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PERCEPTIONS OF SECONDARY SCHOOL TEACHERS AND ADMINISTRATORS OF THE SUITABILITY OF FORMATIVE EVALUATION PROCEDURES FOR ADAPTATION IN SECONDARY SCHOOLS IN IMO STATE OF NIGERIA

presented by

Hyacinth Ibe Dike

has been accepted towards fulfillment of the requirements for

Ph.D degree in Educational Systems Development

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PERCEPTIONS OF SECONDARY SCHOOL TEACHERS AND ADMINISTRATORS OF THE SUITABILITY OF FORMATIVE EVALUATION PROCEDURES FOR ADAPTATION IN SECONDARY SCHOOLS IN IMO STATE OF NIGERIA

By

Hyacinth Ibe Dike

AN ABSTRACT OF A DISSERTATION

Submitted to
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ABSTRACT

PERCEPTIONS OF SECONDARY SCHOOL TEACHERS AND ADMINISTRATORS OF THE SUITABILITY OF FORMATIVE EVALUATION PROCEDURES FOR ADAPTATION IN SECONDARY SCHOOLS IN IMO STATE OF NIGERIA

By

Hyacinth Ibe Dike

This study was conducted primarily to determine the perception of secondary school Principals and Teachers of the suitability of adapting existing formative evaluation procedures in secondary schools in Imo State of Nigeria.

Ten extant formative evaluation models were analyzed for procedures used for conducting formative evaluation.

Since the introduction of formative evaluation into the educational system of Imo State of Nigeria is viewed as an instructional innovation, factors that could facilitate or hinder the adaptation of innovations were also identified through a literature review. These factors and the formative evaluation procedures formed the basis for developing the questionnaire used for this study.

Two pilot studies were conducted to validate the questionnaire. In the first, 10 Nigerian students doing their post graduate studies in Michigan State University were used

while in the second, 3 teachers and 3 administrators in the State were randomly selected.

Forty-two Secondary School Administrators and 285 Teachers were randomly selected and provided with questionnaires for the study. Out of these 42 Principals, 25 (59.5%) completed and returned their questionnaires. Of the 285 Teachers, 181 (62.9%) completed and returned their questionnaires. Two assistants who received no formal training helped the researcher in collecting the completed questionnaires.

Major Findings

Most of the procedures considered essential for formative evaluation by authorities in the field were perceived as suitable by teachers and administrators in Imo State of Nigeria. Although all Administrators perceived themselves as possessing selected skills for formative evaluation, only a moderate percentage of teachers perceived themselves as possessing some of these skills. Respondents identified factors that could hinder or facilitate the adaptation of formative evaluation in their school systems. As regards the 3 approaches for formative evaluation, an equal number of school principals preferred the Large Group and the Small Group Approaches. Only one principal preferred the Tutorial Approach. Among the 181 teachers, 16 preferred the Tutorial Approach, 51 the Large Group Approach, while 114 preferred the Small Group Approach. Even though a low percent of teachers

and administrators preferred the Large Group Approach an interesting finding was in their opting to use the interviewing and observation techniques with the Large Group Approach. Interviews and observations are characteristics of the Tutorial and the Small Group Approach.

Based on these findings, it is recommended that the State of Imo:

1. Establish an evaluation unit in the Ministry of Education.
2. Adopt a strategy for ensuring administrative support of formative evaluation.
3. Make provision for inservice training of teachers and administrators in formative evaluation techniques.
4. Make use of the training program to raise the competence of faculty in conducting formative evaluation.

Implication for further research include:

1. A study to determine the extent to which teachers and administrators possess the necessary skills for specification of behavioral objectives and construction of valid test instruments and the extent to which these are made manifest in their teachings.
2. A comparative study of a prototype to determine which of the 3 formative evaluation approaches is most suitable for secondary schools in Imo State.

3. A study to determine the minimum level of formative evaluation sufficient to improve instructional materials.

To my parents Mr. and Mrs. L.I. Dike

and to my cousin Mr. V.S. Ebereonwu

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I wish to express my appreciation to individuals whose contributions made this achievement a reality.

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with her household duties making it possible for me to have the time to concentrate. To her and my 2 kids, Ike and Kelechi, I am thankful.

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CHAPTER I

STATEMENT OF THE PROBLEM

Imo State is one of the 19 States in the Federation of Nigeria. It came into being when the former East Central State of Nigeria was split into Imo and Anambra States.

Many Educational Service Units have been established by the Imo State Ministry of Education for the selection, production, utilization and evaluation of Instructional Materials for use in her educational institutions. Good examples of such educational service units are Teachers Resources Centers, Audio-Visual Centers, Curriculum Development Centers and Book Development Centers.

Authorities in the field of Instructional development have stressed the importance of formative evaluation for producing "high quality" instructional materials for effective instruction--Gooler,[1] Sullivan,[2] Wells,[3]

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[1]Dennis D. Gooler: "Formative Evaluation Strategies for Major Instructional Development Projects" Journal of Instructional Development, Spring 1980, Vol. 3 No. 3 pp 7-11.

