CHAPTER 11

THEORETICAL FRAMEWORK—A MODEL OF INDEPENDENT STUDY

The theoretical framework for this research consists of a conceptual scheme which brings together strands of research from two areas of the educational field, to form a tentative theory of independent study. The two research areas being combined here are those of self directed study and mediated instruction. The theory is developed from Wedemeyer's definition of independent study, and from it were derived the conjectures about personality-method interactions, and the specific hypotheses which were tested in this investigation.

Wedemeyer's definition is as follows:

> Independent study consists of various forms of teaching-learning arrangements in which teachers and learners carry out their essential tasks and responsibilities apart from one another, communicating in a variety of ways for the purpose of freeing internal learners from inappropriate class pacings or patterns, of providing external learners with opportunities to continue learning in their own environments, and of developing in all learners the capacity to carry on self-directed learning.[1]

As defined, independent study is a generic term describing a major category of educational transactions, which may be classified by the differentia, "apartness" (i.e., "teachers and learners carry out their essential tasks and responsibilities apart from one another"), and "autonomy," "the capacity to carry on self directed learning." In this chapter, we will review the development and the nature of programs of independent study which were designed with the primary purpose of promoting self directed learning and then of programs designed for learners in environments apart from their instructors. After considering in some detail the nature of "Distance" in educational program, and the nature of learner "Autonomy," we will propose a typology in which programs are classified by the above characteristics.

Independent, or Self Directed, Study in American Higher Education

From the 1920's until recent years, independent study on college campuses in America took the form of a private transaction between a student and a faculty member, in which the student read assigned books, prepared papers, or engaged in a laboratory or other project.[2] This independent study is defined as "teaching and learning which focuses upon the individual instead of the group, which emphasizes the person-to-person relationship between teacher and student,"[3] and "the pursuit of special topics or projects by individual students, under the guidance of faculty advisers, apart from organized courses." [4] Brown has traced the development of this kind of

independent study to the model of the tutorial at Oxford University in Great Britain.[5] He says that there were experiments in the United States as early as 1870, at Latrobe, Pennsylvania, in 1910 at Guilford College, in 1911 at Reed College, in 1912 at Harvard, and in 1913 at Rice Institute, but it was only after the First World War that the method made significant headway in North America.

Wedemeyer also ascribes the origin of college independent study to the Oxford model, suggesting that the demand in the United States in the 1920's was a result of the experiences and observations of the American Expeditionary Forces in Great Britain during the First World War. After the War, it was proposed that "superior students" would benefit from an Oxford type of freedom to pursue personal learning interests under the supervision of a tutor, and separate from other learners.[6] During the decade between 1920 and 1930, more than 75 colleges and universities adopted some type of plan for independent study, with a pacesetter being Swarthmore College, whose president, Frank Aydelotte, declared that superior students should be given "greater independence in their work, avoiding the spoonfeeding which makes much of our college instruction of the present day of secondary school character." [7] Programs following the tutorial model were first called "honors courses," but soon became known as "independent study," in Princeton in 1923, at Stanford in 1925, and nationally in the U.S. after a conference sponsored by the National Research Council at the University of Iowa in 1925, which recommended that "independent study" was the accurate term to describe them.[8]

During the 1950's and 1960's, college and university independent study expanded greatly, partly as a measure to meet the threat of overwhelming enrollments projected for the 1970's, but also as educators and researchers discovered that the quality of work done by independent study was equal to, or better than, what was done under traditional methods of instruction.

According to Rogge, "Colleges discovered that independent study, first limited to superior seniors, was even more appropriate in the judgment of most reviewers, for lower classmen of varying academic abilities."[9] A survey covering the academic year 1957-58 showed that of 1,367 institutions replying to a questionnaire, over one-third were developing independent study programs,[10] and ten years later, Dressel and Thompson found 69.2 percent of their sample of higher education institutions offered independent study in all departments, and 89.3 percent made it available in half or more of the departments.[11]

The acceptance of independent study in the world of higher education is evidenced by the general development in the past decade of the "external degree," defined by Houle as "One awarded to an individual on the basis of some program of preparation (devised by himself or by an educational institution) which is not centered in traditional patterns of residential study."[12] Valley has surveyed developments in this area and reports that, in the United States between 1970 and 1974, approximately 30 state public education systems had either planned such programs or had appointed groups to oversee their implementation. Well-known public external degree programs include the California State University and Colleges system, the Empire State College, the New York Regents Degree and Minnesota Metropolitan State College.[13]

Definitions of Independent or Self Directed Study

The Bonthius, Davis, and Drushall definition of independent study emphasizes that each student's learning program is individual, and that teaching therefore is also individual, or tutorial, in nature. While these characteristics should be regarded as essential elements, they are not

enough to adequately define the field, for an individualized, tutorial program, in which the learner is severely controlled in his study by his tutor, is independent in only a restricted degree. A third element of many independent study programs is the earner's freedom to choose the manner in which he will study, with respect to such matters as time, place, pace, and resources he will employ. Of this, MacDonald states that the independent learner is free to pace his learning according to his circumstances and needs, and is free to follow any of several channels for learning, but is not confined to a single channel.[14]

To the freedoms of pacing and resources, numerous writers suggest that independent study must give the learner opportunity to make decisions about what to learn. He must be permitted "to pursue the study of personally significant areas in an independent manner freed of bonds of time, space and prescription usually imposed by conventional instruction.[15] The focus of this definition is on more than individualized study of special topics, individualization of timing, or pacing, and of means for learning, but includes learner independence in the choosing of curriculum, the "personally significant areas."

