# A STUDY OF INSTRUCTIONAL DEVELOPMENT KNOWLEDGE AND COMPETENCY AMONG SECONDARY TEACHERS IN THE ROMAN CATHOLIC SCHOOL BOARD HUMER-ST. BARBE AND THE DEER LAKE-ST. BARBE SOUTH INTEGRATED SCHOOL DISTRICT

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ROMAN CATHOLIC SCHOOL BOARD HUMBER-ST. BARBE

AND THE DEER LAKE-ST. BARBE SOUTH INTEGRATED SCHOOL DISTRICT

by

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Dedication

This thesis is dedicated with love to Matthew, Amanda, Michael and Michelle.

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Abstract

The intent of this study was to determine if secondary teachers possess general knowledge of instructional development from a conceptual perspective, and knowledge of the basic instructional development process which forms the foundation of all instructional development activities. Secondary teachers' knowledge and competency were determined through the use of a written survey which questioned teachers on five specific instructional development competency areas, as summarized and developed from five classroom instructional development models reviewed by Gustafson (1981), and on general definitions and conceptualizations of instructional development.

Two hundred and thirteen teachers from the secondary levels in the Roman Catholic School Board, Humber-St. Barbe and the Deer Lake-St. Barbe South Integrated School District took part in the study, with 42% returning the survey instrument. A follow-up semi-structured open response interview was conducted with two subjects who failed to return the survey to determine (a) their reasons for non-completion, (b) their knowledge of instructional development, and (c) their preferred approach to instructional planning.

Data were analyzed qualitatively and reported in terms of both frequencies and percentages, and descriptively.

It was determined that secondary teachers employed by

these two school boards had little knowledge of or competency in instructional development, and their planning routines did not incorporate specific components of instructional development.

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CHAPTER I

Nature of the Study

Introduction

Tobin (1989) completed a study of primary and elementary classroom teachers' knowledge and competency in instructional development. As a result of her research she recommended that further investigation be done in this area, specifically a study of secondary teachers' instructional development knowledge and competency. This study is an attempt to advance the attainment of such a goal.

Background to the Study

During the past 40 years changes in education have been rapid and decisive. Soviet scientific success (Heinich, 1984) plus in recent years public criticism (National Commission on Excellence in Education, 1982; Newfoundland Task Force on Mathematics and Science Education, 1989) have placed pressure on the North American school system to improve instructional effectiveness and academic standards. The implementation of the traditional lock-step curriculum in sterile, lack-lustre classrooms using limited instructional resources such as textbooks, blackboards and chalk, is no longer desirable or for that matter acceptable (Brown, 1986, p. 12). In response

to public demands the art of teaching is subsequently developing into a more innovative approach which is structured on research, and oriented towards children, teaching and learning (Haycock, 1981, p. 4). This is a direct consequence of a society that is not only effervescent but one that is undergoing profound technological and social change. Teachers who had long been accustomed to the presentation or lecture-based system of teaching have now discovered that their role as transmitters of information is changing to that of designers of learning activities. This current philosophy of teaching has placed greater demands on today's classroom teachers than were placed on teachers a number of years ago. "With less emphasis on a single text and more emphasis on an individual approach, classroom teachers are expected to develop learning experiences based on each student's abilities, interests and needs" (Kennedy & Brown, 1987, p. 6).

For two decades instructional development has been recognized as the real world application of theories of learning and instruction to curriculum implementation, whether it be at the district, the school or classroom levels (Diamond, 1980). Therefore, those who wish to implement individualized approaches to "equip students to function effectively in a rapidly changing resource-rich technological world" (Fennell, 1983, p. 62) need to be acquainted with the concept and the skills of instructional development.

Good teaching is recognized as the successful

matching of individual learners of varied abilities
with experiences most likely to effect in them
desired changes in thinking and behavior. Learning
has replaced teaching as the centre of instruc-
tional planning. Planning and directing learning
experiences are now central to the teaching role.
(Branscombe & Newson, 1977, p. 1)

Instructional development is a field directed toward the
facilitation of human learning. It is described as "a
systematic approach for improving instruction by making
instructional design decisions that take into account many
factors. These include principles of learning, student
characteristics, instructor skills, developer skills,
resources, content time and evaluation data" (Sachs, 1981, p.
8).

The overriding goal and purpose of the field of instruc-
tional development is to facilitate and improve the quality of
human learning. Since this goal is, of course, shared by
every branch of education, it is not enough, in and of itself,
to serve as a rationale for a unique field. The uniqueness of
instructional development, and therefore its reason for being,
lies in the philosophical and practical approach it takes
toward fulfilling this purpose. The approach that is charac-
teristic of instructional development is perhaps best revealed
in three successive patterns that have shaped the development
of the field in the evolutionary process between the 1950s and

its current form (Wiley, 1982). These thought patterns are as follows:

1. The concept of designing instruction directly for the student instead of designing audio-visual materials for teachers to use in their presentations.

2. Benchmark developments in learning theory as identified by B.F. Skinner and others.

3. The influence of World War II and later the rapidly advancing hardware technology which required the development of quick task analysis procedures, effective training, and new communication technologies often labelled "the systems approach" (Knirk & Gustafson, 1986, p. 8).

It is these three concepts, when synthesized into a total approach to facilitate learning (Reiser, 1987, p. 41), that create the uniqueness of, and thus the rationale for, the area known as instructional development.

Significance of the Study

This study is one of a series (Gallant, 1989; Tobin, 1989) on instructional development knowledge and competency among educators in Newfoundland. With the current move toward resource-based teaching and learning it is imperative that teacher planning processes become both more extensive and more sophisticated, if they are to employ learning resources in the most efficient and effective manner. Teacher planning, always

an individual domain of the teacher, has become the domain of both the classroom teacher and the teacher-librarian as they plan together to provide meaningful learning experiences. This broadening of the domain has created interest in teacher planning processes. The studies of instructional development knowledge and competency among Newfoundland teachers are undertaken with the belief that teacher planning could be improved through an instructional development approach. Specifically this study focused on secondary classroom teachers' knowledge and competency regarding instructional development.

Dick and Carey (1978) note that "It will become more important for teachers to have technical skills that will enable them to design and implement instruction in the classroom. Knowledge of instructional development techniques will greatly enhance each teacher's ability [to do this]" (p. 4). In North America many educational faculties offer preparatory courses in instructional development, while others serve as electives offered only at the graduate level. Memorial University of Newfoundland's Faculty of Education does not offer an instructional development course to under-graduate students, hence it can be assumed that few teachers in the province have completed formal courses in instructional development.

The Purpose of the Study

In 1954 B.F. Skinner, in reaction to the failure of the education system to incorporate theories of learning, moved from the laboratory to the real world with his programmed instruction--an innovation which he said would revolutionize the classroom (Harvard Educational Review, 1954). Not much has changed since 1954.

Schrock (1985) notes that a frustration frequently voiced by instructional technologists is the relatively small impact that technology has had on instruction, despite Finn's (1964) prophecy that "the educational future will belong to those who can grasp the significance of [educational] and instructional technology" (p. 26). Richmond (1967) also predicted that "educational technology is designed to emerge as the central humane discipline of the future" (p. 106). In spite of such convictions that technology could dramatically improve learning, and that the instructional development process is "the single most powerful tool for improving the quality of education today" (Turner, 1985, p. 12), there is little supporting evidence to suggest that educational technology, specifically instructional development, is being implemented. Tobin (1989) and Gallant (1989), for example, found that Newfoundland primary and elementary teachers and teacher-librarians do not possess instructional development knowledge and competency.

This study explored instructional development knowledge and competency from a secondary teaching perspective. Specifically, teachers from grades 7 through 12, located within two targeted school boards in Western Newfoundland, were surveyed regarding their instructional development knowledge and competency. In the course of the study, the following questions were addressed:

1. Is the concept of instructional development understood by secondary teachers?

2. What depth of knowledge regarding instructional development do secondary teachers possess?

3. Do secondary teachers possess competencies in instructional development such that they could practice or use instructional development in their instructional planning?

Definition of Terms

For the purposes of this study the following terms and definitions are relevant:

Audio-Visual Device means any piece of equipment, with associated materials, that controls, through mechanical or electronic means, the presentation of visual or auditory communication for instruction (Reiser, cited in Gagné, 1987, p. 12).

Systems Approach is a self-correcting, logical process for the planning, developing, and implementation of (instruc-

tion). It provides a procedural framework within which the purpose of the system is first specified and then analyzed in order to find the best way to achieve it. On the basis of this analysis, the components that are most suitable to the successful performance of the system can be selected. Finally, continuous evaluation of the system provides a basis for planned change in improving economy and performance (Banathy, cited in Gagné, 1987, p. 15-16).

Educational Technology (variously entitled historically as audio-visual instruction; instructional technology; learning resources; educational communications). The development (research, design, production, evaluation, support-supply, utilization) of learning resources (messages, men, material devices, techniques, settings) and the management of that development (organization, personnel) in a systematic manner with the goal of facilitating human learning (AECT, 1977).

Instructional Development (used interchangeably with instructional design and instructional technology). It is an applied science based on research on learning and communication that deals with the design, development, and evaluation of systems of materials and management strategies, employing human and non-human resources for the efficient attainment of specific learning objectives (Thiagarajan, Semmel & Semmel, 1974).

Learning Theory is a systematic integrated outlook in

regard to the nature of the process whereby people relate to their environment in such a way as to enhance their ability to use both themselves and their environment more effectively (Bigge, 1982, p. 3).

Secondary Teacher is the professional person certified by the Newfoundland Provincial Department of Education and hired by the Roman Catholic School Board, Humber-St. Barbe and the Deer Lake-St. Barbe South Integrated School District to instruct from grades 7 to 12 within schools under their respective administration.

Limitations of the Study

1.   In this study, which endeavoured to ascertain whether secondary teachers possessed instructional development knowledge and competency, it may be considered a limitation that the study dealt only with teachers employed by the Roman Catholic School Board, Humber-St. Barbe and the Deer Lake-St. Barbe South Integrated School District. It is only within the boundaries of this particular population that inferences can be made, and not within the Province of Newfoundland.

2.   The study is limited by the response rate. While a 100 per cent response rate is not a realistic objective in research which employs a survey questionnaire as the tool for data collection, the instructional development knowledge and competency for those teachers who did not return the question-

naire might have had some impact on the results of the study.

3.   While the initial instrument was reviewed carefully by the researcher in an attempt to identify and eliminate technical terminology utilized only in the field of educational technology, it is possible that the language might have impacted on participation. However, the researcher did feel that teachers, being highly trained professionals, would be acquainted with the terminology pertaining to the literature of their profession. Therefore, it was decided to use the correct terminology as indicated by the general educational professional literature.

4.   The thrust of this study, in relation to instructional development, was on the various instructional development components as reported in the professional literature, presented in instructional development models and taught through formal courses. It is accepted that teachers may have tacit knowledge of instructional development which the instrument would not be able to measure.

<u>Summary</u>

The research findings reported in this thesis are the result of a study conducted in the fall of 1990 regarding the instructional development knowledge and competency of secondary teachers.

Chapter I gives the framework necessary to understanding

the nature of the study. It depicts the study's background,
its significance and purpose. As well a section dealing with
the definitions of terms that are applicable to the study is
also presented.   Finally, the study's limitations are
included.

Chapter II describes a historical overview of various
events and occurrences which have contributed to the emergence
of instructional development as a field of study, as evidenced
in the literature of educational technology.

Chapter III describes the methodology and procedures
employed in the implementation of the study.

In Chapters IV and V the results of the study are
described, in addition to a summary, conclusion and recommen-
dations for further study.

CHAPTER II

Review of Related Literature

Historical Development of Educational Technology

Origins of the Field

Educational technology is a complex term which has won
increasing acceptance in educational circles, as is evidenced
by the frequency with which it is cited in the educational
literature, and by the emergence of numerous specialized
journals, some examples of which include: Educational
Technology, The British Journal of Educational Technology, The
Journal of Educational Technology Systems and Programmed
Learning and Educational Technology.

Wiley (1982) perceives the term as a response to indus-
trialization and advancements in scientific and social-
scientific knowledge which characterized the late 19th and
early 20th centuries. Spencer (1988) notes that,

Educational technology is composed of at least two
overlapping subsets: technology in education, and
technology of education. Technology in education
may be thought of as the hardware approach. It is
most labelled audio-visual education, audio-visual
aids, or instructional media. Technology of educa-
tion refers to the educational application of
knowledge from the behavioral sciences, including
in particular the psychology of human development

and learning. (p. 1)

The simplest distinction for the two meanings of educational technology seems to be a historical one. Davies (1978), in an examination of the past and the future features of the field, notes three levels of evolution within educational technology. Wiley (1982) concurs, dividing the history of educational technology into three major periods as follows: audio-visual instruction (1920-1945); audio-visual communication (1945-to date); and instructional systems analyses and design (1950-to date).

Early developments in audio-visual instruction emphasized the tools approach, or the physical view (Saettler, 1968). This perspective gained momentum early in the century, as the audio-visual movement focused on the machines and the materials rather than the learners (Saettler, 1968). This approach was concerned with the effects of devices and procedures which were believed to act as an antidote to the excessive verbalism of traditional teaching methods (Wittich & Schuller, 1953). This new media was to supply a concrete basis for conceptual thinking, to make learning more permanent, to develop continuity of thought and the growth of meaning and efficiency, and to provide depth and variety of learning (Dale, 1954).

Although the word audio-visual was practically unheard of before the 1920s (Finn, 1965), the concept itself is very old. The thoughts of primitive men were conveyed by signs, ges-

tures, hieroglyphics to depict military schemes for educational purposes. While the ancients did not know anything about overheads, films or chalkboards, they at least understood the value of the basic use of audio-visuals (McKown & Roberts, 1949).

No audio-visual device can probably compare to the overwhelming acceptance of the chalkboard. One of the very first was used on West Point in 1817 by a Frenchman named Claude Crozet (Anderson, 1961). By 1830, educators looked upon chalkboards as essential, not a luxury. No other audio-visual device has been accepted as rapidly by public education until computer technology.

As the 20th century began, in the forefront of technical training was the military. In fact for some the real beginning of technical training has been attributed to the aviation training programme in St. Paul, Minnesota, during World War I. It was also during World War I that the Navy used highly flammable 70 mm movies to improve the aiming of guns--all ships were equipped with these bulky and dangerous cameras and projectors (Finn & Perrin, 1962).

However, the notion of audio-visual that is presently prevalent emerged in the late 1920s and early 1930s when "technological advances in film and slide quality, radio broadcasting, sound recording and motion pictures with sound became visible" (Reiser, 1987, p. 14).

The first official objective of the Department of Visual

Instruction (DVI)--concerning "reality in learning pro-
cedures"--appeared in the 1931 DVI Constitution, Article II--
Object. This objective stressed social and mental values as
well as the dissemination of information, or clearing house
role. Significantly it mentioned assembly or auditorium
programs as of almost equal importance to classroom learning.
The DVI philosophy in 1931 was clearly rooted in the predomi-
nant teaching procedures of the times, just as the immediate
objectives reflected the concerns of education (Lembo & Bruce,
1971/1972, p. 62).

The movement continued to grow in the 1930s, despite the
lowered birth rate and poor economic conditions having a
depressing effect on education. In an official correspondence
to those "who are now engaged in visual instruction work,"
Ellsworth Dent, who was then the Secretary-Treasurer of DVI,
spoke of the department having reached "... an awkward stage.
It is in its early teens growing rapidly, has worn out its
rompers and playthings and now demands more suitable direction
and attention" (Lembo & Bruce, 1971/1972, p. 44).

The advent of World War II brought an unusual promotion
to the DVI. There was all of a sudden, "an unprecedented need
to train millions of industrial workers and military person-
nel, as rapidly and effectively as possible" (Saettler, 1968,
p. 159). As a result, "the most massive application of audio-
visual technology prior to 1950 was undertaken by the armed
forces during World War II" (Heinich, 1970, p. 116).

Reiser (1987) states that the development and use of audio-visual devices during the war was generally perceived as being "successful in helping the United States solve a major training problem" (p. 15). As a result of this apparent success, after the war there was a renewed interest in using audio-visual devices in the school (Reiser, p. 15). In February, 1947, a significant event took place within the educational milieu, with the creation of a Department of Audio-Visual Instruction. This new name mirrored the technological advances of the day (Lembo & Bruce, 1971/1972).

The field of educational technology has developed at a swift pace since World II, with the military in the United States and Great Britain making a major contribution to its growth. The war presented the armed services with the problem of educating and training great numbers rapidly and efficiently. The challenge then, as now, was maximum training in minimum time. The military had brilliant success using audio-visual instruction techniques, and the audio-visual way of education and training became known as the GI way. After the war, educators began asking the question "Why cannot the schools teach the GI way"? (McKown & Roberts, 1949).

The term audio-visual was predominantly still used at that point to describe the tools approach, but in the 1950s educational media gradually became the preferred term, as research into the comparative effectiveness of different types of audio-visual materials had begun. The audio-visual

designation narrowed the field to include only audio and visual activities, whereas the attention of audio-visual experts was shifting toward communications and systems theories.

A direct consequence of the training effort of World War II was the marriage of educational technology to the behaviourist approach to learning, especially in the very early years of the 1960s (Wiley, 1982). The evolution of educational technology from elementary studies of human learning and use of audio-visual aids, into audio-visual communication, instructional design and development as we know it began with the new decade.