[2]Howard J. Sullivan. "Objectives, Evaluation and Improved Learner Achievement" in AERA Monograph Series on Curriculum Evaluation Instructional Objectives by W. James Popham, Elliot W. Eisner, Howard J. Sullivan and Louise L. Tyler. Chicago: Rand McNally and Company, 1969.

[3]Stuart Wells: Instructional Technology in Developing Countries: Decision-Making in Education. New York. Praeger Publishers, 1976, p.93.

Komoski,[4] Alkin and Baker,[5] Abedor,[6] Tennyson,[7] Scriven,[8] and Yelon.[9]

There is considerable research showing that Instructional materials revised through a process of formative evaluation leads to more effective student learning than materials that have not been subjected to this process - Light

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[4] P. Kenneth Komoski: "An Imbalance of Product Quantity and Instructional Quality. The Imperative of Empiricism". A.V. Communication Review. Vol. 22, No. 4, Winter, 1974.

[5] Eva L. Baker and Marvin C. Alkin: "Formative Evaluation of Instructional Development" A.V. Communication Review Vol. 21, No. 4, Winter, 1973.

[6] Allan Joseph Abedor: Development and Validation of a Model Explicating the Formative Evaluation Process of Multi-Media Self Instructional Learning System. Ph.D. Thesis. East Lansing, Michigan State University, 1971.

[7] Robert D. Tennyson: "Evaluation Technology in Instructional Development" Journal of Instructional Development. Fall, 1978, Vol. 2, No. 1.

[8] Michael Scriven: "The Methodology of Evaluation" as in Blaine R. Worthen and James R. Sanders. Educational Evaluation: Theory and Practice. Belmont, California: Wadsworth Publishing Company, Inc., 1973, p.62.

[9] Stephen L. Yelon. Constructive Evaluation: Improving Large Scale Instructional Projects. Lansing, Michigan: 1736 North Hayford Avenue, 1974, p.3.

and Reynolds,[10] Abedor,[11] Robeck,[12] Montgomery and Vander Meer.[13]

The government of Imo State of Nigeria is not unaware of the importance of evaluation for effective instruction. In a report entitled: "Federal Republic of Nigeria National Policy on Education" it is stated that:

> Government plans that progress along the educational cycle will be based on continuous over-all guidance-oriented assessment by teachers and headmasters. However, government recognizes the implication of the implementation of such a measure for teacher education and will accordingly ensure that programs for pre-service teacher education... and of in-service training in the National Teachers Institute and the Institutes of Education will incorporate training in the continuous assessment of pupils. 14

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[10] Judy A. Light and Larry J. Reynolds. "Debugging Product and Testing Errors: Procedures for the Formative Evaluation of an Individualized Mathematic Curriculum". Viewpoints Bulletin of the School of Education, Indiana University, Vol. 48, No. 4. July 1972, pp. 45-78.

[11] Allan Joseph Abedor, op.cit.

[12] Robeck, M.D.: A Study of the Revision Process in Programmed Instruction. Unpublished Master's Thesis. University of California. Los Angeles, 1965.

[13] A.W. VanderMeer and Robert Montgomery. An Investigation of the Improvement of Educational Filmstrips and a derivation of Principles relating to the effectiveness of these media. Phase III Revision of Filmstrip--Earth's Satellite. Pennsylvania: The Pennsylvania State University, 1958, p. 1-22.

[14] Federal Republic of Nigeria National Policy on Education. Lagos-Nigeria: Federal Ministry of Information 1977, p.8.

The introduction of a "continuous...assessment" scheme will not be enough to improve the quality of education. This is because such a "continuous...assessment" scheme refers to teacher-made achievement tests used to grade students. The results of such tests are not intended to be used for improving the quality of instructional materials. For the quality of education to be high, educational programs should be formatively evaluated. The distinction between formative evaluation and achievement tests is that the former determines program adequacy while the latter only determines student proficiency or achievement. Formative evaluation refers to the process of trying out components of prototypes of instructional materials with student(s) and based on feedback from them, revising the developing program. This process of revision as a result of feedback continues until the quality of the instructional material is at the desired level of effectiveness and efficiency.

The Purpose of this study, therefore, is to contribute toward this "continuous...assessment" program evisaged by the Imo State Government by determining the feasibility of using extant formative evaluation models to determine procedures that can be adapted for improving the quality of instructional materials. The study also attempts to determine what factors will facilitate or hinder the adaptation of such a formative evaluation program in the secondary educational system of the State.

BACKGROUND OF STUDY

Education is regarded as the "biggest industry" in Imo State. According to the Governor for the State:

> ...It is not an industry in the commercial sense of the word. It is a consumer industry (that) has assumed a magnitude capable of swallowing every Kobo (1.87 U.S. cents) of our revenues. 15

A comparative analysis of enrollment figures for primary and secondary schools in Nigeria reveals that the total enrollment for Imo State is among the highest in the whole federation.[16]

These high enrollment figures are accompanied by an increasing number of post primary institutions in the State. According to the "Government White Paper on the Education Review Commission":

> Education in Imo State constitutes presently a gigantic industry with 374 post primary institutions...17

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[15] His Excellency, Sam O. Mbakwe: An Address on the occasion of the swearing in ceremony of members of the State and Zonal Education Boards. Owerri: The Government Printer, October, 1980, p.2.