Freedom of students to choose goals, to choose resources and to determine their own rate of progress, is stated in Trump's description of independent study, which Foshay summarizes in the following definition:

> The individual student is given responsibility for the completion of work he helps to choose for himself. It includes students setting their own rate of progress through the use of teaching machines, libraries, language laboratories, and science laboratories.[16]

Alexander and Hines add *two* characteristics of independent study not touched upon by the above definitions, namely self motivation and self evaluation. Independent study is considered by us to be learning activity, largely motivated by the learner's own aims to learn, and largely rewarded in terms of its intrinsic values." [17] The above finitions all suggest varying degrees of learner responsibility for what is to be learned, and how it is learned. In his definition, Brown gives a central position to the idea of learner responsibility: "A definition of independent study is in order. In brief, independent study is a term used to describe programs which place greater responsibility on students for their own education."[18] Beggs and Buffie make the same point: "The word independent has dynamic connotations. It implies self-determination and personal identification. To be independent one must be responsible and self-sufficient.[19] This concept of independent study as a form of education permitting student responsibility for his own self direction is used in Dressel and Thompson's definition: "The student's self-directed pursuit of academic competence in as autonomous a manner as he is able to exercise at any particular time.[20] Several definitions emphasize the idea of the learner's aloneness as a key characteristic of independent study. Baskin writes,

> Independent study is defined as independent work or reading, sometimes on one's own, sometimes in small groups, but with such work taking place in the absence of the teacher and in lieu of certain regularly scheduled class meetings.[21]

Alexander and Hines state more boldly, "Independent study is learning on one's own." [22] Clarke states that the independent learner is both a proficient learner and his own "competent instructor," who "is independent of the guidance and influence of others as he identifies his own learning needs and selects the appropriate sequence of learning tasks needed to achieve his

educational objective.[23] The National University Extension Association defines independent study as:

> …a teaching-learning process in which the student studies primarily in a non-classroom situation remote from and independent of direct, sustained face-to-face contact with the professor during the duration of his course.[24]

Characteristics of Independent Study

From the various definitions cited above, the following characteristics of independent study can be induced:

1. Independent study is carried on by individual learners;
2. Independent study is supported by tutorial teaching, which is "instruction of individual learners;"
3. Independent study is carried on apart, in a physical sense, from teaching;
4. In independent study the learner chooses, when and where-to study, at what pace, and by which methods;
5. In independent study the learner chooses what to study;
6. In independent study the learner is self motivating**;**
7. In independent study the learner is self evaluating.

Clearly, few programs of independent study exhibit all the above characteristics. Many programs described as "independent study" in such works as "Education Index" provide the learner with no freedom of self evaluation, or choice of what to learn, but do permit self paced learning of teacher determined materials in a setting separate from the, teacher, in individualized form. The teaching model developed at West Virginia University, for example, is described as follows:

> An attempt has been made to sequence activities so that knowledge is translated into behavior at the time it is acquired. To accomplish this, outcomes have been stated in learner skills and behavior, concepts are carried to the mastery level, both in knowledge and performance and various media have been employed in presenting information. Flexibility of testing and time needed for task completion, coupled with remedial cycles, contributes to the individualization of learning. Individual conferences and small group meetings with an instructor help retain the humanistic element in what would otherwise be an independent self-instructional approach.[25]

In this model the instruction is individualized and learning takes place "apart" from instruction, which is tutorial in nature, with the learner free to choose among media, where and when to work and to be tested. However, there is no freedom to select the objectives for learning, which have been "stated in learner skills and behavior," or to decide when mastery has been achieved.

By contrast, in the Temple-Philadelphia-Trenton Teacher Corps Program,

> Each inter-teacher is asked to consider an area of study that he would like to pursue systematically and to plan briefly how he will approach his study, then in private conference with the instructor, the study proposal is delimited and refined. When both student and teacher are satisfied with the proposal, it is transcribed on a contract form and both sign it.[26]

This model provides a greater degree of learner control of the curriculum as well as instruction.

More control still is seen in the various independent study project, investigated by Allen, Tough, and his colleagues. Tough describes the learners he has studied as “self-teachers” to emphasize that the locus of direction is with the learner, not an external agent.

> Each of the self-teaching projects he studied met with three criteria:
> 1. the learner made a deliberate attempt to learn certain definite knowledge or skills;
> 2. he spent at least eight hours doing so during the year preceding the study;
> 3. he himself, rather than any professional teacher, assumed most of the responsibility for planning, controlling and supervising the entire project.[27]

As Tough emphasizes, independent students may obtain a great deal of assistance from sources of all kinds. They differ from other learners in the relationship with their helpers, for the learners themselves direct and determine their programs and are not directed by external forces, as for example are students in the West Virginia and, to a lesser extent, the Temple University programs mentioned above. Tutors exist for Tough's learners in the form of the various “human” and “non-human” helpers used.

According to Tough, most learners use four or five or even ten or twenty human resources, especially friends, colleagues, family members and neighbors, besides such professionals as librarians, instructors, community development workers and religious leaders. In addition almost all learners studied by Tough used such non-human resources as television, radio, films, displays, exhibits, recordings, language laboratories, training and simulation devices, programmed instruction, computer assisted instruction and printed materials including books, journals, newspapers, and magazines.

> In learning to type, for example, a person may follow the sequence of content and practice exercises presented by a teach-yourself typing book. Someone who wants to learn French or introductory psychology might seek the orderly progression and exercises provided by a textbook.[28]

If the person who prepared a teach-yourself typing book, or wrote a text is assumed to have done so with the intention of facilitating learning, he or she might reasonably be described as a tutor to the independent student. The “apartness” of the tutor and student is more than in the case of the independent study program on the university or school campus, and the “autonomy” of the student is also greater. As suggested earlier, these two variables serve to differentiate the many educational transactions known as independent study. They will now be examined more closely.

The Variable of “Apartness”—Distant or Telemathic Teaching

Teaching is defined by Smith as a “system of actions intended to induce learning” [29] and by English and English as I “the act of assisting another to learn.” [30] According to Jackson, teaching consists of two phases, the “preactive” and “interactive.” In the preactive phase, the teacher selects objectives and plans the curriculum and instructional strategies, while in the 'interactive,” face-to-face with the learners, he provides verbal stimulation, makes explanation, asks questions, and provides guidance. Jackson's preactive stage of teaching occurs at a time and place “apart” from the learner, being “activities which occur when the teacher is alone.” [31] However, many theorists suggest t

> A teacher giving instruction over a television network is not in the physical presence of his pupils, He can even be cut off the air by a mechanical difficulty, and being unaware that anything has happened, continue to teach.[32]

To the best of his ability the televised teacher continues to perform those actions he believes necessary to help his learners. We can imagine his work being recorded on video tape and transmitted at some later date, when learners will interact with him, making use of his verbal stimulation, his explanations, questions and guidance. Learners may interact with teaching through any communications device. As Henderson writes, researching what a teacher does rather than what he is,

> …permits a machine, a conventional textbook, or a programmed text as well as a human being to be regarded as a teacher [since] one step removed from the text is the author of the text who, generated the particular sequence of descriptions, explanations, interpretations or illustrations exhibited in the text. [33]

Smith's model of teaching distinguishes between linguistic, performative, and expressive behaviors, “essential elements, in the concept of teaching.” By his verbal behavior, by example of his performance, and his non-verbal expressions, the teacher perform three kinds of instructional tasks. First there is a group of actions named defining, classifying, explaining, inferring, comparing and contrasting, valuating and designating. Smith calls these “logical operations.” A second group of actions which teachers perform with words is called “directive action”;

> In the moment-to-moment tasks of the classroom the teacher is called upon to tell pupils what to do in the performance of some operation or the practice of a motor skill… These verbal actions are all directive in the sense that they instruct the pupil in what he is to do.