Ely (1963), in a definition statement, called the field "audio-visual communication," a name which reflected quite a broad perspective. At the same period, Finn (1965) was strongly promoting the renaming of the field to "instructional technology," a term that reflected a still broader concept of the field. Finn's proposal was finally accommodated in 1970, with another change of name, this time to educational communication and technology. Again in 1972, the field was renamed educational technology, and defined within the rubric of Educational Technology (AECT, 1977).

In the AECT definition lay the influences of many earlier attempts to define educational technology (Grahame, 1976). The general intention of the definition is perceived in the first paragraph of the domain:

Educational technology is a field involved in the
facilitation of human learning through the system-
atic identification, development, organization and
utilization of a full range of learning resources
and through the management of these processes. It
includes, but is not limited to, the development of
instructional systems, the identification of exist-
ing resources, the delivery of resources to
learners and the management of these processes and
the people who perform them. (AECT, 1977)

Ely (1972) stated that educational technology is a field
involved in the facilitation of human learning through the
management of a systematic identification, development,
organization, and utilization of learning resources. Myers
and Cochran (1973) expanded on Ely's definition stating that
the uniqueness of the field is based on three patterns of
interest: (a) the use of a broad range of resources for
learning; (b) emphasis on individualized and personalized
instruction; and (c) the systematic approach to instruction.

In conjunction with an AECT Task Force on Definitions and
Terminology (1977), Silber constructed a model of educational
technology in an attempt to analyze further the domain of
educational technology (see Figure 1).

Streit (1979) noted that Silber's model graphically
illustrated the integrated relationship involving learning
resources, development functions, and management functions to

Learning Resource Management Functions	Learning Resource Development Functions	Learning Resources	
Organization Management	Research & Theory Design Production Evaluation & Selection Logistics Utilization (Utilization Dissemination)	Message Persons Materials Devices Techniques Settings	Learner
Personnel Management			
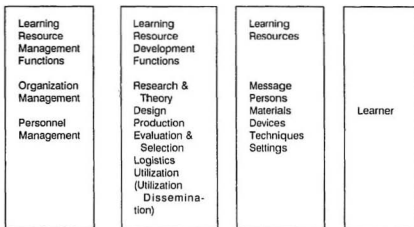
Figure 1. Silber's Model of the Domain of Educational Technology (cited in Prigge, 1977).

facilitate learning. In educational technology, the solutions to problems take the form of learning resources that are designed, selected, and/or utilized to bring about learning. These resources are classified as message, people, materials, devices, techniques and settings. Listed below is a brief description of the learning resources:

1. **Message** - Information to be transmitted through other resources.

2. **Persons** who are acting to store or transmit messages.

3. **Material** - Items, usually called media or software, which store messages for transmission through devices.

4. **Devices** - Items called hardware which transmit messages stored on material.

5. **Techniques** - Procedures for using other resources.

6. **Settings** - The environment in which messages are received.

The processes for analyzing problems and implementing and evaluating solutions are the seven educational development functions as described by Prigge (1977) in Figure 2.

To ensure the effective operation of the educational development functions, either individually or collectively, additional functions are employed. The organization management function is designed primarily to determine, modify or execute the objectives, philosophy, policy, structure, budget, internal and external relationship, and administrative pro-

Function	Definition
Research - Theory	To generate and test knowledge related to other functions, learners and learning resources.
Design	To translate general theoretical knowledge into specification for learning resources.
Production	To translate specification of learning resources into specific actual items.
Evaluation - Selection	To assess the acceptability of actual produced learning resources.
Logistics	To make learning resources available for other functions.
Utilization	To bring learners in contact with learning resources.
Utilization - Dissemination	To bring learners in contact with information about educational technology.

Figure 2.   Seven Educational Development Functions (Prigge, 1977).

cedure of an organization performing one or more of the development functions. The second function, personnel management, is intended to interact with and/or supervise personnel who perform activities in development functions (Streit, 1979). This concept or model of educational technology is totally integrative (Finn, 1965, p. 193). It provides a common ground for all professions no matter what part of the domain they are working in.

Morgan (1978) attributes the origin of the current view of educational technology to the work of Skinner (1954) and his linear teaching machine. The ideas manifested in this work have remained in many ways the corner stone of educational technology, since they are grounded historically in behaviourism and later were developed by behavioural psychologists (Spencer, 1988).

In the early 1970s educational technologists became enamoured with the systems theory and systems analysis. This new approach to educational technology synthesized ideas from such diverse fields as mathematical modelling, economics and military operations. By seeing things as wholes, systems theorists argued that learners might cope with the difficulties encountered in trying to solve a myriad of small interrelated problems simultaneously.

The Role of Educational Technology in Education

The main objective of educational technology is to assist

in the goal of human learning. Thus the processes which are implemented to design and/or utilize resources to facilitate human learning are the key elements in the domain of educational technology, thus giving the concept practical application for instruction (AECT, 1977, p. 75). Other than the human teacher element, the availability of additional resources provides additional alternatives for education, which can cause a dramatic change in the role of a school and an individual teacher (p. 99). Educational technology can supply more resources for learning, and thus change the way of doing things. Instead of chiefly distributing knowledge, the teacher can become a supervisor of learning in selecting learning experiences and interacting with and evaluating individual learners.

The role of educational technology in learning is supported by Gagné (1974), who examines the different potentials or characteristics for the purpose of determining the kinds of educational technology which can maximize the instructional effectiveness and delivery of learning.

Teague (1975) has described and summarized the major contributions that instructional media can contribute to learning (p. 11-13). Beyond the importance of the systematic application of media utilization, Teague states that media provides new or previously unavailable learning experiences for students. These vicarious experiences can be more relevant, accurate and meaningful in assisting the learner in

making judgements about the real world. Teague also indicates that media can make our communications more precise, increase learning interest and provide more options for learning. With the everyday challenges that face the classroom teacher, these instructional media or learning resources can contribute significantly to achieving the goals of instructional programs.

Beckwith (1988) concurs, stating that within educational technology resides the potential for "better schooling, better learning, better transmission of information, better interactive communication, better world" (p. 3).

Historical Development of Instructional Development

Origins of the Field

A philosophy held by modern society is that education, a pervasive influence, serves the needs of all persons in many contexts (Blalock, 1984, p. 580). Fixed firmly in such a philosophy are the tenets that have functioned as a catalytic force for many an educational cause. The days of student unrest in the 1960s illustrates such a point, since university administration, confronted with student demands for attention to human individuality, turned to instructional development to provide a partial solution to their problem (Alexander & Yelon, 1972; Diamond, 1980; Seels, 1989).

Although it is at this point that instructional develop-

ment became clearly discernable and recognized as a field of
endeavour, it did not represent a totally new or different
concept (Knirk & Gustafson, 1986, p. 3). The history of
instructional development can be traced to the tradition of
the elder Sophists in early Greece (Saettler, 1968). Their
systematic approach to the instruction of groups has led
writers such as Pratt (1980) to state that "in the Sophists we
can see the first sustained effort to discover basic prin-
ciples of instruction; they might be termed the first instruc-
tional technologists" (p. 18). Yet according to Saettler
(1968), "It would be futile to designate any particular event
or date to mark the beginning of a science or technology of
instruction" (p. 47). However, Gustafson (1981) disagrees,
indicating:

> The term "Instructional Development," defined as a
> process for improving instruction, appears to have
> had its origin in a project conducted at Michigan
> State University from 1961 - 1965. Entitled
> Instructional Systems Development: A Demonstration
> and Evaluation Project (1967), this project,
> directed by Dr. John Barson, produced one of the
> early ID models. (p. 5)

The literature reflects Gustafson's view. In one of the
"charter" documents of the instructional development field,
Barson and Jones (1965) gave substance to the term "instruc-
tional systems development" by writing:

Experience suggests that media applications stand a better chance of succeeding if they are based on expert analyses of the teaching problem and the selection of tested materials. That is, major instructional innovations should be guided by an in-depth analysis of the instruction, the nature of the course content, the strategy of teaching and characteristics of the learners. (p. 2)

Hamreus (1968) expanded on these thoughts in what he termed the systems approach to instruction development. If the instructional technologist is to get maximum use from media in improving learning outcomes, he must be able to answer how, what and when media can be most effectively employed. To answer these questions he must know what specific learning outcomes are expected of students. Also, the questions must all be considered within the constraints of the education industry: learner differences, learner outcomes, learning process and the conditions for learning. What this all leads to is the need to manage and operate a set of complex elements that make up the particular sub-system in the educational industry within which the instructional technologist happens to confront an instructional problem.

In 1971, the field of instructional development became identified as a profession (Diamond, 1980) despite the fact that as the literature states, "It is not a concept near the ground. Rather it is more like liberty to which it is in fact

related" (Davies, 1982, p. 63).

> For when an instructional idea is born, it becomes
> defined in terms of specific goals and outcomes
> which are translated in turn into instructional
> design specifications, from which instructional
> products are fabricated [and] which are then tried
> out and revised until desired results are achieved
> with the learner. (Hamreus, 1968)

Thus instructional development is not defined by a particular
process any more than saws, hammers, chisels and fasteners
define carpentry or paint, brushes and canvas define painting
(Davies, 1982, p. 63).

Programmed Instruction

Programmed instruction is often associated with the
publication of Skinner's (1954) article in Harvard Educational
Review, entitled The Science of Learning and the Art of
Teaching. Skinner states in this writing:

> We are on the threshold of an exciting and revol-
> utionary period in which the scientific study of
> man will be put to work in man's best interest.
> Education must play its part. It must accept the
> fact that a sweeping revision of educational prac-
> tices is possible and inevitable. (Cited in Hawk-
> ridge, 1978, p. 377)

In this selection Skinner "advised educators to apply knowl-

edge about behavioral reinforcement theory to the design of instruction" (Seels, 1989). A technology of instruction is essentially what Skinner was proposing as he "pointed to the deficiencies of traditional instructional techniques and indicated that by using teaching machines many of those problems could be overcome" (Reiser, 1987, p. 30).

A technology of instruction is "a teaching/learning pattern designed to provide reliable effective instruction to each learner through application of scientific principles of human learning" (Heinich, Molenda & Russell, 1983, p. 266).

The principles proposed by Skinner (1954) for programmed instruction, "were small steps, careful sequencing and immediate and frequent reinforcement of the learner" (Seels, 1989, p. 1). In recommending that instructional materials consist of a series of small steps, Skinner was also stating his belief that learners should be allowed to proceed at their own individual pace (Tobin, 1989).

According to Seels (1989), programmed instruction was the impetus to the study of variables of instruction which came to be known as design characteristics, because it was the first system of instruction to be based on a theory of learning (p. 11).

Teacher Planning for Instruction

The major elements of the instructional process, according to the literature, have traditionally been the student,

the teacher, and the curriculum. Since the 1970s, however, the literature reflects a fourth element, necessitated by rapid technological advances. The fourth element, that of instructional design, has moved to the core of the instructional process (see Figure 3).

Heightened public awareness of the pedagogical fundamentals has required that educators carefully consider resources and alternative approaches to instruction (Beilby, 1974, p. 11-12). The contention is that quality instruction does influence learning.

According to Friesen (1973), instructional materials can be designed and created in two ways (p. 1). The first way requires a master teacher, working alone to create an inspired work of art. The second requires the application of a system of logic in order to accomplish specified learning objectives. Although the master teacher method has had a long history, it is often unaccompanied by empirical verification of effectiveness. By contrast, the scientific method requires the acquisition of learning data to provide feedback through the revision process. A systemic or systematic approach is characterized by an input-output-feedback-revision cycle similar to a cybernetic model (see Figure 4).

A considerable body of literature has emerged in recent years that describes and supports the application of systematic instructional design models to education (Briggs & Wager, 1981; Dick & Carey, 1990; Gagné, Briggs & Wager, 1988;
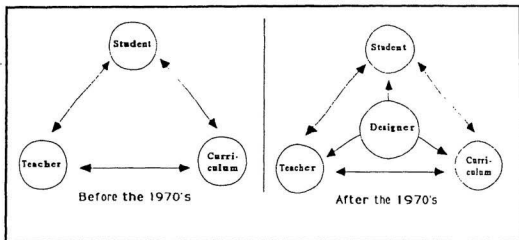
Figure 3.   The Major Elements of the Instructional Process
(Darwazeh, Branch, El-Hindi, 1991, p. 2).
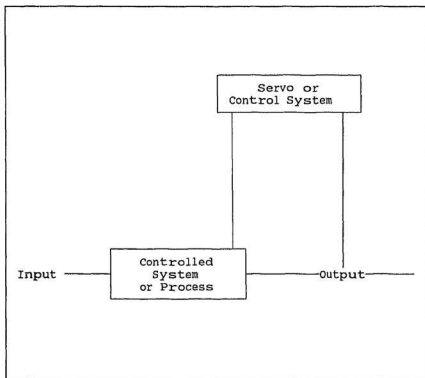
Figure 4. Basic Cybernetic Model (Pratt, 1978, p. 5).

Gustafson, 1981; Merrill, 1983; Merrill, Reigeluth & Faust, 1979; Merrill & Tennyson, 1977; Pratt, 1980; Reigeluth & Stein, 1983). The underlying assumption being that the planning of instruction is not always carried out systematically, with the result that it is not always effective or efficient, and hence does not always meet the learner's needs (Earle, 1985, p. 16).

An assumption has developed that there is a correlation between what instructional designers do when designing instruction and what teachers do in their planning routines. Instructional designers select, adapt, develop and refine a wide variety of instructional products (Martin, 1984). The notion is that successful teachers engage in similar actions when preparing to teach. But does this classify teachers as instructional designers? According to Kerr (1981):

> Teachers are and are not instructional designers.
> Most teachers have not had formal training in the
> procedures commonly used by instructional design-
> ers: many find it difficult to shift their think-
> ing into instructional design (ID patterns) when
> they are asked to do so as part of a course or
> workshop. (p. 364)

The science of instructional design may be defined as a field of study aimed at improving and developing instruction through the systematic application of learning theories, instructional theories and educational methodology (Darwazeh,

in press, p. 2). Accordingly, the role of the instructional designer may be defined as one who understands and practices the activities of the instructional design science in order to accomplish a specified purpose under a certain condition (Martin, 1984; Reigeluth & Stein, 1983).

Darwazeh (in press) defines the teacher's role as one which includes all responsibilities which are involved in planning, developing, implementing, managing and evaluating instruction in order to facilitate students' learning and to accomplish the goals of the instructional process. Dick and Carey (1990) and Gagné et al. (1988) perceive the teachers' role as that of designer of instruction with accompanying roles of implementer and evaluator of instruction. Others have taken the stance that generic instructional design skills have value for the classroom teacher (Applefield & Earle, 1990; Beilby, 1974; Dick & Carey, 1990; Dick & Reiser, 1989; Stolovich, 1980). In fact taking on the role of instructional designer, on the part of the classroom teacher, should have a great influence on the quality of the teachers' professional performance, and hence, on the level of their students' academic achievement.

It is believed by educational technologists that the role of instructional designer is a very important and necessary one in the classroom of the 1990s, not only from the perspective of the teacher involved in direct teaching, but from the perspective of the behind-the-scene instructor--the curriculum

writer. Both groups need to assume the instructional design
role, with curriculum writers developing textbooks and
instructional programs, and teachers routinely planning
classroom activities. Darwazeh et al. (1991) states that
involvement of the teacher in practicing the instructional
designer role will greatly contribute to the effectiveness of
instruction and to the efficiency of the instructional system
as a whole (see Figure 5).

Learning Theories

A basic premise of educational technology and therefore
of instructional development is that instruction is
antecedently related to student learning. Despite the
achievements of the developer, learning must still be done by
the student (Hoban, 1974, p. 462). Consequently a solid
foundation in learning theory is an essential element in the
preparation of instructional developers, as it permeates all
dimensions of their work (Schiffman, 1986, p. 17). Without a
broad-based foundation in learning, the practice of instruc-
tional development becomes narrowly focused on the means to
achieve learning, that is the steps in the system model,
rather than on the rightful end, which is learning for the
learner.

Bigge (1982) has defined a learning theory as a "system-
atic integrated outlook in regard to the nature of the process
whereby people relate to their environment in such a way as to
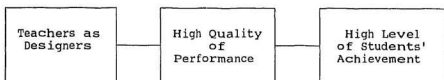
Figure 5.   Input-Output Relationship Between Designing, Teaching, and Students' Achievement (Darwazeh et al., 1991, p. 4).

enhance their ability to use both themselves and their environment more effectively" (p. 3). He also expressed the opinion that there are "at least 10 different theories in regard to the basic nature of the learning process which are either prevalent in today's schools or advocated by leading contemporary psychologists" (p. 8).

The research base for the creation of the field of instructional development has been derived from two psychological paradigms: behaviorist and cognitive (Seels, 1989). Each paradigm presents a perspective on learning that fosters selected perception of problems and procedures. The field of instructional development has not stressed the importance of using one paradigm over the other, but rather it has incorporated theories from both paradigms.

From the beginning when Pressey's teaching machine clattered onto the educational scene in the 1920s, it was closely tied to an underlying theory of human learning. The dominant force in psychology at the time was behaviorism, hence the principles of learning by reinforcement guided the use of teaching machines. The instructional paradigm illuminated by this orientation was simple: "Identify the medium of instruction as the instructional stimulus and assess the resultant effects on learner behaviour." In essence, "the behaviourist emphasized how to direct and measure learning by specifying ways to control practice through cuing and reinforcement" (Seels, 1989, p. 13).