[16] Federal Republic of Nigeria: Implementation Committee for the National Policy on Education BLUEPRINT, 1978-79. Lagos: Federal Government Printer, p. 55 and p.64

[17] Government White Paper on the Education Review Commission in Imo State. Owerri: The Government Printer, January 1980, p.8.

The major reason for this large number of post primary institutions is "active community participation in the provision of educational facilities "[18] to her citizens. Almost every village in the state wants to establish her own secondary school. According to the Governor of the State:

> (This active participation) has maximized rather than minimized government financial commitment in education. This is because those schools built by communities have to be approved and operated with staff and materials provided by the government. 19

Unfortunately, the last battle of the Nigeria civil war of 1967-70 was fought in Imo State. The effect of the civil war was a total "destruction of all-basic infrastructural facilities required for effective learning and teaching in our primary and post primary institutions."[20]

To replace these "basic infrastructural facilities" that were destroyed during the Nigerian civil war and to provide such facilities to the newly established institutions, the Imo State government has established many educational service units such as Teachers Resources Centers, Audio-Visual

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[18]His Excellency, Sam O. Mbakwe op. cit., p.2

[19]Ibid, p.2.

[20]Ibid, p.2.

Centers and Textbook Development Centers for the Selection, Production, Utilization and Evaluation of instructional materials for use in these institutions.

This is in keeping with the direction of the federal government of Nigeria. According to her "Third National Development Plan, 1975-80":

> The bold program of organization and reform of the educational system envisaged during the Plan period calls for the establishment of a greater number of institutions to provide educational services for the improvement of the quality of teaching through adequate supply and maintenance of various forms of pedogogical aids and materials. The importance of such services and their impact on the educational system are such that government intends to financially assist the institutions handling them at the State level and create national institutions with wide range of operational capacity. 21

This government interest in the production and selection of instructional materials can be compared with what happened in the U.S. during the 1950's and 1960's, a period that is often referred to as the "go-go years" that saw the proliferation of a myriad of instructional materials.[22]

Unfortunately, such a proliferation of instructional materials in the U.S. was not accompanied by a corresponding

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[21] Federal Republic Of Nigeria, Third National Development Plan, 1975-80. Vol. One. Lagos: Federal Ministry of Information, p.

[22] P. Kenneth Komoski: "An Imbalance of Product Quantity and Instructional Quality: The Imperative of Empiricism" Op. cit. p.357

effort to determine or improve the quality of such instructional products. In a paper presented to the first session of the 92nd U.S. Congress, Komoski regrets that:

> ...50 million school children...learn from educational materials almost all of which have been inadequately developed and evaluated. 23

Similar views are expressed by Alkin and Baker when they said that:

> Substantial amounts of funds are wasted each year on the purchase and installation of educational products that later prove to be inappropriate and ineffective. 24

One reason that such materials are "inadequately developed" or "later prove to be inappropriate and ineffective" is because their prototypes were never subjected to Formative evaluation or what Komoski calls "Learner verification"[25] before they are introduced into the market. A detailed survey conducted by Komoski with producers and distributors of instructional materials in U.S. revealed that:

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[23] P. Kenneth Komoski: To establish a National Institute of Education: Hearings before the Select Subcommittee on education and labor. House of Representatives, 92nd Congress. First Session. Washington, U.S. Government Printing Office 1971, p.334.

[24] Eva L. Baker and Marvin C. Alkin Op.cit. p.389

[25] P. Kenneth Komoski: "Learner Verification: Touchstone for Instructional Materials?" Educational Leadership February, 1974, p.397.

1. Of the more than 80,000 16 mm films catalogued by National Information Center for Educational Media (NICEM) fewer than one percent have been revised since their original production over 15 years ago.[26]

2. Under one percent of the approximately 14,000 textbooks being sold to schools have been systematically shaped through learner tryout and revision process...[27]

Komoski points to the relationship between the quality of instructional materials available to schools and learner performance. According to him:

> If higher quality materials are not generally available, neither teachers nor their students can be expected to be held completely accountable for learning failures. 28

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[26]P. Kenneth Komoski: "An Imbalance of Product Quantity and Instructional Quality: The Imperative of Empiricism." op. cit. p.367.

[27]P. Kenneth Komoski: "To Establish a National Institute of Education" op. cit. p.338.

[28]P. Kenneth Komoski: Ibid, p.335.

Alkin and Baker share this view when they said:

> To prevent such economic and educational wastes (caused by inappropriate and ineffective materials) and the negative effect it could have on the future acceptance and use of educational products and at the same time to improve the products ultimately produced, developers should engage to a greater extent in formative evaluation of all products. 29

Yelon uses the term "constructive evaluation" as a synonym for formative evaluation. According to him:

> To produce major changes in the field of education, instructional developers must create and perfect large-scale instructional projects. And the best way to perfect an instructional project is to employ the process of constructive evaluation. 30

The fact must be stressed that formative evaluation is not a prerogative of commercial producers of instructional materials. Formative evaluation is also essential for school teachers and administrators during their development of instructional materials for local consumption in their schools.