A third class of teaching behavior consists of “admonitory acts.” The teacher

> praises and commends; blames and reprimands. He recommends, advises, and enjoins. He says to a pupil, 'That is good.' He may say to another, 'That is not up to your ability. You could have done better.'
>
> …These kinds of verbal acts may affect psychological reinforcements or extinctions, depending upon the particular admonitory act and the circumstances in which it occurs. They are conventionally understood to be taken for their social or emotional impact upon the pupil rather than for their cognitive content.[34]

From the point of view of the learner, not only may his interaction with subject matter be through media of various kinds, but help in deciding what to learn, where, when and by what means, and help in evaluating, that is what Jackson calls the “preactive” phase of teaching can also be obtained from teachers distant in space and time.

In Smith's terms the learner might receive the logical operations of teaching, the directive, and the admonitory through a communications medium, from teachers distant in space and time. These may be communicated verbally, by performance, or expressively, though the extent to which the various behaviors can be communicated will depend, as will be seen later, on the characteristics of the communications media that are employed.

The concept and term "Distance Teaching" is not a new one. William Lighty wrote of William Rainey Harper that, in founding the University of Chicago, he "transported bodily… his long distance teaching institution to Chicago," and of Bishop Vincent of Chautauqua, that he "did see that teaching by long distance methods was feasible." [35] The term is now used by a number of major institutions, notably the International Extension College in Great Britain, and the UNESCD affiliated International Council on Correspondence Education. The French call it "tele-enseignement," or "teaching from afar"; in South Africa it is named "tele-tuition" and in Germany "fernunterricht." Here to describe teaching at a distance from learning, we use the term "telemathic teaching."

Telemathy means "learning at a distance," and is a word formed by combining the terms "tele" and "mathy," meaning respectively "far off" or "at a distance," and "mathy" from Greek "mathein," "to learn," as used, for example in "opsimathy," to learn in later life, and in "mathematics." [36] Telemathic teaching is teaching in support of learning at a distance," and describes an essential characteristic of all teaching in independent study, namely the physical separation of learners and teachers. Therefore, telemathic teaching will be defined as:

> All those teaching methods in which, because of the physical separateness of learners and teachers, the interactive, as well as the preactive phase of teaching, is conducted through print, mechanical, or electronic devices.

Whereas in non-telemathic teaching only the preactive phase of teaching is conducted apart in space and time from the learners, in telemathic teaching both the preactive and interactive phases are conducted separately from the learners.

The oldest telemathic teaching method is correspondence instruction.

Teaching Independent Students by Correspondence

While colleges, universities and secondary schools have been developing independent study programs to help individual, self directed learning that is carried on apart from teaching, the same principles have been of interest to students and teachers in University Extension education. For university and school students, independent study has been one technique within the framework of the conventional teacher-directed class instruction system, but for most students who enrolled in Extension, study had to be "independent study," and instruction was by the only method available to distant students, the method then known as "correspondence teaching." According to Noffsinger, "the year 1840 marks the beginning of modern correspondence instruction as in that year Isaac Pitman ir England offered for the first time his shorthand course to distant pupils via the new penny post. [37]

In North America, the teaching of independent students in extension education predates the development of independent study on the campus. Pyle describes the influence of British practice on early American extension, and quotes Creeses' suggestion that the Chautauqua movement founded by Bishop John Vincent in 1874 was "the beginning of the Americanization of University extension." Chautauqua's program included "home study and directed reading courses in which at one time 60,000 students were enrolled from as many as 10,000 communities." [38] Extension divisions were founded at the University of Wisconsin, and at Kansas in 1891, and in the founding of the University of Chicago in 1892. [39] President William Rainey Harper of Chicago had practiced correspondence instruction at Chautauqua, and pioneered the use of the medium of correspondence in University extension teaching. In 1906, it

was introduced into Wisconsin by Louis Reber who had been appointed “to develop extension… to include correspondence work” by Dr. Charles Van Hise, who had himself been a professor under Harper at Chicago. [40] The first head of correspondence instruction at Wisconsin was William Lighty, who became famous for his experiments in teaching by radio. The primary motive of these pioneers was to use the most suitable media to deliver instruction to persons not able to be in residence in the University and “to prepare students at a distance for residence work.” [41] However, from the earliest days, correspondence instructors claimed that their method held educational advantages, particularly the opportunity for learner self direction. W. R. Harper wrote,

> The correspondence student, given all necessary assistance, but compelled to obtain everything else for himself, or write out his questions and wait for the written answer, is led to investigate, to be independent in his study, and to have confidence in the results of his own investigation which the student who had constant recourse to his instructor does not have.[42]

In 1899, according to Edmund James, first dean of Chicago's College for Teachers, the requirements set by the University in regard to the length of courses and the character of the work were “somewhat rigid,” since in James' estimation the great majority of students in correspondence study took the work because they desired to get help from the supervision by the University, “and not at all because they care for University credit of any kind.”[43]

It has been claimed that correspondence instruction has a number of particular advantages for the independent student:

> The advantages of correspondence instruction (a one-to-one relationship with the student, low cost, a student determined rate of progress, adaption to individual differences, and continuity of availability through self contained learning 'packages' always present and ready for use) will cause increased use of this format in extension teaching.[44]

As predicted, correspondence instruction of independent students has grown. According to Johnstone and Rivera[45] some 1,800,000 adults now participate in correspondence courses in the U.S. Sivatko[46] reported the National Home Study Council's estimate of five million, and MacKenzie[47] estimated about three million, in 15,000 courses, 9,000 of which were offered by colleges and universities. Wedemeyer states that in 1967, the National University Extension Association reported that 58 colleges and universities had 200,000 students in correspondence independent study.[48] Sivatko states that the total number of Americans who have studied by correspondence can be conservatively estimated at over 75,000,000, and that in the U.S.S.R. correspondence is the main form of university study.