According to the behaviourists, learning is merely the disposition to behave--the patterned performances elicited by the instructional events. By utilizing such a theory base technologists are not concerned about the knowledge or the mental processes that enable that performance. Classical behaviourism has been most obvious in techniques and principles for designing linear programmed instruction. Programs systematically elicit responses from students which successively approximate learning behaviour, stated as the terminal outcome of instruction.

Cognitive Paradigm

The theoretical perspective on the psychology of learning and instruction has experienced a progressive shift from the early 1950s to the beginning of the 1980s. This shift has been from the behavioural perspective to the cognitive perspective, and it has been matched by a corresponding shift in the research and implementation of instructional technology supporting individualized instruction. Hence the cognitive model of learning has largely replaced behaviourism in psychological circles (Jonassen, 1985). The view of this paradigm was first formally stated by the German philosopher-psychologist, Max Wertheimer in 1912. The focus of Wertheimer's position is that "an organized whole is greater than the sum of its parts" (Bigge, 1982, p. 57-58).

In the 1920s the psychologist Kurt Lewin added new

concepts and coined new terminology in the spirit of Werth-
eimer's belief to "develop a field psychology" (Bigge, 1982,
p. 59). "Life space" was Lewin's basic concept. "This
includes everything that one needs to know about a person in
order to understand his concrete behaviour in a specific
psychological situation at a given time" (Bigge, 1982, p.
170). Although the current cognitive field theory is substan-
tially influenced by the pioneer field psychology of Kurt
Lewin, it should not be thought of as mere regurgitation of
Lewin's position. This is evident in the transition to
cognitive theories and assumptions about learning which are
slowly being implemented into the practice of educational
technology.

The major focus in learning today is upon the mechanisms
by which a learner perceives the environment, processes and
stores information and retrieves it for use, as opposed to the
focus on overt responses which was suggested in Skinnerian
behavioural principles. This emphasis has come about because
of the recognition that indeed each learner is unique, a
product of many experiences, and that messages appear to be
meaningful only as each person gives them meaning. In
essence, for the cognitive psychologists learning is viewed as
a constructive process where changes occur to the internal
representation of knowledge (Wildman, 1981). Currently,
instead of learning responses, the emphasis is on learning
information (Low, 1981; Shuell, 1987). Learning is now seen

as an active process where experience contributes to the development of meaning and understanding (Wildman & Burton, 1981). In focusing on the individual learner, the cognivists must know more about the learner's knowledge; not only what the person knows that is correct but also what he or she knows that is incorrect. Cognitive psychologists have been concerned with diagnosing learners' misconceptions and using them as the basis for tutoring (Putnam, 1987; Stevens, Collins & Golden, 1982).

Included among the acclaimed psychologists who have made influential contributions to the cognitive field theory, and to instructional development, are David Ausubel and Jerome Bruner. According to Ausubel (cited in Orlick et al., 1985), a proponent of the deductive learning strategy as an alternative to the discovery or inductive mode, "the learner will be able to translate newly learned content into something meaningful if materials and learning experiences are carefully structured by the teacher" (p. 297). Romiszowski (1981) notes that Ausubel "stands in opposition to the discovery movement ... [and] argues that much instruction ... is successfully performed by the process of exposition leading to meaningful reception learning" (p. 173).

"The Ausubel model of instructional thinking is designed to teach organized bodies of content and [thus] is dependent on a hierarchy of knowledge" (Orlick et al., 1985, p. 302). Consequently the deductive mode of inquiry, according to

Ausubel (1968), includes three basic components: advance organizers; progressive differentiation; integrative reconciliation. The advance organizer provides the student with an overview and focus. According to Knirk and Gustafson (1986), "students learn more rapidly when advance organizers are used with instructional design to move them from one level of preparation to that of concrete operation" (p. 127).

The progressive differentiation provides the student with items of information that can be more easily understood, while the integrative reconciliation provides meaningful learning by helping students to understand the relationships among the elements of the content being taught. In such a manner the learner is seen as "a whole organism who responds as a whole to a whole situation" (Tanner & Tanner, 1980, p. 418).

The foremost living proponent of the discovery approach is Jerome Bruner. Although the emphasis on the discovery approach or inquiry instruction seems to be a 20th century phenomenon, the technique itself is old. The distinguished trio of ancient Western culture--Socrates, Aristotle and Plato--were all masters of the inquiry processes. Orlick et al. (1985) notes:

> It can be argued that the processes they used have since effected the way most people in our Western civilization think. That heritage has given us a mode of teaching in which students are vitally involved in the learning and creating processes.

It is through inquiry that new knowledge is dis-
covered. It is by becoming involved in the process
that students become historians, scientists, econ-
omists, artists, business persons, poets, writers
or researchers. (p. 253)

"Bruner's research in the late 1950s was influenced by
the ideals of John Dewey and led to the publication of his
classic The Process of Education" (Orlick et al., 1985, p.
253). Bigge (1982) notes that it was this research that led
Bruner to the assumption that "Subjects do not mechanically
associate specific responses with specific stimuli but rather,
tend to infer principles or rules underlying the patterns
which allow them to transfer their learning to different
problems" (p. 229-230).

Romiszowski (1981) notes that Bruner (1960) believes the
child moves through three stages as he learns. These three
stages are described as follows:

The first level is the enactive level where the
child manipulates materials directly. He then
progresses to the iconic level, where he deals with
mental images of objects but does not manipulate
them directly. Finally he moves to the symbolic
level, where he is strictly manipulating symbols
and no longer mental images of objects. (p. 173)

Bigge (1982) considers Gagné to be one of America's
leading learning theorists. Gagné's theory "centers on a

loosely defined behaviorism, but contains marginal overtones
gained from apperception theory and the cognitive-field family
of learning theories" (p. 13). His eight conditions of
learning, and his ideas of a learning hierarchy, have led to
the belief "that instructional procedures should be systemati-
cally designed [thus] his ideas have had tremendous influence
on the field of instructional development" (Tobin, 1989, p.
21).

In the 1960s the idea of task analysis was expanded
through the work of Gagné in his learning hierarchy model.

> To study the effects of hierarchical structure on
> learning, Gagné employed a methodology that has
> long proved valuable in the sphere of business and
> industry. That method is known as "task analysis".
> Careful sequencing of tasks has been and continues
> to be a critical element of efficient production in
> the industrial and technological sectors and even
> in education. (Orlick et al., 1985, p. 56)

Industry has not been alone in recognizing the value of
carefully analyzing tasks and of identifying the sequential
relationships of component activities. Pratt (1980) notes
that "task analysis is the process of listing the component
tasks the students would need to be able to perform if the aim
itself were to be attained" (p. 166). In education, the
importance of sequencing subject matter content for instruc-
tional purposes has been acknowledged for a considerable

period of time. Tyler (1949) viewed sequencing as one of the three major criteria that must be met in organizing a curriculum (p. 5). In the 1950s the process was refined primarily through the efforts of Miller, cited in Reiser (1987), who developed a detailed task analysis methodology while working on projects for the military service (p. 23).

Through the impetus of Gagné's investigations of learning sequences, however, emphasis shifted from the sequence of content per se to the analyzing and ordering of content as it relates to the learning process. This emphasis was aided and thus channelled by Gagné's belief that the tasks and sub-tasks identified through task analysis often have a hierarchical relationship to each other, so that "in order to learn successfully the learner must be able to succeed at one level before he can continue to the next" (Hartley, 1978, p. 34).

The instructional development approach is founded on Gagné's (1961, 1970) belief that in addition to being sensitive to patterns of organization in subject matter, educators are encouraged to focus on the sequential relationships of the subskills (thinking processes and behaviour) that must be acquired prior to learning higher-ordered behaviour and skills. Dick (1987) concurs with Gagné, noting that "the instructional development approach not only indicates the skills that should be included in the instruction [but also] the sequence in which they should be presented" (p. 54).

Bloom (1956, cited in Tanner & Tanner, 1980) divided the

types of learning that take place in the schools into three areas: cognitive, affective, and psychomotor domains. Most of the time teachers at both the elementary and secondary levels are concerned with the cognitive domain. The most widely used classification for analyzing objectives for use in the design of instruction is that of Bloom and his associates. By classifying the processes in each domain into a hierarchical order from simple to complex, Bloom and his associates provided one of the most systematic approaches to the classification of behavioral objectives. His taxonomy is the most widely used analytical tool in the development of instruction (Tanner & Tanner, 1980, p. 168).

The contributions of Bloom's taxonomy of educational objectives to the instructional milieu have been considerable. Not only has it been used as an educational tool to analyze instructional practices since 1956, the taxonomy has gained widespread acceptance in the teaching profession and has proved to be a usable tool for curriculum development, instructional development, and evaluative planning. According to Romiszowski (1984), faith in Bloom's taxonomy has "rendered it difficult for successive generations of educational thinkers to break away from the tripartite division of education into [three domains of learning]" (p. 35).

Hawkridge (1978) is of the belief that:

... [while] Bloom [does not] think of himself as an educational technologist, yet the "organized knowl-

edge" about objectives provided ... was assimilated
into the systematic approach to the design of
learning advocated by programmed learning enthusi-
asts and [by] educational technologists.   (p. 378)

Implications for Instructional Development

Educational technology is in transition, a transition
with most of its roots in the behavioural sciences (Jonassen,
1985).   The direction of this transition is towards the
cognitive sciences (Merrill, Lowallis & Wilson, 1981).   The
foundations of cognitive science and its design implications
are expressed in the cognitive theories of learning, which
make assumptions about the constructive nature of the learning
process.   Constructive conceptions of educational technology
are also emerging.   For example, Winn's (1974) Open Systems
Model of Learning is concerned with learning as the modifica-
tion of one's cognitive structure through experience.
Instructional design models are beginning to assume that the
purpose of instruction is to map the structure of content as
isomorphically as possible on to the cognitive structures of
the learners (Wildman, 1981; Wildman & Burton, 1981).

A second major implication of this cognitive revolution
for educational technology is the emergence of learning
strategies which are rooted firmly in the cognitive informa-
tion processing theory.   Learning strategies purposefully
promote the practising of specialized skills for integrating

information into the learners' rearranged cognitive structures. The potential for having learners, rather than instructors or technologists, intentionally control their learning processes is great. If technologists completely accommodate a cognitive view into their processes, they will accept that technologies should not define as their goal the replication of behavioural responses, but rather the activation of covert mental processes required to build an appropriate knowledge structure, that is, one that adequately represents reality in the learner (Jonassen, 1984).

Models of Instructional Development

A systematic procedure for solving instructional problems is frequently called an instructional development model (Knirk & Gustafson, 1986, p. 19). Thus, the raison d'etre of an instructional development model, it would appear, is to focus on the best way to resolve an instructional/learning problem.

Many models of instructional development have been advanced since the systematic approach was developed and refined during World War II. Gustafson (1981) states:

Of necessity one must pick an arbitrary date from which to trace the origins of the ID model building process. Otherwise one can make the case that the snake in the Garden of Eden used a model to develop his obviously effective message. (p. 5)

After the war one of the most influential model builders was Silvern (Gustafson, 1981). The model by Hamreus (1968) is another classic. However instructional development as a specific term was not used by these authors. As a term "instructional development" which is defined as a process for improving instruction, appears to have had its origin in a project conducted at Michigan State University from 1961-1965. Entitled <u>Instructional Systems Development: A Demonstration and Evaluation Project</u> (1967), this project, directed by Dr. John Barson, produced one of the early ID models. The Barson Model is notable in that it is one of the few models ever subjected to rigorous evaluation (Gustafson, 1981, p. 5).

Several reviews of instructional development models have been made. Twelker, Urbach and Buck (1972) reviewed five models; Stamus (1973) surveyed 23 models; Montemerlo and Tennyson (1976) found more than 100 manuals containing models published since 1951. Logan (1977) examined approximately 60 systems-based authoring tools and procedures for one component of one particular model. Andrews and Goodson (1980) reviewed 40 models; and Gustafson (1981) reviewed 12 models.

In an attempt to reduce such an awkward mass of instructional development models into a manageable scheme, Gustafson (1981) developed a taxonomy of four model categories, recognizing that even though "there are literally hundreds of models there are only a few major distinctions. Many of the models simply are re-statements of earlier models by other

authors using somewhat different terminology" (p. 47). Despite such a reassurance, Barrows (1984) cautions that "there is no single, correct way to do it" (p. 40). The key to success for the educator is simply "to have maybe a half-dozen really different models in his/her tool bag and know how to modify them for each new situation" (Gustafson, 1981, p. 4).

The four categories that the Gustafson's (1981) taxonomy identified include: product development models; systems development models; organizational development models; and classroom development models.

Product Development Models

In their goal of preparing an effective and efficient product, the product development models focus on production of one or more specific instructional products. The assumption is made in this type of model that the development of a product is a given. In addition, the objectives may already by partially determined. The two product development models that Gustafson (1981) reviews are the Banathy Model and the Baker and Schutz Model.

Systems Development Models

The goal of the system focused models is the development of instructional output. Gustafson (1981) reviews the Instructional Development Institute (IDI) model and acknowl-

edges that it is one of the most widely publicized instructional development models in existence (p. 29). In its approach the IDI model is essentially linear, incorporating three stages--define, develop and evaluate. This model was "created as a tool for public school personnel who desire to tackle large-scale instructional problems. The IDI model is problem oriented, specifies team development, and assumes distribution or dissemination [throughout the system] of the results of the effort" (Gustafson, 1981, p. 31).

Organization Development Models

According to Gustafson (1981), an organization focus for instructional development models has as its goal, "not only improving instruction, but also modifying or adapting the organization and its personnel to a new environment" (p. 7). He further states that, "while much has been written about organization development, the activities described often do not indicate systematic analysis, design, development and evaluation" (p. 39). While Gaff (1975) is of the opinion that organizational development and instructional development differ distinctly in activity, other models such as the Blondon Model and the Blake and Moulton Model, as described by Gustafson (1981), have aimed at combining the rudiments of organizational development into a single system.

Classroom Development Models

Gustafson (1981) surveys five classroom models including the Gerlach and Ely Model, the Kemp Model, the Davies, Alexander and Yelon Model, the Briggs Model, and the DeCecco Model. These five models are structured on the supposition that,

Due to the on-going nature of the instruction, often accompanied by a heavy teaching load, there is little time for developing new materials. Also, funds and time for development are usually limited. Also since many elementary and secondary teachers teach any topic once a year, they have less concern for the rigorous formative evaluation associated with courses and workshops which are offered on a highly repetitive basis. (p. 10)

The models Gustafson (1981) includes in this category have been found to be acceptable and readily understood by teachers, and they are usually viewed as a general road map to follow. The models described have many common features and the steps followed are similar. However, he expresses the belief that "even general models of the instructional development process are not widely known to and adopted by teachers" (Gustafson, 1981, p. 10).

The Gerlach and Ely Model is a mix of linear and simultaneous design/development, but it is generally considered linear in its orientation, with several steps seen as occur-

ring simultaneously. The entry point of this model calls for identifying content and specifying objectives as simultaneous interactive activities, thus making it one of only a few which recognizes the content orientation of teachers (Gustafson, 1981, p. 11). According to Gustafson, the strength of this model lies in its uncomplicated nature, thus making the process it describes easily identifiable.

The Kemp Model guides its user to think about the general problems and purposes of instruction, thus it mirrors the same essential qualities as the Gerlach and Ely Model. However, this model differs in its suggestion that instructional development "is a continuous cycle with revision as an on-going activity associated with all eight steps" (Gustafson, 1981, p. 13).

The development in the Davies et al. Model, also referred to as the Learning Systems Design Model, is presented in a more linear fashion than in Kemp's Model, although some steps may occur simultaneously. The eight-step process is constructed within a framework of three elements: analysis, design and evaluation. The strength of the Davies et al. Model, according to Gustafson (1981), is "the considerable amount of detail presented on learning psychology as applied to instructional design" (p. 23), thus make the influence of Gagné's hierarchy quite apparent. However, other steps in the model suffer due to less depth of treatment.

The Briggs Model is presented in a linear fashion. Its

strengths include the concern for students who lack prerequisites, how to deal with media selection, and the narrative, extensive information on the input and output of each step in the process that is provided (Gustafson, 1981, p. 20).

The DeCecco Model is not really an instructional development model, but rather a teaching model designed with boxes and arrows (Gustafson, 1981, p. 20). Its ease of understanding is its strength. However, the model fails to ask why the instruction is being offered or what alternatives are available for teaching the objectives, although the model does have the virtues of objectives specification, evaluation and revision.

Summary.

Instructional development models, then, are in a very real sense management tools that allows individuals to examine all aspects of a problem, to interrelate the effects of one set of decisions to another, and to use the resources at hand optimally to solve the problem.

Clearly the approaches to systematic development vary from very simple models to very complex specifications of step-by-step approaches, although all models have many similarities (Twelker et al., 1972, p. 1). Thus the application of instructional development in education may lead to a number of outcomes, depending on the particular problem focused upon. The outcome that captures the imagination of

most classroom teachers is the provision of learning experi-
ences that somehow are better than what are currently in use.