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[29]Eva L. Baker and Marvin C. Alkin op. cit. p.389

[30]Stephen L.Yelon, op. cit. p.3

Research Evidence In Support of Formative Evaluation

There is considerable research showing that instructional materials revised through a process of formative evaluation leads to more effective student learning than materials that have not been subjected to this process. Descriptions of five such researches are presented in the following sections.

Formative Evaluation by Abedor

Abedor[31] developed his "MK II model" for formative evaluation--a model incorporating the small group[32] techniques for human interaction. This model was used by 3 instructional developers at Michigan State University to formatively evaluate their multi-media instructional materials using the "before and after control group experimental design". Criteria for selecting these developers were:

1. their availability to participate in the program
2. their willingness to participate
3. they were teaching a course using a multi-media lesson which they had developed personally

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[31] Allan Joseph Abedor: "Second Draft Technology Development and field test of a model for formative evaluation of self-instructional multi-media learning systems" Viewpoints Bulletin of the School of Education, Indiana University, Vol. 48, No. 4, July 1972, p. 9-43

[32] Ibid, p.18 (Also see Chapter II p. 46 for detailed discussion of small group approach.)

4. such a prototype lesson had not been previously revised using formative evaluation
5. they were willing to use volunteer students for whom the lessons were meant
6. they all had similar background and amount of experience in multi-media lesson design but came from different academic disciplines.

Each developer solicited volunteers from his course. Final selection was based on performance on the Scholastic Aptitude Test (SAT) which was used to select students of high, medium and low abilities. Students "pre-experimental equivalence was substantiated by comparison" of their "pre-test scores". Students were randomly assigned to a control group (N=12) and an experimental group (N=12) such that each group had equal representation of the different abilities.

Three 40 minute multi-media self instructional prototypes were developed by faculty A and these prototypes were designated A_1, A_2, and A_3. Faculty B and C developed B_1 and C_1 Prototypes. Each field experiment consisted of the lesson developer conducting a "tryout and debriefing" on his prototype using his control group. The responses of the control groups were used to revise the prototypes. The revised materials were next given to the experimental group. According to Abedor, on two trials A_3 and C_1, responses from control groups showed the prototype materials were adequate and did not require further modification. Thus only prototypes A_1, A_2, and B_1 were used for the final experiments.

Four dependent variables were used to assess the effect of the "MK II model":

1. Group Mean Achievement--This refers to post test measure of achievement.
2. Gain Score--This refers to mean score differences between pre-test and post test. These were self scoring equivalent forms developed for the formative evaluation tryout by the individual lesson developers.
3. Percentage of Students Achieving "Mastery"--This variable was used "to determine which treatment enabled a greater number of subjects to achieve a minimum acceptable level of performance, for example, 80 percent or more correct on the lesson post test".
4. Student Attitudes: An immediate post measure of student perception of lesson deficiencies and strengths, measured by a 27-item Likert-type instrument.

Feedback from the control group showed many of the achievement tests were defective. These were either deleted or completely revised. In any case, only test items common to control and experimental groups were used to test the statistical significance of differences.

According to Abedor:

> In two experiments (A_1 and B_1) significant differences were obtained (P.01) favoring the experimental (revised) version on all 4 dependent measures. In the third experiment (A_2) a significant difference (P.05)favoring the revised version was obtained on the post test measure only. 33

The table 1.1 below shows Abedor's full results.

TABLE 1.1 COMPARISON OF RESULTS OF FORMATIVE EVALUATION OF THREE PROTOTYPE INSTRUCTIONAL MATERIALS BY ABEDOR

	Post Test	Gain Score	Percent Achieving 80% Criterion	Student Attitude
Lesson A_1	P .01	P .01	P .05	P .01
Lesson A_2	P .05	NSD	NSD	NSD
Lesson B_1	P .01	P .01	P .01	P .01

(After Abedor, 1972, p.28).

The no significant difference in the three dependent measures with lesson A_2 is attributed to the fact that "two poorly exposed slides were inadvertently used by the developer in the post test. Students guessed the correct

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[33] Ibid, p.27

responses in the pretest but "became confused and missed the items on the post-test thus attenuating the gain scores."[34]

Formative Evaluation by Light and Reynolds

Abedor is not the only person that has formatively evaluated instructional materials. Light and Reynolds[35] set out to "refine and improve on individualized mathematic curriculum in use in an elementary school classroom". Their goal was to evaluate the effectiveness of the curriculum materials and revise those components identified as deficient. In their first revision exercise, students were asked to "write in the missing numbers using the associative principle". A set of problems accompanied this statement. Students responses were analyzed to find the cause of error. Any of the problems solved correctly by a student was used as a cue for identifying possible sources of error in the missed items. Revisions included providing additional information in new pages or revising the original material to take care of hypothesized cause of discrepancy. Revisions also involved taking a look at the pre-entry skills, in checking the conditions under which materials were used and in checking the test materials themselves. Light and Reynolds report that once these discrepancies were corrected, students

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[34] Ibid, p.29

[35] Judy A. Light and Larry J. Reynolds, op. cit. pp. 45-78.

involved, "had no further trouble with these materials and the test for the rest of the year".[36]

Formative Evaluation by Robeck

Robeck[37] revised a prototype programmed text material entitled "English money" by utilizing responses from tests and verbal responses of a single"bright" student. This revised version was again given to a second student for further revision. Both the first and second revised versions and the unrevised prototype were presented to equivalent types of students. Robeck found a significant difference in the performance of the two revised materials compared with the unrevised material (P .05). There was not much significant difference when the results of the two revised versions were compared (P .01).