<u>Other Media Employed for Teaching Independent Students</u>

In this thesis the medium of correspondence instruction has been selected for study. It should be noted, however, that since the Second World War, such “new” media as the computer, television, films, the telephone, radio, dial access tape systems, audio-tape recordings. programmed instruction, and the satellite have been used in telemathic teaching. These media are used either in conjunction with traditional print-mail correspondence teaching, or in educational circumstances where print-mail correspondence might have been used in earlier times. In a report on the TV College of Chicago, for example, Erickson and Chanson[49] describe one of the earliest of such programs, in which 5,000 students received tuition by television and

responded to their teachers by mail; more recently Bannister [50] reports on the teaching of history by radio, with teachers and students interacting on the telephone. Among hundreds of other examples can be mentioned the Rural Farm Development program in Wisconsin, the Open University of Great Britain, in Germany the Tellekolleg, in Denmark the adult education programs of Radio Denmark, in Czechoslovakia the Television University, and in Japan the NHK School. Acccording to Valley,[51] some American colleges "recently inaugurating distant learning degree opportunities" include: 1) Northhampton Area County Community College in Bethlehem, Pennsylvania, College at Home Program; 2) University of Pittsburgh, External Studies Program; 3) Dominquez Hills State College, External Degree Program." In all these major adult teaching programs, some articulation is made of print media, correspondence, radio and television, and in most other media such as the telephone, audio cassettes, the newspaper, and home visits.

Classification of Independent Study Programs by Variable of "Distance"

As noted earlier, independent study programs vary in the extent to which there is "apartness," or "distance" between teacher and learners. What makes a program more distant than another, making one program of instruction more telemathic than another, is a function of two variables in the learner-teacher relationship, which are the extent of dialogue in their communication, and the extent of structure in the learner's program.

Communication, the sending and receiving of messages, is an essential element of every educational program, and in non-telemathic teaching programs it is achieved by speech, together with various supporting non-verbal, but observable, interpersonal interactions. Dialogue is two-way communication. Telemathic teaching requires the use of electronic, print, or mechanical methods of communicating, and these methods differ in the extent to which they permit two-way communication, or dialogue, between learners and teachers. In programs in which a high degree of dialogue is possible, it can be said that distance is less than programs in which little dialogue is possible. For example, in a telemathic teaching program using the Educational Telephone Network, since dialogue is easy, the learner is less distant from his teacher than one in which the FM/AM radio is the communication method, when dialogue is impossible.

Structure is the extent to which the objectives, implementation procedures, and evaluation procedures of a teaching program are prepared, or can be adapted, to meet specific objectives, implementation plans, and evaluation methods of individual students. While "dialogue" is a measure of the degree to which the communications medium in a telemathic program permits learner-teacher interactions, structure is a measure of the extent to which, whether there is dialogue or not, the program will permit transactions between learner and teacher. It is a measure of the extent of the responsiveness of a teaching program to the learner's individual needs.

To the extent that a program "consists of pre-produced parts, at least in the form of particularized plans listing item by item the knowledge and skills to be covered by the Program,"[52] the program may not be responsive to learners' idiosyncracies, and structure is said to be high.

Koffman explains the problem of preparing a highly structured program which attempts to provide many options for the learner:

> All questions must be specified by the course author as well as a set of anticipated student responses to each question. If. branching is to occur, explicit instructions must be given indicating the performance criteria for a branch and the new continuation point in the program.
>
> Since everything must be specified in advance, extensive time must be spent in preparing course material for presentation. Furthermore, once programmed, this material has very little flexibility.[53]

In a highly structured program, such as in a linear, or nonbranching, programmed text, no variation of the program is possible, while a correspondence program is likely to be somewhat less structured, but perhaps more than a computer assisted instructional program in which the medium can respond to thousands of different stimuli from many learners. Among programs using a particular medium, the degree of structure will vary.

Using the variables of dialogue and structure, telemathic teaching programs can be classified according to distance between learner and teacher.

In Figure 1, where +D represents dialogue, +S structure, -D no dialogue, and -S no structure, the most distant programs are those of the -D-S type, and the least distant are the +D-S type. These are theoretical poles, and all programs fall between them. The variables by which we are defining distance are qualitative, and programs must be regarded as “more” or “less” distant. Therefore, a correspondence program is likely to be less distant than a programmed text, since it is likely to be less structured, and certainly more dialogic. However, among correspondence programs, great variability in distance will be found, some especially being more dialogic than others, and some correspondence programs can be no more dialogic or unstructured than programmed instruction. Thus, it is not intended to classify communications methods in this model, but only the uses to which methods are applied in educational programs.

	Type	**Program Types**	**Examples**
Most Distance	-D-S	1. Programs with no dialogue and no structure	Independent reading study programs of the self directed” kind
	-D+S	2. Programs with no dialogue but with structure	Programs in which the communication method is radio or television
	+D+S	3. Programs with dialogue and structured	Typically programs using the correspondence method
Least Distance	+D-S	4. Programs with dialogue and no structure	e.g., a Rogerian type of tutorial program

Fig. 1—Types of telemathic teaching programs

In a program where distance between teacher and learner is low, because dialogue is easy and there is a minimum of structure, both teachers and learners can respond easily to the stimuli of the others. In such a program, the teaching behaviors Smith calls “admonitary acts” as well as “directive action” and “logical operations” are possible. However, when dialogue is difficult, or impossible, and when structure is high, “admonitary acts” become difficult or impossible. In a programmed text, such as Mager's minimum of dialogue between teacher and learner is obtained by use of the branching technique. The admonitary acts, such as “Ooops! You didn't follow instructions,” [54] are weak by contrast to the power such statements would carry in a highly dialogic interaction. In telemathic teaching “directive action” is more easily communicated than admonition, but the teacher must assume that a large part of direction, as well as admonition, will be self administered by the learner. The less distance, the more direction will be feasible. Even the most distant teachers are able to communicate “logical operations.” Whether a particular learner will benefit from a program low in distance, or from a highly telemathic program, is determined by the extent to which he benefits or is impaired by direction and admonition. This is determined by his competence as an autonomous, or “self directed,” learner.