As a result of studies in cognitive learning and memory,
researchers in cognition have demonstrated considerable
progress in understanding the cognitive processes, such as
selective attention, imagery, verbal encoding, memory and
retrieval (Paivio, 1971). The implications for instructional
development is that in the future, instruction should begin
with observation of the learner, knowledge of constructive
processes and individual differences. Wittrock (1974)
believes that teachers need to recognize individual differ-
ences and to facilitate the constructive processes of the
learner. Mertiz and Olander (1980) believe that the improve-
ment of the instructional process through the use of instruc-
tional technology has resulted in an effective change in
students. The effectiveness of learning is measured by the
demonstrated change in recorded behavior from the beginning to
the end of each learning experience.

Exploring bodies of new knowledge in original, effective
ways will allow instructional development to remain a growing
and relevant field. Instructional development has as its
focus the individual student and seeks to enhance each
person's growth through the most effective means possible.
Therefore it has no need to define "one" right way to accom-
plish learning, but embraces the concept that for each
person's inner perception a unique learning formula could be

effective.

Learning theories which have been advanced since the 19th century have all contributed in some manner to the field of instructional development. While there are no conclusive answers to questions regarding the learning process, nor is there universal acceptance of any one theory as superior to others, all theoretical bodies including behaviourism and cognitive field theories have added to the knowledge of the instructional developer.

Psychology is not a field of study characterized by a body of theory that is internally consistent and accepted by all psychologists. Rather, it is an area of knowledge characterized by the presence of several schools of thought. In some instances these may supplement one another, but at other times, they are in open disagreement. (Bigge, 1982, p. 5-6)

Summary

The field of educational technology, duly recognized as a subdiscipline of education since the 1940s, has evolved through three phases: early audio-visual with emphasis on products; later educational media, which incorporated some elements of instructional design; through to the emergence of instructional development and the systemic approach to the

solving of instructional problems.

Instructional development has appeared in the professional literature since the mid 1960s. But what about in practice? In the military, instructional development is flourishing. The military in both the United States and Canada have developed their own instructional development model, and all corporations doing business with the military use that model so that communication among instructional developers and other training specialists is facilitated.

In the United States, business and industry employs numerous instructional developers who work in training and development departments. Approximately a decade ago, this setting had become one of the three major job market areas for instructional developers. College and universities make use of instructional developers. They offer courses in instructional development mostly in faculties of education. Instructional developers also work in faculty development centres, and in departments of continuing education and distance education.

What of the formal school system? For it is surely this milieu that educational technologists focused on in the 1950s and 1960s when they sought new systems to solve instructional problems. Has instructional development become an established practice in the K-12 school system? The traditional role of the classroom teacher is described by Romiszowski (1984) as follows:

The teacher in the "traditional" teaching situation (whatever that is) supplements his presentation with visual aids, refers the learners to textbooks and sets reading assignments, etc. However, he remains the principal medium of instruction and the principal learning resource at the learners' disposal. (p. 13)

There is little evidence that classroom teaching practices are changing, despite the move away from the textbook to the incorporation of multiple resources and approaches. Studies completed in recent years as summarized by Brown (1988) indicate:

1. Teachers rely on textbooks and are concerned with the coverage of all the content in them.

2. Teachers have to control the class in order to teach.

3. Teaching goals are vague rather than specific.

4. Teachers perceive themselves to be autonomous in their classrooms (p. 10-11).

Tobin (1989) states that the major difference between actual teaching practices and what teachers are expected to do in their teaching can be summarized as shown in Figure 6. "In cooperative program planning and teaching ... teachers do more than deliver instruction. They also design effective instruction" (p. 108).

Nature of Teaching	Expectations for Teaching
Isolated activity	Cooperative planning
Teaching autonomy	Team teaching
Vague goals	Precisely defined goals and objectives
Group instruction	Individualized instruction
Reliance on textbook	Variety of resources, different formats
Teacher control	Maximum freedom for the learner
Teacher as essential in the learning process	Teacher as creator of learning experiences leading to students becoming independent learners
Self-contained classrooms	Different locations

Figure 6. The Nature of Teaching and Expectations For Teaching as Exemplified in School Library Media Programs (Brown, J. (1988), Changing teaching practices to meet current expectations. _Emergency Librarian_, _16_, p. 12).

If education is to meet the needs of individual students there must be an increased dependence upon well-designed, effective instruction. While some teachers have been doing this intuitively for years, Dick and Carey (1978) state: "It will become more important for teachers to have technical skills that will enable them to design and implement instruction in the classroom ... Knowledge of instructional design techniques will greatly enhance each teacher's ability [to do this]" (p. 4).

Smith (1979) has proposed that there are six domains of knowledge and skills essential to the teacher. One of these knowledge areas is instructional development. Gorman (1978) also included instructional development as one of the major tasks of the teacher. These authors recognize instructional development as a critical competency area for the teacher, and believe it essential for teachers to have instructional design skills.

If teachers need instructional development skills in order to design effective instruction, what level of expertise is required? Snelbecker (1987) states:

> The classroom teacher need not have the high level
> of expertise we might expect from full-time pro-
> fessional instructional developers but teachers do
> need at least fundamental instructional design
> strategies to plan, evaluate, and modify instruc-
> tion as a result and continuing part of their

classroom work. (p. 35)

This study was designed to discover if, in fact, the teachers in our secondary schools have the instructional development knowledge and competency which this researcher deems necessary to participate as partners in cooperative program planning and teaching.

CHAPTER III

Methodology

Introduction

In an attempt to determine whether teachers at the secondary level possess instructional development knowledge and competency, a study was carried out within two school boards in Western Newfoundland. To gather information the study used a written survey instrument, followed by a semi-structured open response interview with two selected partici-pants.

The Population

The population for this study included all secondary school teachers employed by two school boards on the west coast of Newfoundland, namely the Humber St. Barbe Roman Catholic School Board and the Deer Lake - St. Barbe South Integrated School District. The two boards collectively serve 16 communities and employ 213 secondary teachers. Permission was sought from the superintendents of both boards to survey teachers, and program coordinators at the district offices agreed to assist the researcher in the distribution and/or collection of the questionnaires. Questionnaires were then forwarded to the 16 schools under the jurisdiction of the boards with directions to school principals to distribute them

to each secondary teacher. With a total population of 213 participants, it was decided to survey the total population rather than a sample.

Development of the Instruments

Given that the primary purpose of the study was to determine instructional development knowledge and competency among secondary teachers in Newfoundland schools, the researcher first considered adopting the instruments developed by Tobin (1989) and Gallant (1989), and used in similar studies. It was decided not to adopt either of these instruments for the following reasons.

1. Both studies used as a basis for development of the instruments the instructional development knowledge and competency areas delineated in the AECT Task Force Report on Instructional Development Competencies (1982). These competencies were deemed suitable for educational technologists intending to work in business and industry, as opposed to the school setting.

2. Both studies indicated difficulties in obtaining responses. Gallant (1989) conducted structured interviews with 128 teacher-librarians, and while all participated, having given prior approval for the interviews, the majority cited discomfort with the terminology of the questions and noted that they would likely not have agreed to the interview,

had they realized what it was to consist of. Tobin (1989) used a written questionnaire, and obtained only a moderate response rate (54%). In addition, very negative feedback was received regarding the questionnaire and its design.

The researcher developed an instrument very similar in design to those used by Gallant (1989) and Tobin (1989). However, the basis for the development of the instrument was the classroom models of instructional development as classified by Gustafson (1981). In particular, five models were selected for a content analysis: Gerlach and Ely Model; Kemp Model; Davies et al. Model; Briggs Model; and DeCecco Model.

These models, according to Gustafson (1981), had many common features and similar steps to be followed. Gustafson describes them as having been "found to be acceptable and readily understood by teachers [and] usually viewed as a general road map to follow" (p. 10). The language in these particular models is deemed to be familiar to practicing classroom teachers.

The five models were subjected to semantic content analysis, in accordance with Krippendorff (1980), who describes such analysis as "a research technique for making replicable and valid inferences from data to their context" (p. 21). Competency areas derived through the content analysis formed the main section of the instrument. In addition, sections on demographic information and on general conceptual knowledge of instructional development were

included. In all the instrument contained 48 items, 23 of which were closed response items, and 25 of which required short open-ended responses (see Appendix B).

Upon completion of the development of the instrument, it was submitted to an expert for several iterations of review. Feedback from the expert indicated that the terminology, length, and content itself was suited to classroom teachers, and had the potential to adequately reflect instructional development knowledge and competency among that group.

In anticipation of problems similar to those experienced by Gallant (1989) and Tobin (1989), the researcher decided to plan follow-up interviews with a few participants who had chosen not to return the instrument. A semi-structured interview guide was developed, dealing with participants' feelings regarding the instrument, their knowledge of instructional development, and their preferred instructional planning strategies. In particular the follow-up interview was expected to establish the following:

1.   Whether or not failure to respond was due to the usual problems encountered in conducting survey research—lack of time, poor motivation, or apathy.

2.   Whether or not participants' lack of knowledge of instructional development resulted in feelings of intimidation.

3.   How teachers planned instruction, in the absence of instructional development knowledge and competency (see

Appendix C).

Procedures of the Study

Permission was obtained from the two school board superintendents, via interviews, to conduct the study within the school boards under their administration. The interviews were followed by a formal letter confirming the permission and arranging dates for the study to commence (see Appendix A).

The study was initiated, with an anticipated completion date of late October, 1990. Prior to the delivery of the instruments to each school, a letter was forwarded to each principal regarding the study (see Appendix A). The instruments, with accompanying cover letters, were circulated to participants by three school board program coordinators and by an assistant superintendent, all of whom had agreed to assist in the implementation of the study.

Early in the last week of October the researcher contacted the principals of the 16 participating schools by telephone to inquire regarding the progress of the study. Principals indicated that the instrument was not being well-received, hence the researcher forwarded a reminder to all participants on October 29, 1990, requesting their cooperation and assistance (see Appendix A). On November 19, 1990 a third notice was sent to all principals, asking them to encourage teachers to complete the instrument (see Appendix A). To that

time 89 instruments, or 42%, had been r turned. By early
December the researcher determined that data collection should
cease. No further instruments had been returned.

In January, 1991 two participants in the study who had
failed to return the instrument were selected for follow-up
interview. Participants for follow-up were determined as
follows.

1. In one small school, two instruments from a total of
nine had not been returned. By personally contacting the nine
secondary teachers, the researcher determined which teachers
had not returned the instruments. Having explained the
purpose of the interview to these two teachers, their partici-
pation was requested. One teacher agreed to the interview;
the other refused.

2. The second participant for the follow-up interview
was selected with the help of a school board assistant
superintendent, who asked a school principal to determine if
there was a participant on his staff willing to be inter-
viewed. The principal forwarded the name to the researcher,
who then arranged for the interview.

Follow-up interviews were conducted in early January,
1991 using the semi-structured interview guide developed by
the researcher. Each interview was approximately one hour in
length, and responses were recorded on audio tape. By mid
January 1991, all phases of the implementation of the study
were completed.

CHAPTER IV

Presentation of the Findings

Organization of the Findings

The goal of the study was to determine if secondary teachers possessed general knowledge of instructional development from a conceptual perspective, and knowledge of the basic instructional development process which forms the foundation of all instructional development activities.

Of the 213 instruments distributed, 89 were returned, with a response rate of 42%. However, in preliminary analyses of the data, it was discovered that seven instruments contained little data of any value to the study. Hence, the data were analyzed based on 82 completed instruments.

The results of the written questionnaire were analyzed qualitatively and are presented in terms of frequencies and percentages and in descriptive terms. Instructional development competencies derived from Gustafson's (1981) five classroom models formed five competency areas in one section of the questionnaire. In addition, teachers demographic data were analyzed and results are reported in terms of frequencies and percentages. The follow-up interviews on two participants who failed to return the survey were content analyzed according to Krippendorff (1980).

The information is organized into four sections, as follows. In Part One the results of the demographic data are

presented. This information was collected to achieve some insights into the educational background and teaching experience of the population.

Part Two gives the details of the result of the questions asked pertaining to particular knowledge of instructional development competency areas. In questionnaires of the self-reporting type it is relatively simple for participants to report in a positive manner without possessing a full understanding of the terms. To avoid false positive responses, questions on each of the competency areas were patterned by successive difficulty in order to investigate participants in-depth knowledge of the competency area.

For closed response items in each competency area the results are presented in terms of frequencies and percentages, in table form. If the number and percentages do not add up to 100% of the participants, the cause may be attributed to (a) the respondents' failure to reply to a specific question, (b) the failure on the part of the respondent to correctly choose the requested number of required answers, or (c) the question permitting the selection of more than one answer.

Part Three presents the results of the participants' opinions concerning various statements which mirror (a) either a classroom teacher or instructional developer view of teaching, and (b) either a conceptual or functional view of instructional development. Part Four presents data on the two interview subjects. These data are presented in anecdotal

accounts, using the participants' own language as much as possible.

Part One: Characteristics of the Population

Participants were asked to indicate the following: (a) current teaching assignments; (b) teaching experience; (c) certification level and program of studies completed; (d) degrees obtained; (e) instructional development course(s) taken; and (f) the source of their knowledge (if any) of instructional development.

The 82 participants indicated a variety of teaching assignments, ranging from one to six grades encompassing grades 7 through 12.   The grades included in secondary schools in the Province of Newfoundland are most frequently divided as follows: grades seven through nine, junior high school, and grades 10 through 12, senior high school. Many teachers spanned both levels (see Table 1).

Table 1
Participants' Teaching Assignments

Levels Taught	N = 82	Percentage
Junior High School	6	7
Senior High School	17	21
Junior and Senior High School	59	72
Total	82	100

Table 2 describes participants' years of teaching experience. Overall they proved to be a very experienced group, with more than half (62%) having at least 10 years experience, and nearly one quarter with 20 or more years teaching experience.

Table 2

Participants' Years of Teaching Experience

Years	N = 82	Percentage
0 - 4	10	12
5 - 9	21	26
10 - 14	15	18
15 - 19	16	20
20 - 24	14	17
25+	6	7
Total	82	100

Teacher certification levels range within the province from levels four through seven. Certificate level four is generally assumed to be the equivalent of one undergraduate degree or four years of university, while levels five through seven require additional degrees, diplomas, and/or equivalent

years of university. The top level requires a graduate
degree.

Participants are well trained teachers, with the majority
holding level six certificates. Only a few have the basic
minimum requirements of level four certificate (see Table 3).

Table 3

Participants' Teaching Certificate

Certificate	N = 82	Percentage
4	3	4
5	17	21
6	42	51
7	19	23
Total	81	99

Teacher preparatory training is categorized as either
primary, elementary or secondary. While it might seem obvious
that secondary teachers would have completed the secondary
training program, this is not always the case. Because of the
number of small rural schools and the province's denomina-
tional school system, teachers are frequently assigned to
positions at variance with their preparatory training. While

the majority of secondary teachers have completed the second-ary training program, approximately one third have completed the elementary program (see Table 4).

Table 4

Participants' Program of Studies

Program	N = 82	Percentage
Primary	0	0
Elementary	18	22
Secondary	59	72
Total	77	94

In addition to the specific preparatory training programs completed by participants, they were asked to indicate the number and category of degrees completed. Responses indicated that approximately one-quarter had completed graduate degrees, mostly Master of Education degrees.   The   majority   held Bachelor of Education degrees, with a significant number, approximately one quarter, holding the B.A.(Ed.) degree--a discontinued degree program replaced by the Bachelor of Education degree.   This is indicative of the age of the participants, since the B.A.(Ed.) degree was discontinued in

the early 1970s (see Table 5).

Table 5

Participants' Preparatory Training Programs

Degree	N = 82	Percentage
Master of Education	22	27
Master of Education (Learning Resources)	0	0
Master of Arts	1	1
Master of Science	1	1
Learning Resources Diploma	0	0
Bachelor of Arts	37	45
Bachelor of Science	23	28
Bachelor of Education	57	70
Bachelor of Arts in Education	20	24

In terms of instructional development background, there are few programs which include courses in instructional development, or elements of instructional development incorporated within courses. These include the M.Ed. (Learning resources), the M.Ed. (Teaching) and the Learning Resources Diploma. As can be seen in Table 5, no participants completed the Learning Resources programs. Two completed the Masters of

Education (Teaching). Participants were asked to indicate
whether or not they had completed the one instructional
development course available at Memorial University of
Newfoundland. That course is designed so that it provides the
student with a thorough functional level experience in
instructional development. Only eight participants, or 10%,
indicated that they had completed the course.

Participants claimed to have some familiarity with the
term instructional development. They indicated that their
knowledge was gained from a variety of sources (see Table 6).

It is apparent that a significant number of secondary
teachers feel that they have completed formal university
courses which led to knowledge of instructional development.
However, inclusion of instructional development content within
other courses offered by the Faculty of Education, Memorial
University of Newfoundland, is minimal. They have also read
professional literature on the subject. Nearly one half of
those teachers surveyed have learned what they know about
instructional development on the job.

Summary.

The participants were, for the most part, well educated
professionals with a significant amount of teaching experi-
ence. They indicated familiarity with the concept of instruc-
tional development, and most indicated having had some degree
of formal or informal exposure to the concept.

Table 6

Sources of Participants' Instructional Development Knowledge

Source	N = 82	Percentage
School Board In-Service	41	50
Conferences	27	33
Inclusion in Formal Courses at Memorial University of Newfoundland	21	26
Professional Literature	27	33
On the Job	36	44
Other (specify)	7	9
Inclusion in Formal Courses at Other Universities	5	6
Colleagues	2	2

Part Two: Secondary Teachers' Knowledge Re Specific Competency Areas

Section B of the instrument contained items on five basic components of instructional development. Through semantic content analysis of five classroom teaching models of instructional development (see Chapter III, p. 60), it was discovered that those instructional development models deemed most suited for use with classroom teachers focused on the following

competency areas: behavioural objectives, learner analysis, evaluation, selection of teaching strategies/resources, and assessment of performance/revision.