Formative Evaluation by Montgomery and VanderMeer

VanderMeer and Montgomery[38] formatively evaluated filmstrip materials. The purpose of their study was to "determine the extent to which systematic study of pictorial and graphic materials in filmstrips and their accompanying verbal captions could be translated into revisions of these

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[36] Ibid, p.61

[37] Robeck, M.D. op.cit.

[38] A.W. VanderMeer and Robert Montgomery op cit p.1-22

filmstrip elements in such a way that the revised filmstrips would produce significantly more learning than the original.[39]

Using a filmstrip material entitled "The Earth's Satellite, The Moon," "four choice multiple choice items" were written to cover the verbal and pictorial contents of the filmstrip. These were administered to students from grades 5 to 12. Based on their responses, it was possible to hypothesize possible causes of discrepancy and how the original filmstrip could be revised. This involved incorporating the views of filmstrip producers. The revised filmstrip was next shown to a randomly selected sample from upper elementary to senior high school levels, under controlled experimental conditions. The samples took a common post test similar to those administered to the original control group.

A comparison of the effectiveness of both the revised and the unrevised filmstrips was made in terms of mean total test scores. In grade 5, there was no significant difference in the mean score achievement and no reason was suggested for this. However, in grade 8, there was a difference in mean score in favor of the revised versions at .025 level of significant. In grades 10, 11 and 12 the difference in favor of the experimental group was significant at .01 level of significance.

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[39] Ibid, p.1

A comparison was made of the proportion passing each item in both the revised and unrevised filmstrips. In grade 5, the yield was 8 items with significant difference favoring the revised version, 16 for grade 8; and 11 for grades 10, 11 and 12.

Formative Evaluation by Gropper, Lumsdaine and Shipman

Gropper et al.[40] used students responses to achievement tests to revise televised instructional materials entitled "The Effects of Heat" and "An introduction to chemistry". Both lessons were integral parts of a junior high school science series presented throughout the year by Metropolitan Pittsburgh Educational Television stations. For each lesson, a "competent junior high school Science teacher" was charged with the task of preparing objectives for the units after familization with the entire science series. This teacher next prepared a lesson to match his objectives and with the collaboration of TV directors the lesson was recorded.

Each lesson was given a "preview showing" during "non peak hours" to ensure that future participants did not see the preview. Each lesson was seen by a class of 30-40 students

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[40]George L. Gropper, Arthur A. Lumsdaine and Virginia Shipman. Studies in Televised Instruction Report Number 1 Improvement of Televised Instruction Based on Student Response to achievement tests. Pittsburgh, Pennsylvania: Metropolitan Pittsburgh Educational Television Stations WQED, WQEX and American Institute for Research, March, 1961, pp. 2-21

"who in terms of ability, were representative of other students who customarily viewed the science series at its regularly scheduled time."

An achievement test covering all aspects of the objectives were given to participants. Analysis of these post tests responses revealed points that were not "understood or misunderstood". This analysis involved a review of the test "item by item" and the "filmed lessons part by part" to discover causes of discrepancies. These discrepancies were corrected in the revised version.

Having done this revision, both the revised and the unrevised versions were telecast simultaneously by the two TV stations participating in the project. Six sample classes from the entire population of the 7th and 8th grade viewers of the Science series were used for the experiment. Three intact classes in three different schools watched the experimental lesson (revised version) while three other intact classes from still different schools served as the control. Both the experimental and control classes were matched for grade level and for I.Q. Identical achievement tests were given to both groups.

The following table, 1.2, shows the results of the test scores for the experimental and control groups.

From these studies, it is apparent that by subjecting instructional materials to a process of formative evaluation it is possible to discover problems in the materials and

TABLE 1.2 COMPARISON OF RESULTS OF FORMATIVE EVALUATION OF PROTOTYPE TELEVISED INSTRUCTIONAL MATERIAL BY GROPPER, LUMSDAINE AND SHIPMAN

	Mean of Class Means	S.D.	Differences between Means	t	D.F.	P
Form A						
Revised version	16.0	2.1				
Preview version	12.6	2.9	3.4	4.5	2	.02
Form B						
Revised version	14.6	3.4				
Preview version	9.4	2.6	5.2	7.3	2	.01

(After Gropper et al., 1961 p. 12)

improve them for a more effective learning. It is hoped this study will yield a formative evaluation program that can be used to continuously improve the quality of instructional materials in the educational system of Imo State of Nigeria.