Graphic Model of Telemathic Teaching

The relationship of learners in telemathic teaching programs can be depicted by use of graph theory, following Maccia's representation of the conventional classroom relationship (Figure 2a), in which person A, the teacher, influences persons B, C, and D, the students.[55] In Figures 2b, 2c, 2d, 2e, 2f, and 2g, we show telemathic teaching-learning relationships. In these figures, the teaching of A is not represented as a segment (————), a specific and closed influence as in Maccia's model, but as a ray (– – – – – –), an open and general influence directed by the teacher to any learners dialogic teaching programs there are numerous responses, while in the non-dialogic programs there is only one. In programs of less structure there are several rays, representing alternative versions of teaching provided to potential learners, and in programs of no structure there are no rays eminating from the teacher, but only responses to the stimuli of learners.

Fig. 2—The relationship between teacher and learners in a conventional classroom and in four types of telemathic teaching

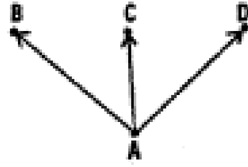

Fig. 2a—Conventional classroom

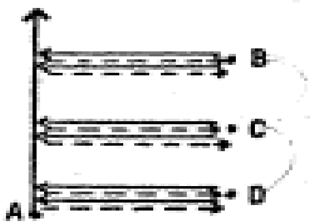

Fig. 2b—Telemathic teaching
Type +D+S
(e.g., correspondence program)

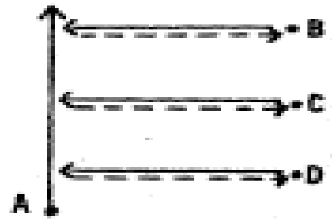

Fig. 2c—Telemathic teaching
Type -D+S
(e.g., radio program)

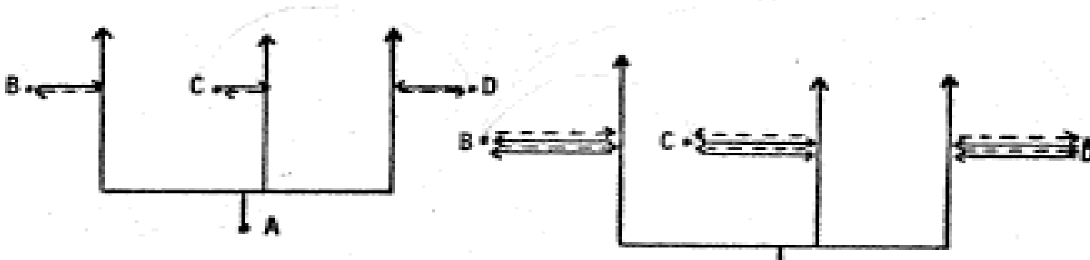

Fig. 2d—Telemathic teaching
Type +S-D
but less structured than Fig. 2c
(e.g., programmed text)

Fig. 2e—Telemathic teaching
Type +S+D
but less structured than Fig. 2b
(e.g., computer assisted instruction)

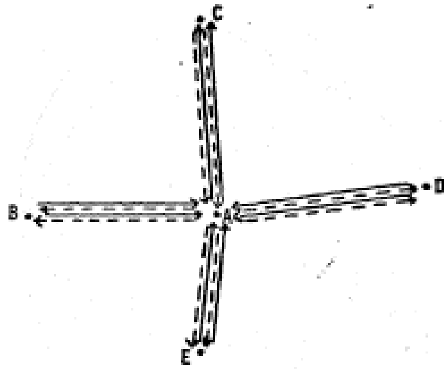

Fig.. 2f—Telemathic teaching: Type +D-S (e.g., tutorial)

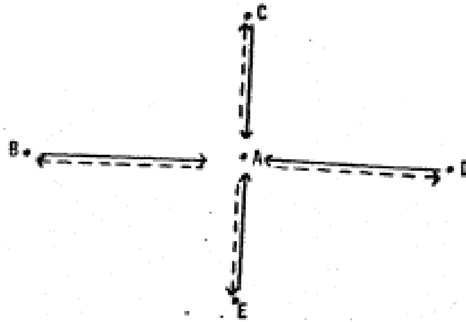

Fig. 2g—Telemathic teaching: Type -D-S (e.g., textbook)

<u>The Variable of Self Direction: Autonomous Learning</u>

Jackson's theory of preactive and interactive phases of teaching, and Smith's theory of teacher behaviors, assume that in an educational transaction teaching always precedes learning, and they place most decision making about what is to happen to the learner in the hands of the teacher. For Jackson,

> …behavior relevant to the teaching task includes many things, such as preparing lesson plans, arranging furniture and equipment within the room, marking papers, studying test reports, reading sections of a textbook and thinking about the aberrant behavior of a particular student.[56]

This approach places more decision making power in the hands of the teacher than is acceptable to most adult educators, who emphasize the desirability of having learners participate in the selection of objectives, planning instructional procedures, and in evaluation. It also suggests the learner is very dependent on the teacher for explanations, guidance, questions, and stimulation.

Maslow describes teaching that assumes learner dependence in the following terms:

> … the teacher is the active one, who teaches a passive person who gets shaped and taught and who is given something which he then accumulates and which he may then lose or retain, depending upon the efficiency of the initial indoctrination process… This kind of learning too easily reflects the goals of the teacher and ignores the values and ends of the learner himself.[57]

While it is a fact that some adult learners need help in formulating their learning objectives and in identifying sources of information, and in measuring achievement, many others are self stimulating, with good understanding of the questions they want answered, and knowledge of ways to achieve their objectives, and ways of measuring achievement. These are "autonomous learners."

In the context of a program, the term learner autonomy describes the extent to which, in the learning-teaching relationship, it is the learner rather than the teacher who determines the goals, the learning experiences, and the evaluation decisions of the learning program. A fully autonomous learner is a person who identifies a learning need when he finds a problem to be solved, a skill to be acquired, or information he does not have. He is able to articulate his learning need in the form of a general goal, which is differentiated in several more specific objectives, which are accompanied, more or less explicitly, with criteria of achievement. In implementing the learning need, the autonomous learner gathers the information he desires, collects ideas, practices skills, works to resolve his problems, and achieves his goals. In evaluating, the learner judges the appropriateness of newly acquired skills, the adequacy of problem solutions, the quality of ideas, and the knowledge acquired. He reaches conclusions, accepting or rejecting the material, and eventually decides the goals have been achieved, or abandons them.