These five competency areas formed the main section of the instrument, with each competency area containing a number of items ranging from simple to difficult. Data on the level of knowledge and competency of teachers are presented here in relation to the five competency areas.

Behavioural objectives.

One of the main underpinnings of the instructional development process is behavioural objectives. Consequently, it would appear that possession of expertise in this competency area is essential for all those who wish to use an instructional development approach in the planning of instruction.

Twelve questions were included in the behavioural objectives competency area, in an effort to ascertain the degree of knowledge teachers possess regarding the development and use of objectives. The first question simply asked participants to indicate if they used behavioural objectives. Eighty-three percent of participants responded in a positive manner, while nine percent responded negatively. The participants were then asked to indicate the source of the behavioural objectives which they made use of in their teaching (see Table 7).

Table 7

Participants' Source of Behavioural Objectives

Sources	N = 82	Percentage
(a) Those in the Curriculum Guide.	6	7
(b) Create My Own.	9	11
(c) Both (a) and (b).	52	63

An additional two percent of participants indicated that they used other sources for objectives; these included other texts and advice from coordinators and colleagues.

Participants were then asked if they felt they were capable of developing their own behavioural objectives. Eighty-three percent responded positively, while four percent felt they could not create their own objectives. In indicating types of objectives which they made use of on a regular basis, more than half of the participants noted that they used all the categories provided (see Table 8).

Participants were then asked to write an example of a behavioural objective that they had developed for a course. While 83% of those surveyed had indicated, in an earlier item, their capability regarding the development of objectives, only 31% demonstrated that they could correctly write an objective

Table 8

Participants' Development and Use of Type of Goals/Objectives

Types of Goals/Objectives	N = 82	Percentage
Unit Goals	60	73
Behavioural Objectives	52	63
Instructional Objectives	49	60
Learner Objectives	50	61
Teaching Objectives	46	56

that reflected the three recognized components, namely: (a) the condition; (b) the action verb; and (c) the standard or criterion. The number represents only 26% of the total participants. It seems that only approximately one-quarter of the participants were familiar enough with the concept of behavioural objectives to be able to actually produce one on request.

From an instructional development perspective, teachers should not only be competent in the development or refining of behavioural objectives--they should also be cognizant of the fact that objectives are related to distinct levels of learning. When asked about objectives hierarchies, 70% of participants replied that they were familiar with common objectives hierarchies such as those developed by Bloom,

Engelhart, Hill and Krathwohl (1956) and Gagné (1975). However in subsequent questions probing their knowledge of these objective hierarchies, only 37% of participants could recall the three objective domains as established by Bloom. Those who responded in a positive manner were asked to complete an open-response item in which they were asked to list the three domains of objectives. Eighty percent of the 37% positive responses correctly listed all three domains-- cognitive, affective and psychomotor. This however represents only 29% of all participants who responded to the survey.

Only 22% of those surveyed indicated that they would ensure that their objectives reflected various levels of knowledge and skills by comparing them to taxonomies such as those developed by Bloom or Gagné. While 61% agreed that behavioural objectives described the learners' performance, only 39% understood what was meant by the phrase terminal behaviour in relation to objectives. From the responses provided by participants, it can be concluded that in-depth knowledge regarding behavioural objectives is minimal. Secondary teachers are for the most part unable to develop their own objectives, or to determine the levels of those objectives they develop and/or use.

Learner analysis characteristics/entry level behaviour.

In order to discover secondary teachers' knowledge of this competency area, participants were asked to reply to a

set of six items. In all, the majority of teachers seemed to be aware of the key characteristics of learners which impact on instruction. Commonly listed characteristics included intellectual ability, reading levels, interest or motivator, home environment, age, and past experiences.

Eighty percent of participants surveyed indicated that they were aware of various learner characteristics when developing classroom instruction. However, only 60% were conscious of the fact that the entry level of the learners should determine basically where the teacher begins instruction. Approximately 70% were cognizant of the fact that learners' entry level can be determined through a variety of means that basically falls into the two categories of formal and informal assessment.

Participants were asked to select from three choices the correct view of the importance of entry level behaviour in sequencing content (see Table 9). Responses reveal that entry level behaviour is deemed important for nearly 75% of the participants, as they believe that it establishes the beginning steps in an instructional sequence. This high rate of correct responses, when compared with 32% who chose the first view and 27% who chose the third view, indicates that the majority of participants see the need to look at the individual learners and to aim instruction at meeting the needs of those individual learners, rather than focusing on the needs of the entire class.

Table 9

Participants' Views Regarding the Importance of Entry Level

Behaviour in Sequencing Content

Views	N = 82	Percentage
It ensures that instruction is geared to the same level of skills and knowledge for all the students.	26	32
It establishes the beginning steps in the instructional sequence.	59	72
It determines the adequacy of existing material.	22	27

(Note: The discrepancy that exists between the number of participants and the number of responses to this question is because in some cases more than one response was indicated. In fact, there were a number of participants who indicated that all three responses were important for sequencing content.)

In all, participants were aware of the need to focus instruction on the learners. Many were able to identify

characteristics of learners that impact on instruction, and the majority recognized the importance of identifying learners' entry level skills. In general, secondary teachers seem to be more knowledgeable about learner analysis than they are about behavioural objectives.

Evaluation.

Participants' knowledge of this competency area was determined through eight items. The first item asked teachers to indicate what they would use as a guide in developing unit tests and/or regular quizzes. Only 34% of participants responded that they would use objectives.

Scriven (1967) insists that evaluation should not only concern itself with the assessment of goal attainment but also with the values of the goals being sought by educational programs. For Scriven, the primary goal of evaluation is to indicate whether the goals themselves are worth achieving.

In the following question, participants were then asked what would be the next step, after objectives for a unit of instruction were generated or chosen. They were provided with four options, and asked to select only one such option (see Table 10).

Only five percent of the participants would evaluate the objectives as the next logical step to generating or choosing objectives for instruction, despite Scrivens' (1967) and others, advice regarding this step.

Table 10

Participants' Views Regarding the Subsequent Step Following the Setting of Objectives

Views	N = 82	Percentage
To prepare the objectives as a handout to your students.	12	15
To design your instructional procedures and/or strategies.	52	63
To make up your tests.	6	7
To evaluate your objectives.	4	5

Respondents were provided with six components--objectives, resources used, content, learning activities, teaching strategies and learner outcome--and were asked to decide which should be considered in evaluating one's instructional development activity. They were advised that they could choose more than one component. It is important that these various components be examined when carrying out an evaluation of an entire instructional program or unit. It was felt that those who chose at least four components, one of which was objectives, would be cognizant of the need to do a comprehen-

sive evaluation, although all six components should be included. The percentage choosing four or more components are presented in Table 11.

Table 11

Participants' Knowledge of Components to Include in the Evaluation of Instructional Units/Programs

Number of Components	N = 82	Percentage
6	12	15
5	5	6
4	14	17

Only 38% of participants checked four or more components to be included in evaluation activity. It appears that the majority of teachers are not aware of the scope of evaluation, in terms of its function in the instructional development process, and in terms of how it should be carried out.

From an instructional perspective, the optimal time to develop tests is before instruction begins, so that the objectives rather than the content is used as a foundation for the evaluation of learners. When given three alternatives as to when to develop tests--before the unit begins, sometime during the unit, or immediately after the unit--only 10% of

participants agreed that the best time was before the actual
instruction begins (see Table 12).

Table 12

**Participants' Views Regarding When Instructional Unit Tests
Should Be Developed**

Optimal Time	N = 82	Percentage
Before the instruction begins.	8	10
Sometime during the instructional unit.	20	24
Immediately after the instructional unit.	37	45

In an attempt to learn whether participants were
acquainted with the term criterion-referenced testing, a
yes/no type of item was included. Thirty-four percent of
participants claimed to be familiar with the term, while 49%
said they were not.

In a follow-up question asking them to briefly state
their understanding of criterion-referenced testing, only 36%
of the 34% who responded positively to the item regarding
familiarity with the term could correctly identify the meaning

of test items matched to specific criterion, for example objectives.

When asked about the possibility of evaluating instructional programs/units in the absence of objectives, 54% of the participants were of the opinion that instructional programs or units could be evaluated, even though no written objectives were present. Further it was indicated that only 55% of those who responded positively were aware that objectives could be developed in consultation with others.

An additional item as to how teachers would make use of objectives in evaluating instruction units disclosed that teachers are not aware of the value of evaluation as a means of making decisions about and revising the instructional program. Only 48% stated that they would use the objectives as a standard for tests and quizzes.

While some general knowledge of evaluation was evidenced, most participants failed to grasp the significance of evaluation measures which are related to objectives, for example criterion-referenced testing as a means of establishing the effectiveness of instruction. Neither could they see the value in evaluating the objectives themselves, once developed. In all, secondary teachers had a narrow and unfocused view of evaluation activity.

Select teaching/learning strategies and resources.

Participants' knowledge of this competency area was

determined through a set of 13 items, focusing on the use of various resources, the design of teaching strategies, and the selection or design of learning activities. Item one asked participants to indicate which of three resources they used in developing daily lessons, including textbooks, provincial curriculum guides, and school board support materials (see Table 13).

Table 13

Participants' Selection of Resources Used in Developing Daily Lessons

Resources	N = 82	Percentage
Textbook	60	73
Provincial Curriculum Guide	41	50
School Board Support Materials	27	33

Table 13 reveals that the majority of participants use the assigned textbook as the basis for daily lesson planning. The assumption might be made that teachers' preference for the textbook is based on the fact that texts include objectives for units/chapters and teachers prefer using existing objectives in the absence of ability to develop their own.

Table 14 indicates teachers' familiarity with use of

various common patterns for sequencing learning activities. The data indicate that the majority of participants are familiar with sequencing according to level of difficulty and according to level of familiarity. Approximately one third of participants indicated they use these sequencing strategies. Very few used the strategies frequency of use and temporal order.

Table 14

Frequency of Use of Various Patterns for Sequencing Learning Activities

Pattern	Familiarity N = 82	Frequency of Use (%)
Easy to Difficult	57	32
Frequency of Use	23	9
Familiar to Unfamiliar	56	37
Temporal Order	33	13

Given four choices for selecting or determining teaching strategies, including teacher preference, objectives, learner analysis, and content or subject matter, participants were asked to indicate which of the four choices they considered in planning instruction. Although consideration of all four

would be advantageous, objectives are deemed to be the most significant. Hence in tabulating data, those participants who included objectives either alone or in combination with any of the others were considered to have responded correctly. Sixty-one percent of participants were knowledgeable regarding the importance of objectives in selecting and determining teaching strategies.

Given that there is great diversity in those teaching strategies that can be employed by teachers, participants were asked to indicate their preferred teaching strategy. Approximately 17 responses were named, some of which did not constitute a strategy, but rather a general teaching approach, such as resource-based teaching. Various components of the instructional development process such as behavioural objectives and learner analysis were also listed, indicating that not all participants understood the term teaching strategy.

Table 15 indicates the four most frequently mentioned strategies. When asked if they would consider any one teaching strategy to be superior to others, over one half of the participants said they would not, indicating that they were aware of the need to vary strategies, given other instructional variables.

Participants were asked to indicate which of four choices--textbooks, learners' past experiences, objectives, and what is available--they thought should be used as a basis for the selection of learning activities (see Table 16).

Table 15

**Preferred Teaching Strategy Mentioned Most Frequently by
Participants**

Strategies	N = 82	Percentage
Use of Manipulation	12	15
Lecture	11	13
Demonstration	9	11
Grouping	8	10

Table 16

**Participants' Choices Regarding the Basis for Selecting
Learning Activities**

Choices	N = 82	Frequency (%)
Textbook	26	32
Learners' Past Experience	53	65
Objectives	52	63
What Is Available	30	37

In selecting learning activities, 63% of the participants indicated that the objectives, either individually or collectively with one or all of the other choices should be used.

When asked if they designed their own learning activities, nearly 75% of participants indicated that they did so. Approximately 25% of that number expressed the need to design activities frequently. Seventy-nine percent stated that their learning activities were designed so that learners could use different resources in acquiring the necessary knowledge, or in practising a skill.

Participants were asked to indicate what they used as a guide in selecting the resources, given that they used resources other than the prescribed textbooks. Only six percent of participants indicated that they would use objectives as the base for the selection of instructional resources. Approximately 25% of participants indicated teacher preference as main focus in the selection of resources, while 11% indicated that past experience of learners should guide selection of resources.

Following the selection of resources, appropriateness to the learning activity should be considered. Participants were asked to indicate their choice of four possibilities--fit with objectives, ease of use, previewing, and student preference in determining appropriateness (see Table 17).

Table 17

**Participants' Views Regarding the Determination of the
Appropriateness of Resources**

Views	N = 82	Percentage
Fits With the Objective	60	73
Easy to Use	19	23
Preview Resources	39	48
Student Preference	18	22

As demonstrated in Table 17, approximately three quarters
of participants indicated that objectives are important in
determining the appropriateness of resources. Only approxi-
mately half, however, felt that previewing such resources was
important. Approximately three-quarters of participants
indicated that they used resources in a variety of media.

Participants were asked to indicate which attributes of
the media they deemed to be important in selecting instruc-
tional resources. Common attributes identified in the
literature include pacing, random access, sensory mode,
colour, and motion. Participants knew little about attributes
of the various media, with only a total of four participants
being able to name any attribute. While an earlier item
indicated that 48% of participants felt that it was important

to preview resources, the focus of their previewing must have been the content, since they indicated no knowledge of media attributes.

In all participants recognized the need to use resources beyond the textbooks, and indeed indicated that they designed learning activities frequently, and used a variety of mediated resources. While more than half recognized the importance of basing decisions regarding the selection of resources and activities and the appropriateness of resources, on objectives, many were unsure of how to determine appropriate teaching strategies and resources, and the majority demonstrated little knowledge of the various media.

Assess performance/revise and recycle.

Participants' knowledge of this competency area was determined through a set of five items, focusing on the assessment of learners, the use of results of such assessments and the modifications/revisions made to instruction as a result of assessments.

Seventy-five percent of participants indicated that they usually test learners at the end of chapters and/or units. In questioning participants regarding the use of learner results of such assessments, it was determined that participants were aware of the value of assessment as a means of making decisions about revising the instruction.

Approximately 75% of the participants felt that feedback

was useful for revising the entire instructional program,
developing new tests, and in organizing the content different-
ly. Only 23% stated that they used feedback from learner
assessments primarily to compare performance of learners.
Eighty percent of participants indicated that they do consider
using student results to modify their instruction.

Through use of an open-response item, participants were
asked to state what kind of modifications they would make
based on student results. Approximately 65% of participants
noted that they would modify their teaching techniques, while
19% of those responding positively stated that modification
would take the form of resequencing their materials. However
53% indicated that they infrequently revised their instruction
to a considerable degree.

It is apparent that participants value the feedback
received through learner assessments, particularly for the
revision of instruction. Revisions and modifications most
frequently take the form of reorganization or resequencing of
content, and occasionally the development of new tests.
However the majority do not perform major revisions frequent-
ly.

Part Three: General Instructional Development

This section surveys participants' views of instructional
development. It contains four items, including participants'
understanding of instructional development from either a

classroom teacher or instructional development perspective;
their understanding of functional versus conceptual levels of
instructional development; their personal definition of
instructional development; and their understanding of instruc-
tional development in relation to curriculum development.

Question one contains a series of statements reflecting
thoughts and opinions about instructional development and its
relationship to classroom teaching. Participants were
required to respond to each statement on an agree/disagree
scale.

Four statements, numbers 1, 4, 5, and 10, described a
traditional classroom view of teaching (see Figure 7). Six
statements, numbers 2, 3, 6, 7, 8, and 9, described an
instructional development view of teaching (see Figure 8). In
all, 88% of the participants surveyed responded to this item
(see Table 18).
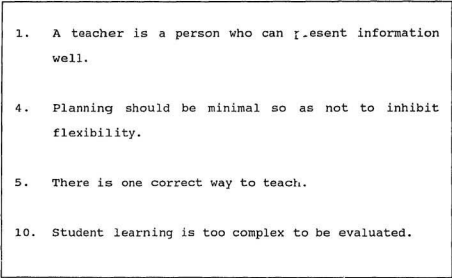
1. A teacher is a person who can present information
    well.

4. Planning should be minimal so as not to inhibit
    flexibility.

5. There is one correct way to teach.

10. Student learning is too complex to be evaluated.

Figure 7. Statements Reflecting Traditional Classroom View of
Teaching.

2. A teacher is a person who arranges environmental conditions so that a student will learn.

3. Good planning has flexibility built in.

6. There is no one correct way to teach, yet there are valid principles and techniques that work well under specified conditions.

7. Only the latest scientific principles and techniques are appropriate for instructional development.

8. A course of instruction planned by the instructional development approach has adaptive change built in.

9. Student learning should be evaluated.

Figure 8. Statements Reflecting Instructional Development View of Teaching.