NEED FOR THE STUDY

A brief survey of the Need for Formative Evaluation of instructional materials (Appendix A) conducted with Nigerian students at Michigan State University and with some educators in Imo State of Nigeria also provided the impetus for this study. After studying a definition and description of formative evaluation these students and educators were asked whether formative evaluation, as described, exists in their educational system. All those contacted responded in the negative, that such a formative evaluation program is non-existent in their educational systems. On being asked if they feel such a formative evaluation is necessary for improving the quality of instructional materials they all expressed affirmative views. They also saw the need for formative evaluation data to be one of the guiding factors for the selection of instructional materials for the State. This means that before any material is selected it should be subjected to such questions as: for what grade level of students is it meant?; Has the material ever been revised with any member of target population?; or What are the results of this revision exercise?

It is planned that this study will provide a framework for developing a formative evaluation program that can be taught through the "pre-service" and "in-service" training programs for teachers for quality improvement of instructional materials. Concommitant with this would be the necessary provision of support systems within the educational system where they teach. Towards this end, the study will also attempt to determine organizational and individual factors that may facilitate or hinder the adaptation of such a formative evaluation program in the State.

Relevance of the Study

The Imo State Government of Nigeria allocates a substantial part of her annual budget on education. The greater part of this amount is used to provide "basic infrastructural facilities" which were destroyed during the Nigerian civil war. Hence the Imo State Government, in keeping with the directives of the Federal Government, has established many educational services units like the Book Development Center, the Audio-Visual Center, the Teachers Resource Center whose duties include: the selection, design, production and evaluation of instructional materials for use in her secondary schools.

However, from a needs survey, conducted with a sample of teachers and leading educators from Imo State of Nigeria, it was discovered that practial applications of formative

evaluation is not a means of currently used to improve the quality of instructional materials and programs. Many of the educators sampled indicated the importance of such formative evaluation and would support the adaptation of a program developed for its full utilization. This need is demonstrated by the works of authorities on Instructional development like Abedor and Komoski who testify to the importance of formative evaluation for quality improvement of instructional materials.

The government of Nigeria also realizes the importance of evaluation for effective learning. Hence, she is taking steps to ensure that "continuous...assessment" of pupils is carried out by teachers and headmasters. However, it must be pointed out that such "continuous...assessment" refers to teacher-made achievement tests. Formative evaluation tests program adequacy,while achievement tests only test the student. Formative evaluation refers to the process of trying out components of prototypes of instructional materials with student(s) and based on feedback from them, revising the original program. This process of revision as a result of feedback from student(s) continues until the quality of the instructional material is at the desired level of effectiveness and efficiency.

Specifically therefore, this study is important for the following reasons:

1. Through responses to a questionnaire it will identify the perceptions of secondary school teachers' and administrators' in Imo State of Nigeria as to

the suitability of extant formative evaluation procedures for secondary schools in the State.

2. Through responses to a questionnaire it will determine the extent to which secondary school teachers' and administrators' perceive themselves as possessing some selected skills for conducting formative evaluation.
3. Through responses to a questionnaire this study will identify secondary school teachers' and administrators' perceptions of organizational and individual factors that facilitate or hinder the adaptation of formative evaluation program in secondary schools in the State.
4. It will identify what modifications (if any) of extant models of formative evaluation can be made to suit the educational needs of secondary schools in Imo State of Nigeria.
5. It will identify what modifications (if any) can be made in organizational structure of secondary educational systems to encourage the adaptation of formative evaluation in secondary schools in Imo State of Nigeria.

Generalizability of the Study

Education in Imo State of Nigeria is centrally controlled by the State Government. The Ministry of Education is an arm of State Government charged with the responsibility

of enunciating educational policies for the State and implementing Federal educational policies as these suit the needs of the State.

All State educational institutions are under the control of the Ministry of Education which coordinates such activities as recruitment, promotion and discipline of staff and the provision of "basic infrastructural facilities" for use in the teaching-learning process.

It is assumed that a study using a randomly selected sample of secondary school teachers and administrators in Imo State can be generalized to all secondary school teachers and administrators in that State.

Limitations of the Study

The following limitations influenced the course of this study:

1. Because of time, cost and transportation constraints, this study was limited to a selected sample of secondary schools in Imo State of Nigeria (42 out of 210).
2. The study did not attempt to develop and formatively evaluate instructional materials. Rather it is interested in the suitability of procedures for formative evaluation identified from extant formative evaluation models for quality improvement of prototype instructional materials.

3. The study did not attempt to draw respondents from commercial producers and distributors of instructional materials. Rather it was limited to secondary school teachers and administrators.
4. This study is designed as an exploratory study attempting to derive base line data for the development of a formative evaluation program which can be further tested for greater generalization across the target population.

Research Questions:

Data collected in this study were used to answer the following research questions:

1. What are the perceptions of secondary school teachers and administrators as to the suitability of formative evaluation procedures for secondary schools in the Imo State of Nigeria?
2. To what extent do secondary school teachers and administrators perceive that they possess some selected skills for conducting formative evaluation?
3. What factors do secondary school teachers and administrators perceive will hinder or facilitate the utilization of a formative evaluation model in secondary schools in Imo State of Nigeria?