The development in children of perceptions and response patterns having to do with dependence and independence has been described by Heathers, who defines independence as follows: "A person is independent of others to the extent that he can satisfy his needs without requiring that others respond to him in particular ways."

> There are two kinds of independence, called instrumental and emotional. Instrumental independence means conducting activities and coping with problems without seeking help…
>
> The extent to which he persists in the task without asking for help may be taken as a measure of his instrumental independence.[58]

Emotional independence means "the absence of needs for reassurance, affection, or approval in particular situations." It includes "self assertion," in the form of the need to master tasks, which is motivated by the need for self approval on the basis of one's performance. Any behavior motivated by the need for approval of others is symptomatic of emotional dependence, while behavior motivated by need for self approval is symptomatic of emotional independence.

Heather's definitions may be used to explicate the concept of the autonomous learner, who is emotionally independent when pursuing a learning task, being motivated primarily by the need for self approval. To the extent that any of his behaviors are motivated by need to win approval of his instructor, or other external judge, he is not autonomous. He is likely to have a high degree of instrumental independence, since he is experienced in coping with learning problems in a self

reliant manner, but may be instrumentally dependent at times, for he will ask for help after persistent problem solving activities prove unrewarding. However, his approach to a helper is functional, not emotional, so help is used to achieve the learner's ends, not to win the approval of the helper. An autonomous learner proceeds without need for admonition, and little need for direction. If highly autonomous, he may have no personal relationship with a teacher, but if he has a personal teacher, will be able to control the effect and significance of teacher input in a realistic and unemotional way. He will resist teacher direction and admonition, and has a high tolerance for loneliness in learning. He is able to control and manage alternative sources of help. This description is very similar to Boyd's definition of the adult learner, a person who

> … can approach subject matter directly without having an adult in a set of intervening roles between the learner and the subject matter. The adult knows his own standards and expectations. He no longer needs to be told, nor does he require the approval and rewards from persons in authority.[59]

According to Knowles, autonomous behavior should be natural for the adult learner who, by definition, has a self concept that he is self directed. Indeed, Knowles writes "the point at which a person becomes an adult, psychologically, is that point at which he perceives himself to be wholly self-directing." Knowles says that dependency is part of the self concept of a child, who begins to see himself as having the capacity to make decisions for himself as his self identity begins to take shape. Unfortunately, however,

> … as the child moves up the educational ladder he encounters more and more of the responsibility for his learning being taken by the teacher, the curriculum planners, and his parents. The net effect is to freeze him into a self-concept of dependency.

For this reason, adult educators often must help learners to overcome a fear of being self directed and self reliant in learning, for "adults are typically not prepared for self directed learning; they need to go through a process of re-orientation to learning as adults." [60]

Besides Knowles, a number of observers have criticized North American schools for their neglect of learner autonomy. Thelen says that schools, by keeping students busy finding solutions to problems already formulated, "externalized, depersonalized and emotionally fumigated," deny their students "the most fundamental human need: the quest for autonomy." [61] In the vast majority of schools, according to Rogers, at all educational levels,

> … we are locked into a traditional and conventional approach which make's significant learning improbable if not impossible. When we put together in one scheme such elements as a prescribed curriculum, similar assignments for all students, lecturing as almost the only mode of instruction, standard tests by which all students are externally evaluated and instructor chosen grades as the measure of learning, then we can almost guarantee that meaningful learning will be at an absolute minimum. [62]

Yet autonomy is the stated objective of most educators, and especially adult educators. The role of instruction in preparing a learner of autonomy is stated by Bruner: "Instruction is the provisional state that has as its object to make the learner or problem solver self-sufficient," [63] and Verner writes,

> Self education is possible when an individual has sufficient insight and skill to define objectives clearly, to select and arrange a sequence of developmental tasks for himself,

> and to manage and effectively direct his own progress with objectivity. It is the attainment of this ability to which Lyman Bryson referred in his oft-repeated statement that self-education is the goal of all adult education. [64]

Carl Rogers defines the autonomous learner, "the man who has learned how to learn," the "educated man," "the man who has learned how to adapt and change; the man who has realized that no knowledge is secure, that only the process of seeking knowledge gives a basis for security." [65]

Teaching Autonomous Learners

Since autonomous behavior is adult, the very nature of good adult education, according to Knowles, is the restoration and support of learners' autonomy. In all programs, this means "great emphasis is placed on the involvement of adult learners in a process of self-diagnosis of needs for learning," there is, "involvement of the learners in the process of planning their own learning," "the learning-teaching transaction [is]…the mutual responsibility of learners and teachers," and there is "a process of self-evaluation in which the teacher devotes his energy to helping the adults get evidence for themselves about the progress they are making toward their educational goals."[66]

After a search of the literature, Landvogt identified three criteria that contribute to the adult educator's philosophy, and three criteria that are in effect when the philosophy is operationalized. These criteria include the use by the adult educator of the learner as a source of information upon which decisions are to be based, the adult educator giving the learner an opportunity to take responsibility to make major decisions in the total curriculum development process, the adult educator sharing basic pedagogical moves in the teaching cycle with the learner, and the adult educator engaging the student in actively participating in learning. [67]

Pine and Horne surveyed the conditions for learning in adult education and concluded "People are active and creative beings who need the opportunity to determine goals, issues to be discussed, and the means of evaluating themselves." [68] Knowles, Landvogt, and Pine and Horne are agreed that adult learners should be treated by adult educators as autonomous, and that as far as possible autonomy should be exercised at all stages of instruction, goal setting, implementation and evaluation, or in Jackson's terms in the preactive and the reactive stages of instruction. The rationale for involving the adult learner, in all stages of his learning program, is efficiency. Since adults have a different time perspective than children, "they engage in learning largely in response to pressures they feel for their current life situation." [69] They do not learn so much for the future as to deal with problems of the present, and if the objectives of an educational program are relevant to such problems, the intensity of learning is high. To obtain relevance is the purpose of the educator's consulting with the learner.