Table 18

**Participants' Attitudes Toward Statements Reflecting Tradi-
tional Classroom Versus Instructional Development Views of
Teaching**

Views	N = 82	Percentage
Traditional Classroom	17	21
Instructional Development	60	73

Despite participants' general lack of knowledge of
instructional development competencies, as reflect by
responses in Section B, they obviously favoured the typical
instructional development perspective of classroom teaching.
It could be that given knowledge and competency, they would
willingly use such an approach in their teaching.

Question two in Part C of the questionnaire contained a
series of five statements. These statements reflected either
a functional or a conceptual view of instructional develop-
ment. Functional instructional development is the type of
instructional development taught in most introductory or basic
university courses (Brown & Kennedy, 1988). "Students emerge
from such courses able to follow, in generally linear fashion,
the process indicated by the boxes and arrows, in order to
design something" (Brown & Kennedy, p. 1). This basic form of

instructional development takes the form of "a series of boxes
and arrows, usually with a feedback loop, indicating a step-
by-step approach to develop work. Almost always there is a
clear beginning (definition of objectives), and almost always
a terminal step (evaluation)" (Davies, 1978, p. 22).

At a more conceptual level instructional development is
a form of problem-solving. "There is no one best means, and
neither is there necessarily one best solution. Rather,
everything is dependent on the situation, and the skills and
expertise available" (Brown & Kennedy, 1988). According to
Kennedy and Brown (1987),

> Differentiating between the functional and concept-
> ual levels of instructional development is not
> easy. Rather than discrete levels, they seem to be
> along a continuum. It is not the size or scope of
> the instructional development activity that pro-
> vides the key differentiating variable, but the
> role which the instructional developer plays. (p.
> 16-17)

Participants were asked to indicate those definitions of
instructional development that they agreed with. Three
statements described functional instructional development
while two statements described conceptual instructional
development (see Figure 9).

1. **ID** is a series of boxes and arrows with a feedback loop indicating a logical step-by-step approach to the development of instruction. (Functional)

2. **ID** is a common sense planning device using a cooperative effort to identify and define learning problems and develop a plan of action. (Functional)

3. **ID** is a process for systematically designing, developing, implementing and evaluating instruction. (Functional)

4. **ID** is a heuristic approach to the development of instruction. (Conceptual)

5. **ID** is the development of instructional from the total systems perspective rather than from the discrete components of that system. (Conceptual)

Figure 9. Statements Reflecting Functional and Conceptual Views of Instructional Development.

Table 19 describes participants' responses to instructional development from a functional or conceptual perspective.

Table 19

Participants' Attitudes Toward Statements Reflecting Functional Versus Conceptual Views of Instructional Development

Views	N = 82	Percentage
Functional	34	40
Conceptual	25	31

The majority of respondents favoured the functional view of instructional development. They particularly favoured view statements which referred to the systematic nature of instructional development as a basic planning tool. Agreement with these views indicate that the respondents' knowledge levels of instructional development is most closely aligned with the basic, how-to-do-it approach referred to by Kennedy and Brown (1987) as functional instructional development.

In summary, it would appear that teachers are generally aware of the presence of two distinct levels of instructional development. There is an agreement that instructional development can be practiced at different levels, or using a

variety of approaches. Teachers' agreement with the functional nature of the instructional development is not surprising, considering their current roles within the instructional setting.

Through an open-response question, teachers were asked how they would define instructional development. Only 43% of participants provided a response to this question. Using semantical content analysis, responses were grouped into five categories as indicated in Table 20. Responses indicate that thinking about instructional development is unclear on the part of the participants.

Definitions contain pieces of knowledge and understanding about instructional development but for the most part lack conciseness and focus. In actuality, only definitions number four, "a clearly defined procedure for designing instruction into structured units of work" and five, "a process whereby the teacher takes [aspects] of the curriculum that are passed to him/her, reorganizes, and adjusts it to meet the stated objectives of a particular course of study," provide a meaningful definition of the process.

Question four asked participants to explain their understanding of the difference between instructional development and curriculum development, again using an open-response question. Only 45% of the participants provided any response. Once again semantic content analysis was used, resulting in a grouping of seven categories of responses (see Table 21).

Table 20

Participants' Definitions of Instructional Development

Definition	N = 35	Percentage
Develops systematically a series of learning objectives.	10	29
Defines a method of instruction that is generally more suited to the learning styles and abilities.	4	11
It permits the teacher to ask "have my efforts been successful?"	9	26
A clearly defined procedure for designing instruction into structured units of work.	4	11
A process whereby the teacher takes [aspects] of the curriculum that are passed to him/her, reorganizes and adjusts it to meet the stated objectives of a particular course of study.	8	23

Table 21

Participants' Understanding of the Difference Between Instruc-

tional Development and Curriculum Development

Relationship of ID/CD	N = 37	Percentage
ID equated with how to teach; CD equated with what to teach.	22	60
ID focused on student; CD focused on groups/materials.	6	16
ID specific; concentrating on particular learning; done in small units; CD long term, done with entire program.	2	5
ID focused on delivery of units; CD focused on curriculum change.	2	5
ID focused on decisions about what learning takes place; being flexible.	1	3
ID used in implementation and instruction.	2	5
CD focused on what is being presented to learner.	2	5

As Table 21 indicates, most participants view curriculum development and instructional development as separate entities, the one focusing on subject matter or content, and the other on methodology. Very few participants saw both entities as linked, with only two participants noting that the curriculum development and instructional development lay along the one continuum of teaching and learning.

Analysis of the Interview Data

Interviews were conducted with two participants who had failed to return the survey instrument. The intent of the interviews was to provide elaboration on the many responses posed in the survey. The interviews were designed to elicit a descriptive exploration of the "real-life" situations of the teachers (Yin, 1984, p. 13). They focused on exploring teacher planning strategies in the absence of instructional development, since it was assumed that the concept of instructional development is not widely known among secondary teachers. The two teachers interviewed, T1 and T2, were asked to talk about how they planned for their instruction. In addition, instructional development in general and its application to teaching were discussed. Finally, T1 and T2 were asked to discuss the reason(s) for their failure to respond to the instrument, since previous studies had experienced similar problems, resulting in either (a) a low response

rate, or (b) the expression of negative feelings regarding the
instruments used.

Background Information on T1 and T2

T1 is an experienced physical education teacher who has
been in the profession for nearly 20 years. T1 is assigned to
teach physical education from K-12. His duties also include
provision of instruction in academic subject areas.

T2, also an experienced teacher, is a French specialist
and has been teaching French for over 20 years. Currently he
is assigned to teach high school French in a 7-12 setting.

To facilitate the explanation and clarification of the
interview results, the description and analysis of T1's and
T2's observations are organized according to the different
sections of the questionnaire. Data were analyzed using
semantic content analysis, according to Krippendorff (1980)
and are presented here in anecdotal form.

Planning

In the first discussion, interviewees were asked to
provide a brief description of the way they plan instructional
units, activities normally done in planning instruction, and
how they develop measurement/testing instruments to evaluate
learners and/or instruction, and when they develop such
instruments.

In planning a unit of instruction, T1 and T2 utilize

totally different procedures. T1 uses a general approach as he initially reviews the unit, choosing important points to be presented to the students and appropriate examples. Seatwork is then given where students are observed as to their level of understanding of the concept(s) being presented. After the seatwork is corrected T1 determines whether constructive interaction between himself and the students has taken place.

Although T2 utilizes a two-fold process in the development of his French lessons, namely oral/written skills, he is ever mindful of the current underpinnings of the second language approach--to get the student to speak as much of the language in class as is possible. Consequently, when he develops a unit, he initially begins with a process to get the students "to tune their ears to the sound of the French language." They are then, through teacher imitation, slowly taken into saying the sounds and then reading them. If new vocabulary is to be introduced it is done so at this point.

After T2 has prepared the learners with the necessary oral and listening skills for the unit, the introduction of written skills that pertains to the unit occurs. T2 states that he presents the material by utilizing the following process:

1.   Identification of the written skill to be taught in the unit.

2.   Identification of the degree of familiarity, with the skill, if any, by the student.

3. Detailed plan of skill development by (a) oral introduction, and (b) application of the material by sequencing it from the simple to the complex. For example, if teaching the verb form--the passé composé, "I would move from the fill in the blank variety to writing a sentence, to transcribing from one verb form to the passé composé." T1 and T2 both view the identification of the specific skill to be taught as their first priority in planning a unit.

Once T1 identifies the skill his method of instruction will depend on whether or not the skill has been introduced somewhere before in the curriculum. T1 says that if the skill is a new one he would "break it down to the very lowest level of giving examples they will probably never forget." If the skill has frequently been introduced before in the curriculum, "[it] is only given a quick review. The skill is always developed in conjunction with whatever is being taught." Underlying all skill development in his area of physical education, T1 says, is long term planning, for the ultimate goal is not necessarily for the learner to develop into a star quality but simply to enjoy the game.

When introducing a unit in French, the teaching of the vocabulary to be used in the unit is the first step. T2 was more specific than T1, in his examples of how the skill would be developed and the reasons for adopting the approach that he uses.

T2 wants his students' thoughts to proceed from the

unknown to the known. He wishes the students "to have a concept of the French term rather than a translated idea of the French word." Thus he adopts an artistic or dramatic mode to introduce a series of at least four or five new vocabulary words. T2 states:

> If it is something that I can present by means of a drawing I would use my overhead and I would sketch [on a transparency]. If I wanted to teach the peak of a mountain for example, I would first of all draw a mountain and have them identify the drawing as a mountain, and then I would show the base by saying, "la bas de la montagne," and at the same time I would indicate this by using the appropriate arrows and things. Then I would go to the peak and ask if they know any particular word in French that would work there. If they could not come up with one, I would give them the new vocabulary word ... I do this activity first because I want them [the students] to have a concept of the French term rather than a translated idea of the French word. My idea of a concept [is] when I say the word "le summit" I want the child to understand that it [the word] refers to the peak of the mountain that they have seen, rather than "le summit" means peak.

Although T1 did not specifically say when he developed his instruments for evaluation, he implied in his statements

that the instruments are developed at the beginning for it is
"closely knit to the skills being taught." T1 indicated "that
when you start out you know what the child is to accomplish
when you have finished ... in physical education the emphasis
is always on individual improvement albeit very minute."

T2 stated that he develops his evaluation during the
unit. Due to his total familiarity with the course and his
collection of old quizzes/exams, he is able to revise his
material and develop his new quiz from such revision.
However, he noted specifically, "I never use the same exam
twice. I always indicate on the old ones which question(s)
worked and which one(s) didn't."

For T1, test items are selected from materials taught
since the last quiz. The items vary from the simple to the
complex. He bears this in mind as he chooses the material
from the textbook, the teacher-made questions, and/or resource
books pertaining to the same subject area. T1 says, however,
that the amount of time available for the quiz/exam directly
determines his choice of materials.

The nature of T2's subject dictates a more structured
approach in the selection of test material. Fifty percent of
evaluation must be based on oral skills due to Department of
Education directives and the course design. "Thus," says T2,
"I would want to choose material that pertains to the unit,
that is 50% oral communication and 50% that is written."

Both T1 and T2 felt that criterion-referenced testing,

whereby one test item was developed to measure each objective, was a good approach. T1 felt he would find criterion-referenced testing very useful when setting up the final testing in various sports.

> There is very little study of notes involved in the
> learning of game skills for the students. Thus you
> can say to a student "at the end of x period you
> will be expected to achieve the following ... and
> you will have to demonstrate to me, as proof that
> you have achieved."

T2 further expounded on the virtues of such an idea as it seemed to him such a method would help the teacher map out instruction. "You no longer will be wondering what is it today that I am suppose to be achieving." However, he expressed concern over his ability to be able to identify a particular skill that he would be testing.

T1 and T2 did not perceive any problem with the criterion-referenced testing approach. In a sense, T2 felt he was currently following such an approach.

> I follow the format of the text and the text is so
> designed that in each unit certain items which I
> call structures, and the text calls components are
> presented. Each time I teach a component I reflect
> on last year's strategy and recall whether it
> worked. Thus, I am following your approach in that
> I look at objectives and prepare criteria to

reflect that.

T2 did not feel that subject matter was the most import-
ant consideration when starting to develop an instructional
unit in French. T1, however, always tried to famil'arize
himself with the material and to see what it pertained to.
The foundation of T2's teaching philosophy lies in "the
continual development of French--to communicate as much as
possible. Therefore the material is a second consideration."
T2 did stress, however, that he did not teach concepts in
isolation, and it is at this point that material is con-
sidered, "to help with the integration."

T2 felt that he had to be very selective with material,
due to the fact that French is a second language learning
situation.

> The one thing you do not want to do is to compound
> that frustration of not being able to understand
> French with a very complex presentation of subject
> matter. I recognize the needs of my students.
> Often I would select and throw out things and bring
> in new material of my own.

T2 followed the curriculum guide rigidly in the beginning
when he began teaching the course, until he became acquainted
with the subject matter and the material. Now that he has
become more familiar with the course T2 thinks he can achieve
the Department of Education guidelines without following the
teaching guide so stringently. T1 did not mention making use

of the curriculum guide in his teaching.

Learners' Needs

In this section participants were asked to discuss what considerations they would give to the learners in planning instruction, and how the selection of subject matter would depend upon the specific learners. T1 simply stated that he gave,

> Great consideration to those who do not grasp the material very well. It may become boring to the upper students ... but we cannot afford to weed them out so when we get ready for a lesson we must remember it is going to be a drag on somebody but it has to be done no matter what.

T2 felt that not only did he have to consider the learners' abilities in planning instruction but also their degree of exposure to the French language which, in his situation, was unique. T2 teaches in a shared services school. One half of the students in his class he has known through past experience, and other half has come into the school for the first time at the senior high level. It is this integration of the "old" students with the "new" ones that T2 says makes his planning both challenging and difficult.

Since T1 (for the most part) considers the lower end of the spectrum in his teaching, he eliminates difficult material

from the course, that is, "material where you have to really sit and think. Time is of a major concern, as you have to gauge yourself according to the curriculum."

T2 thinks his presentation meets two-thirds of his class needs. After material is presented a work period is set up. During the work period T2 says, "I go and focus in on the one-third of the class, where I know problems will occur. This private intervention helps to reach some of the students."

In terms of testing, both T1 and T2 agreed that their learners are given consideration. T1 begins his test with an easy item that has been done in the previous chapter. This he says, "helps to make the children feel more comfortable, as what is taught first is tested first." He utilizes all item format types when he is given a quiz/test.

T2 says the format of his tests are a "pretty standard one." After the first quiz of the year he takes aside those who did poorly, breaks the test down and identifies the elements that he always incorporates in the quiz. There is a focus on "hierarchy of difficulty from the easiest to the more difficult. The difficult questions do not comprise a large percentage of the testing but are there for the upper level performers, to challenge them." By doing this he feels he helps the learners prepare for future quizzes, as this indicates to them how they should prepare their studies for his style of testing.

T1 and T2 present opposing opinions when asked if they

revised instructional units from year to year. T1 felt all
teachers revised instructional units yearly even if they were
not aware that they are doing so. This is done, he believes,
by the unconscious gleaning of ideas from other teachers and
resources, and then fused with the teachers' own experience:

> I can remember first when I started teaching math I
> followed the guide they [the Department] sent out
> chapter by chapter, ... doing fractions, then
> decimals and then back into fractions again. Now I
> leave decimals until after all the fractions have
> been completed.

T2 said that he did not revise units but rather the
technique of the presentation. "From unit to unit I note in
my plan book as to what worked with certain classes or what
didn't. The following year when I go to review and prepare
for a particular unit, I can alter or make changes to it."

Both T1 and T2 thought that the clarity of instruc-
tion/teaching would be a factor to be considered if students'
test results were not good enough. T1 considers the reason
for poor results to be twofold:

1. The teacher taking too much for granted, such as
"this was covered last year or the year before and they should
know this" or "last year's grade knew this so I am expecting
that you know it."

2. Lack of achievement caused by: (a) lack of applica-
tion; (b) illness; and (c) didn't grasp the material being

taught, and did not inform the teacher.

T2 was more hesitant in his reply to this question. He said "I am not sure a, b, c, d are the only factors per se." Although if overall test results are being considered, lack of clarity in instruction/teaching would be a determinant to consider. But he quickly added, "it is not very often that I have experienced test results not to be good. I have never had a test bomb out." For T2, the biggest influence on students and their test performance is the fact that, "I don't think our students study. Most of what they get from the test is what they get from the classroom." T1 concurs as he states, "One cause to consider is lack of application by students, as academics is not a priority. In this day and age, people have got too many things to do and academics are not a priority-- not at home any way."

General Reaction to Survey Instrument

Section two of the interview focused on the survey instrument itself, the interviewees' reluctance to take part by completing the instrument, and their thoughts on the value of investigating teacher knowledge of instructional development. Interviewees were asked for their overall reaction to the instrument and whether they thought it would present a true picture of teacher instructional development knowledge and competency.

Both T1 and T2 stated that they did not complete the

survey instrument that had been circulated by the researcher.
T1 says his reaction to this survey was no different than any
other: "I hate doing surveys unless the surveys are not very
long and are also very simple. I like the check and go
variety and even then lots of time I just throw them away and
don't do them. However, he continued, "Since the survey came
from you I did look at it to see what it was about, [but] I
didn't think it overly pertained to me because of [my]
physical education area." He concludes his reaction to the
survey by saying that he "... kind of [got] lost on some of
the questions and therefore I didn't follow it up even though
I had ample opportunity."