4. Based on secondary school teachers and administrators perceptions, what modifications (if any) of existing models of formative evaluation is necessary to best serve the needs of secondary education in Imo State of Nigeria?
5. Based on secondary school teachers and administrators perceptions, what modifications (if any) in organizational structure of secondary educational systems should be made in order to encourage the adaptation of formative evaluation in Imo State of Nigeria?

Definition of Terms

The definition of some of the terms that are commonly used in this study are presented below:

Formative Evaluation: This may be conceptualized as the process wherein developers of prototype instructional systems collect and analyze information for purposes of correcting system deficiencies. To operationally define this concept, techniques must be available which answer three types of questions: (a) how to identify major discrepancies in the prototype via data collection; (b) how to analyze these data and develop revision hypotheses; and (c) how to design, integrate and evaluate the revisions. Abedor.[41]

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[41] Allan Joseph Abedor, "Second Draft Technology..." op. cit. p.10.

Prototype: An experimental or untried model for an instructional system or product to be tested to determine those revisions needed to achieve the terminal objectives; it precedes wide-scale use of the system or product for instructional purposes.[42]

Program Evaluation: This is defined as data collection and analysis for purposes of making decisions relative to program modification or termination. A program here refers to an infinite number of instructional development projects aimed at improving the efficiency and effectiveness of learning and teaching. Abedor and Gustafson.[43]

Instructional Material: A developed unit for instruction whose content is recorded or printed in the form of textbooks, slides, audio cassettes, records, 16 mm films, lesson plans, 8 mm films, radio and television programs, games and simulations, transparencies, etc. for use in a learning-teaching situation - Komoski.[44]

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[42]Association for Educational Communication and Technology. Educational Technology, Definition and Glossary of Terms Vol. 1. Washington, D.C. AECT, 1977 p. 228

[43]Allan Joseph Abedor and Kent L. Gustafson. Evaluating Instructional Development Programs: Two Sets of Criteria. Audio Visual Instruction. December 1971, p. 2.

[44]P. Kenneth Komoski: "An Imbalance of Product Quanity and Instructional Quality: The Imperative of Empiricism" op. cit. p.360

Instructional Developer: This refers to a teacher or a member of a staff of an institution charged with the responsibility of designing and producing instructional materials.[46]

Secondary Education: The form of formal or classroom bound education for pupils within the ages of nine and sixteen years old which comes in between the primary and tertiary levels of education. Secondary education embraces secondary grammar school, secondary technical school and teacher training colleges. Whenever used in this study, secondary education refers to secondary grammar school.

Secondary Grammar School: This refers to an aspect of secondary education that emphasizes acquisition of general knowledge without much focus on the acquisition of specific skills.

Ministry of Education: An arm of State or Federal government responsible for enunciating and executing all government policies related to all levels of education.

Permanent Secretary: This refers to a career civil servant in charge of administration in the Ministry of Education. He sees to the coordination of policies and the implementation of such policies as they relate to the Ministry of Education.

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[46] Allan Joseph Abedor "Development and Validation of a Model Explicating the Formative Evaluation Process of Multi Media Self Instructional Learning System" op. cit.

Commissioner for Education: In Nigeria, the term refers to an official appointed by the Governor of a State and charged with the responsibility of directing the educational affairs of that State. The Permanent Secretary reports to the Commissioner for Education.

School Administrator: This refers to principals of secondary schools used for this study.

Instructional Innovation: A planned or unplanned change aimed at introducing something new into an educational system.

Feedback: Any information,whether verbal or non verbal, communicated to a developer for formative evaluation of a prototype.

Revision: Altering or modifying the elements or sequence of an instructional material as a result of feedback from users.

Overview

The following format is adopted for this study. Chapter I covers the introduction and statement of the problem, the purpose of the study, the need for the study, the Relevance of the study, Generalizability of the Study, Limitations of the Study, Research Questions and Definition of Terms.

Chapter 2 reviews literature pertinent to this study. In Chapter 3 the procedures and methodology for the study are presented. This includes a definition of the population, a definition of the sample, the selection of sample, development and pilot testing of questionnaire and the administration and collection of the questionnaire. Chapter 3 concludes with methods used for analyzing the study. Analysis of data is presented in Chapter 4. Chapter 5 discusses the Summary, Conclusions and Recommendations made on the basis of the findings from this study.

CHAPTER II

REVIEW OF LITERATURE

This review is organized into three sections. Section A focuses on types of data essential for formative evaluation. Section B takes a look at various formative evaluation models for commonality of techniques. Section C considers factors that are essential for the adoption of innovations. Under this section will be discussed organizational and individual factors as well as attributes of innovations that may facilitate or hinder their adoption.

A. TYPES OF DATA FOR FORMATIVE EVALUATION

Different authors have used different terminologies to describe the types of data considered essential for formative evaluation. In this section some of these descriptors will be examined and their implications for formative evaluation analyzed.

