tasks of researchers to determine how instruction ought to vary from one learner to another" (39).

Another study, done by Abraham, tried to do just that. Abraham tried two different types of lesson presentations in teaching ESL grammar to foreign students. One lesson was based on the traditional deductive approach; the other provided no rules, but did provide many examples of the target grammar item.

In general, Abraham found that the FI students responded better to deductive lesson, while the FD students had more success with the example lesson.

In sum, these studies show that most of the aspects of FD/I that have influence on education in general are also working in ESL. Therefore, the implications for general education such as improved teaching methods and matching or mismatching are the same for ESL. Messick lists six things that he believes can be accomplished by paying attention to cognitive styles.

1. An improvement of instructional methods. For example, tailoring the mode of the presentation to capitalize on student characteristics for optimum learning.

2. An enrichment of teacher behavior and conception regarding cognitive styles. Simply knowing about stylistic differences might help lesson them and create better communication.

3. An enhancement of student awareness of the learning styles. Perhaps, the student could learn to be more flexible in his or her learning style and thus better able to cope with other people including teachers who tend toward the other style.

4. An expansion of guidance and vocational decision making. That is, taking learning styles into account may help the student make better choices of a major and a vocation.

5. A broadening of educational goals and outcomes.

6. An adjustment of educational environments to more uniformly match or mismatch learner styles. When a program has parts that are matched but other mismatched, this may put the student in an awkward situation which Arthur Chickering calls a double bind. For example, an FI student might like the lecture method in linguistics but dislike being in the 300 member class that is in the large hall listening to it.

## IMPLICATIONS FOR THE ESL CURRICULUM

In *Designing Undergraduate Education*, Bergquist, Gould, and Greenburg present a curricular taxonomy which gives the six generic dimensions of all curricula. They state that "by rearranging these six curricular dimensions, or variables, it is possible to free up the curriculum design

process and to be both more creative and more explicit in curriculum development" (5).

The dimensions are:

1.  Time
2.  Space
3.  Resources
4.  Organization
5.  Procedures
6.  Outcomes

If we were to implement some aspects of FD/I cognitive learning styles into the ESL curriculum, we would have to make changes or adjustments in all of the dimensions.

Time would likely be the least affected, but there may be occasions when the lessons should be shortened or lengthened to accomodate one of the learning styles. For example, the results of some research in ESL, show that different kinds of language input are consolidated at different rates, and that the spacing between times of studying, the pacing or speed at which the studying was done, and the amount of material trying to be learned at a given time all had an effect on the amount and quality of material remembered.

Space is also effected since FI and FD people relate to individuals and groups in different ways. Since the classrooms at most colleges are designed for about 30 or 40 students, there may be a need to provide areas for làrger or smaller groups. FI students may prefer individual study rooms, whereas FD students may prefer group study areas or seminar rooms. More space may also be needed for counseling if the FD/I results are used for advising about course work or vocational choice.

**Resources** is the dimension that is, perhaps, most affected by FD/I. Using some of the designations given by Bergquist, we can see the extent of the involvement not only for curricula in general but also for the ESL area.

The faculty members who are *instructors* at all levels would be asked to take the test to determine their FD/I tendency and to give the test to determine the FD/I tendency of the students.

Faculty members who are *advisers* would be asked to consult with their advisees to let them know the results of their tests and how to match or mismatch with the teachers and classes, how to choose a major, and, likely, how to use the FD/I information to choose a job.

The *instructional support staff* would also be involved since getting and using the FD/I information would necessitate scheduling of rooms, extra record keeping, and so on.

Of course, the *student* would have to spend extra time taking the test, evaluating the results, and learning to adapt to various situations.

Regarding *materials, equipment, and environments*, probably little beside the test itself would be extra, though it might be good to have a computer to score the test with if one was not already available. However, the decision to put the results into action in some way such as incorporating matching or mismatching may, of course, cause a reconsideration of the curricular materials being used and create a demand for new materials.

Another dimension that would be quite substantially effected would be **organization**. Not necessarily in the large sense of reorganizing a complete program, but in the sense of allowing different choices within the established program. Of

those listed in Bergquist, perhaps the most likely to be considered would be the optional degree track, that is, making available different paths to the same degree such as a concentration in a discipline track and an independent track. If these were the choices available, the FD students would most likely choose the "concentration" track with its preset courses, while the FI students would probably opt for the freedom of setting their own goal in the "independent" track.

Three of the four procedural concerns mentioned in Bergquist would be affected by an FD/I program. First, the nature of FD/I would probably lend itself best to a faculty/student negotiated *program plan* since there would be discussion about which major or curricular track fits the student's learning style best. As well, as noted previously, the procedures for *teaching* inside and outside the classroom would need to be modified to help the student learn and the teacher teach more effectively. Depending on the FD/I tendency of the classes, there could be a flexible use of the three basic modes of teaching: Content-based, Interaction-based, and Student-based. Briefly, content-based teaching includes methods such as lecturing, question and answer with recitation, and audiovisual aids; interaction-based includes seminars, discussion, team teaching, and role playing; student-based includes independent study, learning contracts, and student-generated courses. The types of *assessment* used would probably remain basically the same, but the FD/I information might cause some of them to be modified. For example, the cloze test is becoming popular as an assessment tool for ESL. Recently, some researchers have said that they feel the cloze tests are biased to some degree in favor of FI students. The cloze test may have to be balanced with a

test that is suitable for FD students.

Like time, the outcomes dimension is likely to be little affected except more credibility may be placed in self-appraisals of outcomes since the students will have become more adept at self-appraisal through the FD/I counseling.

In sum, ESL curriculum development could benefit in several ways from knowing the FD/I tendencies of both teachers and students by causing an improvement in teaching approaches, in course material, and in relationships between teacher and student. FD/I knowledge could also help by allowing the student to make wiser choices in their methods of study, about their curricular track, and about their vocation. However, perhaps, more importantly the students may be able to gain a greater command over English because of their knowledge of their own learning style, and because the teachers could create devices for presentation of materials which would be suitable for either learning style.

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