T2 was certain that it was the terminology that "threw
him":

> I was doing well with the first nine questions
> [Section A--Demographics] and then when I got to
> 10--"Any knowledge of instructional development
> came from the following sources." It was instruc-
> tional development, [and] that kind of terminology
> that threw me off.

Both teachers felt that the instrument would give a true
picture of teachers' lack of instructional development
knowledge. They were both in agreement that there would be
value in finding out what teachers know about instructional
development. As T1 said so succinctly, "If it is going to
improve what is done within the classroom-even minimally--it

is"!

In the following discussion participants were informed of the negative feedback regarding the questionnaire and they were asked to provide insight about the potential cause of the negative reaction. T1 felt that when he read the first few pages of the survey instrument "It made you feel that there was something that you should know but you don't really and therefore you got feeling uncomfortable about it." However, on a more positive note, T1 continued:

> Surveys are done with a lot of thought and a lot of terminology must go in to it to satisfy the one who is making it up. A lot of people who have not been to University or haven't been doing a lot of study outside of what they have been teaching, kind of get lost in the terminology and questions. Pages two and three might have frightened some people off or given them a bad feeling.

T2 was not at all perturbed by the questionnaire. It was terminology such as instructional development or behavioural objectives that he didn't understand. Other than that he did not "have any particular negativism towards it."

T1 could not make an assumption about why some teachers felt perturbed by the survey instrument. He could only speak for himself, he said, and in his case, as he had reiterated previously, he was "a bad one for surveys anyway." However, in way of explanation as to why some people might have felt

intimidated, he offered the following:

> When you are in your own subject area and field and
> you are questioned about it, sure you can handle
> it, and you don't feel inferior, but when you are
> not really sure of what is coming at you, it is a
> different story.

T2 was of the opinion that intimidation might not be the
correct word. Resentment could be more like it he said, as
there are people who resent having to complete any kind of
form, whether it is a return on a register, a form from the
Board, a fact sheet, or a study. People like this don't
complete forms and have no time for it.

Neither T1 nor T2 felt they were intimidated by the
instrument, although both cited different reasons for feeling
that way. T1 says he "didn't go far enough to get too
intimidated. I got turned off and that was it." T2 said he
wasn't intimidated, he "just didn't understand it, therefore
I had to leave it blank."

T1 offered "a lack of understanding of what is being
asked," as the reason why some teachers felt intimated by the
instrument. "Probably it is a little bit too heavy," he said.
T2 could not understand why somebody would ever feel intimi-
dated by completing a study sheet, especially since it is
anonymous and "if you don't understand it or you don't know it
you just pass on."

Both teachers were in agreement that they hoped members

of the teaching profession did not feel they should know everything about teaching and learning. "If they feel that way," says T2, "I think they are in the wrong field."

Neither T1 or T2 would be opposed to considering other methods or approaches to planning, such as instructional development. In fact, they stated they would be receptive to any method that would facilitate their teaching. Consequently, they both thought their teaching might possibly be improved through knowledge of instructional development, simply because, as T2 stated, "knowing instructional development increases my knowledge of how to prepare and anything I do has to enhance my preparation [and consequently my performance]."

Specific Reaction to Survey Instrument

In this discussion teachers were asked their reaction to specifics of the questionnaire including length, terminology, requirements for open responses, use of the word competency in reference to teachers and its inherent connotations. They were also asked if the questionnaire dealt with content they knew little or much about.

T2 stated that from his perspective three factors could possibly be inhibiting in terms of the format of the questionnaire. These he had discovered in discussion with five or six teachers in his school. "We were all in the same boat," he said. These factors included: (a) terminology; (b) having to

write your own explanation, especially since the majority of studies only require a check mark and/or circle; and (c) the survey itself appeared to be an in-depth one.

The length of any survey determines whether it will be completed by T1. That and the type of question involved are the two requirements he looks for in any request to complete a study since "that's the way I am." The terminology he does not perceive as inhibiting as "you cannot do much about that. It is a turn off factor though."

Neither T1 or T2 were bothered by the word competency. As T1 said,

> It could be the nature of the beast. I do not analyze like that, as if I were signing a contract. The word competency is different to everybody anyway. You know yourself that in some course material you feel so much more competent in covering it and in some more you don't.

T2 felt that the questionnaire dealt with material that for the most part he knew little about. He explained further by saying "take for example the objective hierarchies of Bloom and Gagné. I have never studied those. I have done several psychology courses at university but I have never met those famous people before." Thus it made him feel very inadequate as a professional. This inadequacy was not an influence that affected his decision in not completing his survey, he stated, rather it was the reason.

T1 was a little more confident as he said he knew about half of the content. However, he did not perceive that only knowing 50% had an effect on his professional image. For him, the professional image was T1 the physical educator instructor, not the teacher. For he says, "if this survey was totally in my field ... if it came from a student doing their Masters in Physical Education I would have probably gone through it and done it for them ... this is a bit heavy plus I got lost early." He gave no indication of whether or not his lack of instructional development knowledge was an influencing factor in his decision not to complete the questionnaire.

Utility of Instructional Development Knowledge for the Classroom Teacher

In this discussion the participants were asked to give their opinions regarding the utility of instructional development knowledge for classroom teachers, its impact on efficiency and effectiveness of instruction, and whether or not factors or circumstances in the system mitigate against its use. Finally, they were asked if instructional development should be a requirement in teacher preparation programs.

When the interviewer gave the definition of instructional development to begin the section, T1 felt it should have been quoted at the top of the survey, as then "more people might have completed it [the survey], and then they would have known

what you were talking about, when instructional development
was mentioned."

T2 felt that a lot of, or maybe all the teachers, have a
systematic way of planning a lesson. However he mused:

> But I think anybody can benefit from anything that
> is different and new. Even if it is not as good as
> you already have. The fact that you can be exposed
> to something else has to make you think about other
> things--and that is important--looking at other
> "things".

T1 felt that efficient and effective planning procedures
such as instructional development would lead to more effective
instruction if such planning procedures were used properly.
However, he felt that if people are expected to try there must
be first hand evidence or examples of success and very good
success. T2 certainly agreed that planning would be effective
but he did not perceive efficiency in a positive light, as for
him the word connotes "getting it over with."

For T1, time would be a factor that would play a role in
his choice of using instructional development.

> In the school system today, especially in the small
> schools, where you teach all different courses,
> subject areas and grade levels and you are expected
> to help out so much after school, [and] then you
> are trying to get your work completed in the night
> time, there is not much room for taking on anything

else. But if the time is made available [to you] for the preparation, maybe yes. But not many of us can afford to sit down and punch an hour here and another hour there just to make sure that what you are going to do for the next 40 minutes is alright on paper.

T2 did not have such strong feelings. There was nothing in his situation that would prevent him from using instructional development as a process for planning. The reason being, of course, "While I have a textbook and guidelines I feel quite free to develop any kind of techniques to teach my unit, as long as ... my students are able to adequately perform the objectives of the course." Both teachers strongly urged that instructional development be included in an undergraduate degree since proper planning would make life easier for them [the student teachers].

T2 emphatically concluded his remarks by stating:

I have had several teacher interns in the past seven or eight years and one of the biggest drawbacks is basically [their] inability to prepare a lesson and to teach it the way I prepared it. I spent five years at university and I did an education degree and for all that I did I could have done any kind of a degree outside of education and I would still have had to learn by trial and error. From that point of view I cannot understand why our

teachers are not being taught how to teach, and how
to teach obviously has to be how to prepare [using]
instructional development within a course and then
over time within a unit.

Summary

Results of the survey instrument and the follow-up
interviews indicated that secondary teachers, at least those
employed with the two school boards participating in the
study, were not knowledgeable about instructional development.
While teachers were well-educated and very experienced, the
combination of preparatory training and experience did little
to further their knowledge or competency in instructional
development. Through the analysis of demographic data it was
established that few had completed a course in instructional
development, and that not many others had completed courses
with instructional development components.

Secondary teachers were unfamiliar with instructional
development terminology, and it might be that the use of such
terminology inhibited their ability to respond to the items in
the instrument. It may well be that secondary teachers have
a tacit understanding of the concept of instructional develop-
ment, which this instrument was unable to measure.

The follow-up interviews with two specific cases con-
firmed the data elicited through the survey instrument. These

two teachers knew little of instructional development and, according to their expressed opinions, would be unable to implement such an approach in their instructional planning, because the they lacked the requisite knowledge and competency to do so.

CHAPTER V

Summary, Conclusions and Recommendations

Introduction

The study of secondary teachers' instructional development and competency was guided by three questions as follows:

1.   Is the concept of instructional development understood by secondary teachers?

2.   What depth of knowledge regarding instructional development do secondary teachers possess?

3.   Do secondary teachers possess competencies in instructional development such that they could practice or use instructional development in their instructional planning?

Summary and Conclusions

The limitations of the study included:

1.   The findings could only be applied to secondary teachers of the two school districts.

2.   The findings were limited in application by a moderate response rate.

3.   The instrument focused on instructional development knowledge as identified through the literature and through instructional development models, hence was unable to measure teachers' tacit knowledge regarding instructional development.

Within the boundaries of these limitations, the following conclusions can be made.

1. **Overall, secondary teachers had little knowledge of or competency in instructional development.** Results of the survey and the follow-up interviews indicated that secondary teachers' knowledge of the basic instructional development components and of general instructional development was scant. Teachers knew little about behavioural objectives, were unable to write sample objectives, and were unable to identify the various levels of objectives that might be used.

They were more knowledgeable about learner analyses, demonstrating an awareness of the importance of establishing learners' entry levels. However they were unable to indicate ways that learners' entry levels might be identified.

Teachers' knowledge of evaluation was minimal. They were, for the most part, unable to relate the objectives to the development of tests and quizzes. Very few had any knowledge of criterion-referenced testing, and did not consider moving from the selection or development of objectives directly to the development of the test, to ensure that essential content would be evaluated.

In terms of selecting/using resources and learning activities, something that teachers do on a regular basis, they indicated the need to use resources other than the prescribed text, and to select the suitable activities for

their learners. The majority of secondary teachers did recognize the need to base decisions about resources and activities on the objectives, but they were unsure how to determine the appropriateness of resources and activities. The majority of teachers seemed to recognize the value of feedback from learner assessments for revising both instruction and tests. But more than half admitted that they only very infrequently revised their instruction to a considerable degree.

Secondary teachers similarly demonstrated little general knowledge of instructional development. Through the two follow-up interviews, it was established that these participants did not know the meaning of instructional development. T1 felt that it "lay outside my realm as a physical education teacher," and he suggested that ' ˋre people might have filled out the survey if a definition of instructional development had been given at the beginning of the instrument." T2 noted that once he was given a definition, he thought it might be beneficial to his planning.

The interviews also established that the terminology of the survey instrument was unfamiliar to these participants and deemed to be outside their areas of expertise. Specific terms indicated by interviews as unfamiliar included instructional development itself, behavioural objectives, and criterion-referenced testing. (The latter two are within the realm of all professional education literature, as opposed to educa-

tional technology literature).

Only 43% of those having completed the survey instrument attempted to define instructional development, and of these a scant 12 or 15% provided definitions reflecting any significant meaning of the term.

2. **Secondary teachers had little exposure to instructional development.** Few secondary teachers had completed formal study of instructional development, either through enrolment in a specific instructional development course, or in courses which might include some instructional development content. Similarly very few completed degree programs which required the study of instructional development. Only two of the participating secondary teachers had completed one of these degree programs.

Teachers' unfamiliarity with much of the terminology used in the survey instrument indicated that they had done little professional reading in the area of instructional development or educational technology, or for that matter general educational literature. They did not see instructional development as lying within the realm of their teaching roles.

3. **Secondary teachers demonstrated little adverse reaction to the notion of instructional development.** The majority of teachers who completed the survey instrument seemed to have an instructional development perspective of

teaching, rather than the traditional classroom perspective. They consistently chose statements indicating that the teacher's role as a planner and manager of learning and resources was preferable to that of deliverer of content. Their understanding of instructional development, such as it was, lay at the functional, how-to-do-it level rather than at the more conceptual level.

Interview data indicated that teachers, once given a simple definition of instructional development, thought it might be beneficial to their instructional planning, providing that, as one teacher indicated, "There was lots of evidence that it worked." While neither interviewee felt that teachers would react adversely to using an instructional development approach, T1 indicated that factors such as planning time and other school commitments mitigated against its use.

Overall, the data indicated that secondary teachers, despite their lack of knowledge of instructional development as a complete system, could see benefits to the individual pieces of the process with which they were familiar--for example, using learner assessment data to improve their instruction.

Recommendations

On the basis of the data described in this study, the researcher makes the following recommendations:

1. Given that the population of this study was drawn from two rural school districts, generalizations can only be applied with these particular limits. The research recommends that a similar survey type of study be done with a larger population of secondary teachers.

2. It is recommended that further study of secondary teachers' knowledge and competency regarding instructional development be done, using the interview method to probe in-depth knowledge and competencies.

3. Given that secondary teachers demonstrated little knowledge of or competency in instructional development, it is recommended that instructional development courses be included in all undergraduate teacher preparatory programs.

4. Given that secondary teachers demonstrated little knowledge of or competency in instructional development, and that many secondary teachers in the province's schools have completed all university training, it is recommended that in-service programs on instructional development for such teachers be implemented. Further, that such in-service programs be focused on long-term development of instructional development competencies, as opposed to focusing on one-shot workshops or seminars.

5.   This study assumed an instructional development focus regarding secondary teacher planning of instruction. It is recommended that further studies be completed, focusing on how teachers actually plan, and extrapolating from their planning routines any tacit or explicit instructional development knowledge and competency.

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APPENDIX A

Correspondence

P.O. Box 695
Deer Lake, NF
A0K 2E0
October 9, 1990

Mr. Leo Whalen
District Superintendent
Roman Catholic School Board -
   Humber St. Barbe
P.O. Box 368
Corner Brook, NF
A2H 6G9

Dear Mr. Whalen:

In April 1990, I spoke with you regarding permission to conduct a study among secondary teachers within the school district of your administration.

I am pleased to inform you that the research instrument has now been designed and prepared. Consequently, I am ready to proceed with this study which deals with instructional knowledge and competency. I am proposing weeks three and four of October as the tentative dates for the administration of the questionnaire and the collection of the data.

Thank you so much for your kind co-operation. It is greatly appreciated.

Sincerely,

Elizabeth Thomey

P.O. Box 695
Deer Lake, NF
A0K 2E0
October 9, 1990

Mr. Graham Blundon
Superintendent
Deer Lake - St. Barbe South
  Integrated School District
Deer Lake, NF
A0K 2E0

Dear Mr. Blundon:

Further to my June 1990 request regarding permission to
conduct a study among secondary teachers within the school
district of your administration, I am pleased to inform you
that the research instrument has now been designed and
prepared. Consequently, I am ready to proceed with this
study, which deals with instructional knowledge and compet-
ency. I am proposing weeks three and four of October 1990 as
the tentative dates for the administration of the question-
naire and collection of the data.

As promised, once the study is completed and the results
compiled, I will forward a copy to your office.

Thank you so very much for your kind co-operation. It is
greatly appreciated.

Sincerely,

Elizabeth Thomey

P.O. Box 695
Deer Lake, NF
A0K 2E0
October 9, 1990

Dear Principal:

I have received permission from Mr. Leo Whalen of the Roman Catholic School Board Humber-St. Barbe and Mr. Graham Blundon of the Deer Lake-St. Barbe South Integration School District to conduct a study of instructional development knowledge and competency among secondary teachers in the areas under their jurisdiction.

I realize that questionnaires are often difficult to complete, tedious and another demand on the teacher's time. However, I am quite sure you can appreciate the necessity of receiving a high rate of return in order to ensure a reliable measurement of the situation. Therefore, I am asking for your support to encourage your teachers to participate in this study.

The proposed dates for collection of the data are during weeks three and four of October 1990. In order to complete the data collection for this project, Mrs. Angela Murphy and Mr. Pat Whelan from the Roman Catholic School Board Humber-St. Barbe and Mr. Jim Powell and Mr. Richard Parsons from the Deer Lake-St. Barbe South Integrated School District have very kindly agreed to assist. These people will distribute the question-naires to you. I ask that you pass these questionnaires on to your teachers. Once the teachers have completed the question-naire they have been asked to place it in the envelope provided, seal it and return it to you, who will then hold it for collection by one of the persons named above.

Thank you so much for your co-operation. It is greatly appreciated.

Sincerely,

Elizabeth Thomey

P.O. Box 695
Deer Lake, NF
October, 1990

Dear Principal:

I have received permission from Mr. Leo Whelan of the Roman
Catholic School Board Humber-St. Barbe and Mr. Graham Blundon
of the Deer Lake-St. Barbe South Integrated School District to
conduct a study of instructional development knowledge and
competency among secondary teachers in the areas under their
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of the situation. Therefore, I am asking for your support to
encourage your teachers to participate in this study.

Thank you so much for your co-operation.

Sincerely,

Elizabeth Thomey

P.O. Box 695
Deer Lake, NF
A0K 2E0
October 1990

Dear Teacher:

One of the more positive influences on education and training
today has been the increased utilization of educational
technology. As a graduate student I am interested in
researching this field to determine the instructional develop-
ment knowledge and competency among secondary teachers in the
Roman Catholic School Board Humber-St. Barbe and the Deer
Lake-St. Barbe South Integrated School District.