Learning is intense when based on a learner's real problems because then his motivation is high. From a phenomenologist's perspective, Rogers asserts, "Human beings have a natural potentiality for learning," [70] and since people naturally desire to discover, to enlarge their knowledge and experience, the question of how to "motivate" learning which preoccupies many teachers is irrelevant. The art of teaching the autonomous learner lies in helping him decide what is a suitable objective for his natural wish to learn, and then to help him pursue that objective. Rogers writes:

> I become very irritated with the notion that students must be "motivated." The young human being is intrinsically motivated to a high degree. Many elements of his environment constitute challenges for him. He is curious, eager to discover, eager to know, eager to solve problems … it is our task as facilitators of learning to tap that motivation, to discover what challenges are real for the young person, and provide the opportunity for him to meet those challenges." [71]

After helping a learner identify learning objectives relevant to his real problems, the facilitator of autonomous learning, according to Rogers, spends much time on

> …the imaginative provision of a multitude of resources for learning … all kinds of new ways of surrounding the student with a learning environment from which he could choose those elements which best meet his needs.[72]

As well as finding meaningful objectives and being provided with rich resources, the learner has to be helped evaluate. Rogers states that the learner should take responsibility "for deciding what criteria are important to him, what goals he has been trying to achieve, and the extent to which he has achieved those goals." To the autonomous learner, "Independence, creativity, and self reliance are all facilitated when self criticism and self evaluation are basic, and evaluation by others is of secondary importance." [73] In summary, Rogers concludes,

> When he chooses his own directions, helps to discover his own learning resources, formulates his own problems, decides his own course of action, lives with the consequences of each of these choices, then significant learning is maximized.[74]

To the rationale of efficiency, Boyd suggests one grounded in morality,

> An individual has the right and responsibility to determine, in concert with those others directly involved the direction and extent of his acts in accordance with his knowledge of the realities and his capabilities to handle the demands of those realities.[75]

The autonomous learner is one who has what Thelen calls "captaincy of self," so that in educational situations he is

> Aware of the many choices among ways he might behave; he will review the process and study it with the help of books and other people; he will speculate about it and draw tentative conclusions from it.[76]

Thelen's reference to "books and other people" points out that the autonomous learner is not to be thought of as an intellectual Robinson Crusoe, castaway and shut off in self-sufficiency. Autonomous learners have recourse to teachers, depending on the extent to which they are autonomous. A learner who is highly independent both emotionally and instrumentally may have less need of help from a teacher than one who is less autonomous. The fully autonomous learner is so highly self directed that he may choose from hundreds of resource persons, through writings, broadcasts and recordings, as well as in person. A less autonomous learner, who needs more direction and admonition, is more likely to attach himself to a limited number of resource persons who can provide the support he needs.

To the highly autonomous, the teacher's role is that of respondent rather than director. He is a resource that replies to the learner's stimulus, but does not initiate learning activity. Maslow contrasts this, what he describes as “Taoistic” teaching, with conventional, directive teaching:

> Unlike the current model of teacher as lecturer, conditioner reinforcer, and boss, the Taoistic helper or teacher is receptive rather than instrusive.[77]

This is a kind of teaching similar to the laissez-faire teacher. in the typology described by Lippit and White, who

> …should make clear the various materials which are available and be sure it is understood that he will supply information and help when asked. He should do a minimum of taking the initiative in making suggestions. He should make no attempt to evaluate negatively or positively the behavior or productions of the individuals or the group.[78]

Tough writes of this kind of teaching as “helping,” and the teacher as “helper”:

> The helper provides detailed information about the various possibilities that are open, but lets the learner himself make the decisions. This is similar to the role of the consultant, who enables someone else to do something; the consultant does not himself make and implement decisions… The distinction between help and control is important, because it helps us realize that a learner can receive a great deal of help without giving up any of this control or responsibility.[79]

There is a second difference in teaching of autonomous learners compared to others. When the learner is not dependent on directions and admonitions, but is largely, or solely, concerned with acquiring what Smith defined as “logical operations,” he ceases to be dependent on one teacher resource and can draw upon any of a number of persons, through personal contact, or through such media as the telephone, radio, television, letter writing, programmed texts, books, and the computer. Thus, a teacher who is to prepare a program to be available when the autonomous learner requires it must be “anticipatory,” as well as being “responsive.”

Consider the analogy with dining. A child sits expectantly at his mother's table, and consumes the meal she places before him. He may try to reject that which he finds unpalatable, or seek extra helpings of what he enjoys, but the nature of the meal is limited, and determined by his mother, with little contribution from the child. By comparison, in a cafeteria, in anticipation of the patron's demands, a selection of dishes has been prepared and exposed to view. Those the diner likes he may select, those he dislikes he will certainly reject. His choice may be nutritionally sound, or foolish. He may come in search of a particular fare, which he may find, or, if unsuccessful, he may reject the whole offering and take his appetite elsewhere. So with learning and teaching. In dependent learning, the learner tastes only the intellectual foods prepared by his loving teacher, while for the autonomous learner, consumption is determined by his own appetite. The production of teaching programs may be in anticipation of his demands. In autonomous learning and teaching theory, therefore, teaching may be thought of as a system of behaviors intended to induce learning, but the inducement may not occur until the learner himself has already started to behave in the way of a learner, by approaching the work of the teacher, already completed perhaps, in anticipation of such an approach.

The extent to which a teaching program is responsive will depend primarily on the communication between instructor and learner. If communication is by a “one-way” medium such as the television, the program will be unresponsive, though it might be highly anticipatory. To be anticipatory the program must provide many alternative resources to meet the needs of each learner. Clearly the characteristic Responsiveness is a function of the characteristic Dialogue, and Structure is a function of Anticipation.

Classification of Independent Study Programs by the Variable “Leamer Autonomy”

What Wedemeyer calls “various forms of teaching-learning arrangements” are referred to here as “educational programs.” A teaching program is a purposeful, deliberate, and planned activity or series of activities by a teacher intended to help change in knowledge, behavior or attitude sought by a learner. A learning program is a purposeful, deliberate, and planned activity or series of activities by a learner intended to result in a change in his knowledge, behavior or attitude. An educational program is a learning program which uses teaching programs. As suggested previously, teaching can be communicated by a book, a programmed text, a computer, television, correspondence, or through other media, and the writer or presenter of such programs is teaching, as we define it. Learners who have no personal contact with teachers, but who use such mediated teaching, are nevertheless engaged in educational programs.