I am requesting that you take a few minutes of your busy
schedule to assist me in this important research project.
Your participation is strictly voluntary. However, I am
particularly interested in obtaining your responses because
your experience will contribute significantly to this study.
Confidentiality is assured; your name will not be associated
with your responses in any public or private report of the
results.

The proposed dates for collection of the data is during weeks
3 and 4 of October, 1990. In order to complete the data
collection for this project, Mrs. Angela Murphy and Mr. Pat
Whelan from the Roman Catholic School Board Humber-St. Barbe
and Mr. Jim Powell and Mr. Richard Parsons from the Deer Lake-
St. Barbe South Integrated School District have very kindly
agreed to assist. These people will distribute the question-
naires to your principal who in turn will pass it on to you.
When you have completed the questionnaire please place it in
the envelope provided, seal it, and return it to your princi-
pal, who will hold it for collection by one of the persons
named above.

Thanking you in advance for your participation. It is greatly
appreciated.

Sincerely,

Elizabeth Thomey

P.O. Box 695
Deer Lake, NF
A0K 2E0
October 29, 1990

Dear Principal:

Thank you for your co-operation in encouraging your teachers
to participate by completing the questionnaire I forwarded to
you, through the Board's co-ordinators during weeks three and
four of October. This co-operation seems quite evident in my
telephone conversations with you. However, I gathered at the
time I spoke with you that in some cases questionnaires were
not being returned.

As I mentioned to you in my introductory letter, I am only too
aware that questionnaires are often perceived by teachers as
another demand on their extremely busy schedule. I am sure,
though, you can appreciate my need for a high rate of return.
Consequently, I am again requesting your co-operation. Would
you please pass on to all the teachers on staff who have been
selected to participate in this project a copy of the enclos-
ure that I have included with this letter.

Thank you once more for your assistance. It is greatly
appreciated.

Sincerely,

Elizabeth Thomey

Encl.

October 29, 1990.

Dear Teacher:

Just a friendly reminder that I need your participation in the research project regarding instructional development knowledge and competency.

Please complete and return to your principal the questionnaire that was forwarded to you during weeks three and four of October 1990. If you have already returned the questionnaire, please consider this note a thank you for your assistance.

Sincerely,

Elizabeth Thomey

P.O. Box 695
Deer Lake, NF
A0K 2E0
November 19, 1990

Dear Principal:

I am sorry but again I have to request your assistance
regarding the questionnaire on instructional development
knowledge and competency. Would you please distribute the
enclosed reminders. I would also appreciate it if you could
add another few words generally in an effort to encourage
those teachers who as yet have not completed the survey.

I realize that the questionnaire may be difficult to complete.
Yet a high rate of return is very important to my study. It
will provide information for both the university and the
school boards as to the necessity for in-service in the area
of instructional development. The teachers' response will
ensure that a reliable measurement of the situation as it
exists locally will be obtained.

Thank you for your co-operation.

Sincerely,

Elizabeth Thomey

P.O. Box 695
Deer Lake, NF
A0K 2E0
November 19, 1990

Dear Teacher:

Just another friendly reminder regarding your participation in
the survey of instructional development knowledge and compet-
ency among secondary teachers that I forwarded to you via your
principal during weeks three and four of October 1990.

If you have already responded to the questionnaire, thank you
so very much. I realize that surveys take time and I know
only too well how full the day of a teacher is. If you have
not completed the survey form as yet, may I say that I would
really like to have your input regarding this project. Please
do not feel that every item must be completed in order for the
questionnaire to be accepted. Just do as many as you can then
return the questionnaire in the sealed envelope to your
principal.

Your help would really be appreciated.

Sincerely,

Elizabeth Thomey

APPENDIX B

Research Instrument

A Study of Instructional Development Knowledge and Competency Among Secondary Teachers in the Roman Catholic School Board Humber-St. Barbe and the Deer Lake-St. Barbe South Integrated School District.

Instructional Development is a fairly recent educational phenomenon, having been introduced to the educational milieu in the mid 1960s. To date, it is not included as part of the under-graduate program at Memorial and at present there is only one course at the graduate level.

Although many teachers may not have formally studied Instructional Development (ID), they have been introduced to various aspects of it in general methods courses at University and through in-service. In fact, they may use various parts of the ID process in developing their own classroom instruction.

The questions which follow, apart from the demographic items, deal with various aspects of ID. You may not be familiar with all of these aspects, but please try to complete as many of the items as you can.

SECTION A - DEMOGRAPHIC INFORMATION

Please respond to the following background items.

1.	Grades/Levels presently teaching	7 8 9 I II III
2.	Teaching experience	_____
3.	Teaching certificate	_____
4.	Program of studies	P E S
5.	Degrees/Diplomas obtained	_____
		_____
		_____
		_____
6.	If M.Ed., which area?	_____
7.	Learning Resources diploma	Yes No
8.	Completed L6521 (Graduate Course in Instructional Development)	Yes No
9.	I have formally studied Instructional Development	Yes No

10. Any knowledge that I may have of Instructional Development came from the following sources:

___ school board in-services
___ conferences
___ formal courses at Memorial University
___ professional literature
___ on the job
___ other (please specify): _____

SECTION B - INSTRUCTIONAL DEVELOPMENT COMPONENTS

This section contains a number of items on Instructional Development. Some of the items require a simple check mark (√), while others require short written answers in your own words. Please complete all items if possible.

I. Behavioral Objectives

1. Do you make use of behavioral objectives in your teaching?

Yes ___   No ___

2. Which behavioral objectives do you make use of in your teaching?

___ a) those in the curriculum guide
___ b) create your own
___ c) both a) and b)
___ d) objectives from other sources (please specify): _____
_____

3. If asked to do so, would you be able to develop behavioral objectives for your courses?

Yes ___   No ___

4. Please check any item(s) below that you develop and/or use regularly:

___ unit goals
___ behavioral objectives
___ instructional objectives
___ learner objectives
___ teaching objectives

5. Would you please write an example of a behavioral objective that you have developed for a course?

    _____

    _____

6. Are you familiar with objective hierarchies such as those of Bloom and Gagne?

    Yes ___   No ___

7. As you probably remember from Ed/Psych. courses, Bloom established three domains of learning objectives. Do you recall the three domains?

    Yes ___   No ___

8. Could you try to list Bloom's three domains?

    _____   _____   _____

9. There is more to behavioral objectives than simply writing them. Objectives should reflect various levels of knowledge and skills. How do you ensure that your objectives cover these various levels?

    _____

    _____

    _____

10. Would you agree that behavioral objectives describe student performance?

    Yes ___   No ___

11. If NO, what do they describe?

    _____

    _____

12. What is your understanding of the term "terminal behaviour"?

    _____

    _____

    _____

II. Learner Analysis Characteristics/Entry Level Behaviour

1. Would you please list some characteristics of your learners that you think are important to consider in developing classroom instruction:

   _____
   _____
   _____

2. How does the entry level of your learners influence your instruction?

   _____
   _____

3. How do you determine a learner's entry level in the various subject matter areas that you teach?

   _____
   _____

4. Do you use any strategies to cope with the variety of entry levels found in a typical classroom?

   Yes ___   No ___

5. If YES, would you briefly describe one such strategy.

   _____
   _____
   _____

6. Why do you think entry level behaviour is important in sequencing content?

   ___ it ensures that instruction is geared to the same level of skills and knowledge for all the students.
   ___ it establishes the beginning steps in the instructional sequence.
   ___ it determines the adequacy of existing materials.

III. Evaluation

1. What do you use as a guide in developing unit tests and/or regular quizzes?

   _____
   _____

2. Once you have generated or chosen the objectives for a unit of instruction, what would be your next step? (Please check <u>one</u>)

    ___ prepare the objectives as a handout to your students
    ___ design your instructional procedures and/or strategies
    ___ make up your tests
    ___ evaluate your objectives

3. (a) If there are no written objectives do you think that instructional programs or units could be evaluated?

    Yes ___ No ___

    (b) If YES, how?

    _____
    _____

4. How would you make use of objectives in evaluating your instructional units?

    _____
    _____

5. Are you familiar with the term "Criterion-Referenced Testing"?

    Yes ___   No ___   (If NO, please continue to number 7)

6. If you indicated YES, for number 5, would you briefly state what is your understanding of the meaning of the term.

    _____
    _____

7. When do you develop tests for your instructional units? (Please check <u>one</u>)

    ___ before the unit begins
    ___ sometime during the unit
    ___ immediately after the unit

8. Which component(s) of an instructional program or unit do you usually evaluate? (You may check <u>more than one</u>)

    ___ the objectives
    ___ the resources used
    ___ content
    ___ the learning activities
    ___ the teaching activities
    ___ what the students have learned

IV. **Select Teaching, Learning Strategies and Resources**

1. What do you use as your guide in developing your daily lessons?

    ___ text book
    ___ provincial curriculum guide
    ___ school board support materials
    ___ other (please specify): _____
    _____

2. Please check the patterns you are familiar with for sequencing content.

    ___ easy to difficult
    ___ frequency of use
    ___ familiar to unfamiliar
    ___ temporal order (the order in which the events occur in the instruction that
         precedes the activities)

3. Which one(s) of the above patterns do you use the most?

    _____   _____

4. Which of the following do you consider when selecting or determining teaching
   strategies?

    ___ teacher preference
    ___ objectives
    ___ learner analysis
    ___ content

5. Would you please name your preferred teaching strategy?

    _____

6. Do you consider any one teaching strategy to be superior to others?

    Yes ___   No ___

    If YES, please specify: _____
    _____

7. When selecting learning activities, which of the following do you think should be used as a basis for selection?

    ___ textbook
    ___ learner's past experiences
    ___ objectives
    ___ what is available

8. Do you design your own learning activities?

    Yes ___   No ___

    If YES, how frequently? _____

9. Are your learning activities designed so that your students can use different resources in acquiring the necessary knowledge or in practising a skill?

    Yes ___   No ___

10. If you use resources other than the textbook, what do you use as a guide in selecting the resources?

    _____   _____

11. How do you determine the appropriateness of resources?

    ___ fit with the objectives
    ___ easy to use
    ___ preview resource
    ___ student preference

12. Do you ever use resources in a variety of media?

    Yes ___   No ___

13. Which attributes of the various media do you consider important in selecting instructional resources?

    _____   _____
    _____   _____
    _____   _____

V.   **Assess Performance/Revise and Recycle**

1.   Do you usually test learners at the end of the chapters/units etc.?

_____

2.   What use do you make of the student results?

_____

3.   Have you ever considered using student results to modify your instruction?

Yes ___   No ___

4.   What kinds of modification/revisions do you think you could make based on student results?

_____

_____

_____

5.   How frequently would you say you revise your instruction to a considerable degree?

_____

_____

SECTION C - GENERAL INSTRUCTIONAL DEVELOPMENT

    This section contains some thoughts and opinions about Instructional Development and its relationship to classroom teaching. Please check item(s) in each question which best reflect your opinion.

1.   The following statements reflect either classroom teacher views or Instructional Development views of teaching. Please place a check mark (√) before those which you agree with. Place an (X) before those which you do not favour.

___   A teacher is a person who can present information well.
___   A teacher is a person who arranges environmental conditions so that a student will learn.
___   Good planning has flexibility built in.
___   Planning should be minimal so as not to inhibit flexibility.
___   There is one correct way to teach.
___   There is no one correct way to teach, yet there are valid principles and techniques that work well under specified conditions.

___ Only the latest scientific principles and techniques are appropriate for Instructional Development.

___ A course of instruction planned by the Instructional Development approach has adaptive change built in.

___ Student learning should be evaluated.

___ Student learning is too complex to be evaluated.

2. Please place a check mark (√) by those definitions of Instructional Development that you agree with.

___ ID is a series of boxes and arrows with a feedback loop indicating a logical step-by-step approach to the development of instruction.

___ ID is a common sense planning device using a cooperative effort to identify and define learning problems and develop a plan of action.

___ ID is a process for systematically designing, developing, implementing and evaluating instruction.

___ ID is a heuristic approach to the development of instruction.

___ ID is the development of instruction from the total systems perspective rather than from the discrete components of that system.

3. How would you define Instructional Development?

_____
_____
_____
_____
_____

4. How would you explain the difference between Instructional Development and Curriculum Development?

_____
_____
_____
_____   _____
_____   _____

THANK YOU FOR YOUR COOPERATION

APPENDIX C

Follow-Up Interview Guide

Follow-Up Interview Guide

As you know, I am completing a study of instructional development knowledge and competency among secondary teachers for my thesis.

My study assumes that teachers know very little about instructional development, since there are no preparatory courses at the undergraduate level at Memorial University of Newfoundland. I am interested in confirming my assumptions, plus exploring how teachers do plan instruction in the absence of instructional development knowledge. These interviews are meant to explore teacher planning, in the absence of instructional development.

Section 1 Questions
Planning

1. Could you give me a brief outline of the steps you would take in planning an instructional unit.

2. You mentioned certain activities you normally do in planning instruction. Could you tell me which of these you're likely to do first. Why?

3. As part of the planning of an instructional unit, you obviously must develop tests or evaluation methods for your students. Could you tell me:
    a) When you usually develop these instruments?
    b) How you select items for your tests? (probe)

4. One way to develop tests for instructional units is to use the objectives of the unit, and develop test items to measure all objectives. This is known as criterion-referenced testing.

a)   Does this seem to be a good approach to you?

b)   Do you see any problems with this approach?

c)   Do you think this approach would be of any help to you, or make your test development easier? Why or why not?

5.   In planning instructional units, how much importance would you give to the subject matter? (ie. most important element in planning, somewhat important, of least importance).

6.   a)   Is subject matter the first thing you consider when you start to develop an instructional unit?

      b)   How do you decide which elements of subject matter to include in your unit? (prompt: by what is in the texts/curriculum guides, etc.).

7.   Obviously when you're planning an instructional unit you are doing so for a specific group of students.

      a)   What consideration do you give to students in planning your instructional unit?

      b)   How does your selection of subject matter depend on your specific learners?

      c)   In terms of testing, do you take into account the type of learners you have when developing your tests?

      d)   If yes, in what way does consideration of your types of learners influence your test development? (prompt: types of items, test format, length, etc.).

           If no, why do you not take into consideration your students when planning your instructional unit?

8.   a)   From year to year, do you revise instructional units? If no, why not?

b)   If yes, what do you use as the basis for revision?
     (prompt: experiences in implementing, student test
     results, etc.).

c)   If your student test results are not good, which of
     the following would you consider to be causes or
     influences? (You can choose more than one).
     -   students not motivated
     -   instruction/teaching not clear enough
     -   test not valid/good
     -   students inability to learn
     -   anything else?

d)   If more than one, which is the biggest influence?

Section 2 Questions
Instructional Development Questionnaire
Introduction

As you know, I've circulated a survey instrument on
instructional development knowledge during the fall term. Did
you complete it? (Give copy of the questionnaire). I'd like
to discuss some of the content of the questionnaire with you,
as well as instructional development in general, and its
application to teaching.

1.   Could you tell me your overall reaction to the question-
     naire. (difficult, long, not organized well, terms not
     understood, etc.).

2.   Do you think that it would give a true picture of
     teachers' instructional development knowledge or lack of
     instructional development knowledge?

3.   Do you see any value in finding out what teachers know
     about instructional development?

4. Some teachers were perturbed by the questionnaire. They felt very negative about it.

    a) Did you?

    b) Why do you think some teachers felt so negative?

    (If intimidation is not mentioned in 4(a) (b), go to 5).

5. Some teachers said that they were intimidated by the instrument.

    a) Were you?

    b) What do you think might be the cause of feeling intimidated?

    c) Do you think that teachers generally feel that they should know everything about teaching and learning?

6. a) Most teachers indicated, through various answers, that they had a set way of planning for teaching. This might suggest that they saw no need to consider other methods or approaches to planning such as instructional development. Would you say that you feel that way?

    b) Do you feel that your teaching might possibly be improved through knowledge of instructional development? Why? Why not?

I would like to focus on the questionnaire specifically now.

1. In terms of the format or design what would you consider to be inhibiting factors to its completion?

    a) Length

    b) Requirement for open-ended writing (ie. lots of writing)

    c) Use of terms not familiar to teachers

    d) Anything else

2. In terms of the content of the questionnaire, I'd like to
    explore some of the influences on teachers.
    a) Some teachers objected to the use of the word
        competency in the title of the study at the top of
        the questionnaire. How do you feel about the use
        of the word in relation to teachers' competency in
        instructional development? Does the word itself--
        competent vs. incompetent--seem objectionable to
        you?
    b) Did the questionnaire deal with content that you
        knew much about or little about?
        i)   If little about, how did that make you feel as
             a professional?
        ii) Is the fact that you knew little about
             instructional development a major influence/
             factor in your decision not to complete the
             questionnaire?

3. Instructional development is defined as a systematic
    planning procedure which is used to identify and define
    learning problems, and to develop an effective instruc-
    tional solution. Based on that definition:
    a) Do you feel that classroom teachers would benefit
        from knowledge of instructional development?
    b) Would efficient and effective planning procedures,
        such as instructional development, lead to better
        or more effective instruction?
    c) If you knew a lot about instructional development,
        and were able to use it well, what, if anything, in
        the current system would prevent you from using
        such a process on a regular basis?
    d) Do you think that course(s) on instructional devel-
        opment should be required as part of B.Ed. degrees?
        Why? Why not?