A program is distinguished from a “unit” by the level of generality of its goals, the goals of a unit being subordinate, and contributing to the goals of a program. When the goals of a unit are achieved, the learner proceeds to work on a new unit (or abandons the program). When the goals of a program are achieved, the program is complete. A typical correspondence program in economics, for example, has ten units, or lessons. The instructor's program goals are that the learner will become informed about basic economic concepts, and each unit goal is for the learner to become informed about a particular concept.[80]

Because a learner may choose to master only the goals of a unit, thereby defining for himself a unit as his program, or may treat a program as a unit, it is here stipulated, for convenience, that the determination of what is a program depends on an examination of the instructor's intention. As has been described, in adult education programs, some learners may be able to learn autonomously, while others might need a period of orientation before they can abandon dependent behaviors. Thus independent study programs vary in the extent to which learners exercise autonomy. Depending on the design of a program, it may be characterized as permitting more or less learner autonomy. Since learner autonomy is identified as a major characteristic of independent study, it is suggested that independent study programs be classified according to the extent to which the learner can exercise autonomy in learning. In this classification the following questions are asked:

1. Is the selection of learning objectives in the program that of the learner or the teacher?
2. Is the selection and use of resource persons, of books and other media, the sequence and pace of learning experiences the decision of the teacher or the learner?
3. Are the decisions about the method for evaluation and criteria to be used made by the learner or teacher?

By applying these questions a typology of teaching programs is generated. In Figure 3, programs range as follows:

1. Autonomous learning programs in which the learner will use resource persons, literature, and other sources of information and skill, but decides himself what to learn, in what manner, and how to evaluate successful achievement. For example, a homemaker who feels a need to be a better cook, and sets the specific objective to be able to cook three varieties of fruit pies with a success rate of 90%, where success is determined by her family's eating the pies, who chooses to learn by using a "teach yourself" book has made all decisions about her learning herself. Her program may be described as the AAA type. Teaching, as defined by Smith, English and English, and Jackson is used by the learner, but control and direction of the learning program is in the learner's, not the teacher's, hands.
2. This is a class of programs of lower autonomy, in which the learner's achievement is judged by an external agent, but the areas of competence in which he offers himself for testing, and the means he employs for achieving competence, are within his own control. In Great Britain, since 1885 it has been possible to register oneself as an external student at the University of London (though not for all degrees). Quite independently, the student in the London system may select areas of study, may study as he will, and may present himself for the evaluation of the University examiners. [81]
3. Having freely selected learning objectives, learners may surrender the direction of the use of resources to the teacher. Perhaps this is illustrated in the case of learning sports skills where several learners seek out a professional's instruction, but each has different criteria of achievement in mind, and each decides when he has learned enough.
4. A program type in which the learner, once having defined learning objectives he wishes to achieve, enters a controlled series of learning activities, and is evaluated by his teacher or other external agency. A person who chooses to learn the skills of driving an automobile and enrolls with a professional instructor has little control of the instruction, and none of the evaluation.
5. Program formats, in which the learner controls, in the one case implementation procedures and evaluation, and, in the other, evaluation only.
6. A common type of program where the student has some control of the implementation procedures, but where the goals are prescribed by his teacher, and he is evaluated by an external agency. The majority of school and college independent study programs fall into this category.
7. The Common type of program in institutions, especially where professional certification is at stake. The objectives for learning, the means, and the evaluation of achievement are in the control of the teaching authority.

		Objective Setting	**Implementation**	**Evaluation**
A= Learner	1	A	A	A
Determined	2	A	A	N
("Autonomous")	3	A	N	A
	4	A	N	N
	5	N	A	A
N= Teacher	6	N	N	A
Determined	7	N	A	N
("Non-Autonomous")	8	N	N	N

Fig. 3—Types of independent study programs by variable learner autonomy

Discrimination among the various types suggested above is by the variable "learner autonomy," "the extent to which in an independent study program the learner determines the objectives, implementation procedures, and evaluation."

<u>Classification of Independent Study Programs by Variables of Distance and Learner Autonomy</u>

Independent study describes any educational program where the learner has autonomy and there is distance between teacher and learner. Theoretically, the universe can be described by Figure 4.

Fig. 4—Universe of independent study programs

However, since distance and learner autonomy are both qualitative variables, so is the term independent study descriptive of elements in all educational programs rather than descriptive of an exclusive class of programs or methods. By superimposing Figure 2 on Figure 1, we can provide a typology of all educational programs showing the range from most independent study to least independent study.

Fig. 5—Suggested typology of educational programs

In Figure 5 as in Figure 1, D represents Dialogue and S represents Structure. Programs range from 1-D-S, which is a program of high learner autonomy, and very high distance, to 8+D-S, a program where autonomy and distance is very low, so the learner is largely controlled by the teacher. The former program is a high independent study program, the latter is low. Using this typology, we should be able to describe any educational program in terms of its Learner Autonomy, its Telemathy, and its Independent Study.

Summary of a Theory of Independent Study

Assumptions:

1. A teaching program is a set of teacher's objectives for change in learners' skills, attitudes or knowledge, a set of resources for reaching the objectives, and a design for measuring the achievement of the objectives.
2. A learning program is a set of learner's objectives for his change in skills, attitudes or knowledge, a set of resources for reaching the objectives, and a design for measuring the achievement of the objectives.
3. Teaching consists of two phases. Setting objectives, identifying resources and evaluating are “preactive,” while admonishing, directing and giving information are “interactive.”
4. An educational program is the use in a learning program of a teaching program.

Postulates:

1. Autonomy is the extent to which the learner in an educational program is able to determine the selection of objectives, resources and evaluation procedures.
2. Educational program can be classified by the variable “learner autonomy.”
3. Telemathic teaching is a teaching program in which, because of the physical separateness of learners and teachers, the interactive as well as the preactive phase of teaching is conducted through print, mechanical, electronic or other devices.
4. Distance in an educational program is a function of dialogue and structure. Structure is the extent to which the objectives, implementation procedures and evaluation procedures of the teaching program can be adapted to meet the specific objectives, implementation plans and evaluation methods of a particular student's learning program. Dialogue is the extent to which interaction between learners and teacher is possible.
5. Teaching program and educational programs can be classified by the variable “distance.” Definition: Independent study is any educational program in which the learning program occurs separate in time and place from the teaching program, and in which the learner has an influence at least equal to the teacher in determining learning goals, resources and evaluation decisions.
6. Since distance and autonomy are qualitative variables, all educational programs can be classified on the two dimensions.

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