The importance of identifying the various types of data has been stressed by Cunningham[47] who came up with a

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[47] Donald J. Cunningham: "Comments on the Case Studies of Formative Evaluation--The Sources of Information". Viewpoints Bulletin of the School of Education, Indiana University, Bloomington, Indiana, 1972, p. 112-113.

model suggesting three major sources of information relevant to formative evaluation. The first is what he calls "internal information" or information that can be obtained about an instructional product by "mere inspection". The second is "external information" or "information concerning the effects of the product or its components on the behavior of students, teachers, parents," etc. The third source is the "contextual information" or information related to the conditions under which the materials are expected to function. Similar categories of data have been suggested by Ellis[48] and the Joint Committee on Programmed Instruction and Teaching Machines.[49]

Cunningham[50] points out that many formative evaluators rely more on "external information" to the neglect of the "internal" or "contextual". This view is supported by Alkin and Baker when they said:

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[48]Henry C. Ellis: "Judging the teaching effectiveness of Programs" Trends in Programmed Instruction (Gabriel D. Ofiesh and Wesley C. Meierhenry eds.) Washington, D.C.: National Education Association, 1964, p.207.

[49]Joint Commission on Programmed Instruction and Teaching Machines: "Recommendations for Reporting the Effectiveness of Programmed Instruction Materials." A.V. Communication Review. Vol. 14, No. 1, Spring 1966, p. 118-119.

[50]Donald J. Cunningham, op.cit. p.113

> Although there have been many recommendations regarding the sort of data to collect in program development, research on data gathering have centered on the consideration of cognitive achievement. 51

This is understandable especially when it is realized that proponents of formative evaluation have been those in the vanguard of programmed instruction. According to Ellis[52] "the most fundamental kind of data which reflects the teaching effectiveness of programs is some measure of gain in achievement." This is not to suggest that other categories of data are unimportant. However, when one considers the limitations for using "internal information" as put forward by Ellis, one can only hope that "future studies will reveal those internal characteristics of programs that correlate highly with desired objectives."[53]

A more detailed list of categories of data for formative evaluation provided by Paulson (1969) is paraphrased by Abedor[54] as Table 2.1 below:

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[51] Eva L. Baker and Marvin C. Alkin. op. cit. pp. 394-395.

[52] Henry C. Ellis, op. cit. p. 207

[53] Ibid, p. 207

[54] Allan Joseph Abedor: Development and Validation of a Model Explicating the Formative Evaluation Process of Multi-Media Self Instructional Learning Systems. op. cit. p.37

TABLE 2.1 CLASSES OF DATA AND SPECIFIC INDICATORS FOR FORMATIVE EVALUATION

Classes of Data	Specific Indicators
1. Antecedent data (assessment of student entry behavior)	Pretests, General Abilities (Standardized tests)
2. Technical data (assessment of instructional stimuli quality)	Student comments, Technical Consultant comments
3. Process data (assessment of student behavior during learning experience)	Tryout monitor observations and comments
4. Learning data (assessment of student progress towards learning objective)	Enroute responses and feedback during lesson
5. Criterion achievement data	Post test, criterion-referenced tests
6. Attitudinal data	Rating scale, questionnaire, student comment

As is obvious from the above table, Paulson also presented a list of instruments for collecting each type of data. This will be the subject of discussion in Section B of this review.

Alkin and Baker[55] are of the opinion that the following types of data are essential for formative evaluation.

1. Learner criterion test performance
2. Learners within-program error response
3. Learners attitude towards a learning program and,
4. Implementation data during the utilization of a product.

It can be seen from these lists that formative evaluators have a concensus of opinion as to the types of data that are essential for formative evaluation. For instance, items in Paulson's and Alkin and Baker's categories are interchangeable and have their counterparts in the lists provided by Ellis, Cunningham and the Joint Committee on Programmed Instruction and Teaching Machines.

Identification of these various categories of data has organizational value for this study or for any other work on formative evaluation. First it ensures that important categories of data are not omitted. Second, it

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[55] Eva L. Baker and Marvin C. Alkin, op. cit. p. 394

helps to identify those techniques which can be used to collect and analyze such data.

B. FORMATIVE EVALUATION TECHNIQUES

This section is intended to provide answers on types of techniques that can be used for conducting formative evaluation. The term "technique" as used in this study refers to "those methods or procedures used to (develop) gather, analyze and report evaluation data" Gooler[56]. Following a review of some formative evaluation models several techniques considered essential for formative evaluation have been identified. These techniques have been grouped into the following: (1) pre-requisites for formative evaluation, (2) data collecting instruments and (3) material revision techniques. Each of these major categories will be split into their component units for more detailed discussion. Table 2.2 presents a matrix which serves as a basis for identifying techniques that are common to all the models.

1. Pre-requisites for Formative Evaluation: These refer to those conditions a formative evaluator must ensure are satisfied for a successful formative evaluation to occur. Some of these pre-requisites refer to (a) selection of the

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[56]Dennis D. Gooler: "Formative Evaluation Strategies for Major Instructional Development Projects". Paper delivered as part of a symposium entitled Formative Evaluation: Issues and Applications. Annual meeting of the Association for Educational Communications and Technology. New Orleans, L.A.: March 4-8, 1979, p.2.

TABLE 2.2 TECHNIQUES COMMON TO FORMATIVE EVALUATION MODELS

	Tutorial Approach				Large Group Approach					Small Group Approach
Techniques	Gilbert	Robeck	Silberman	Horn	Dick	Paulson	S. Markle	VanderMeer	Light & Reynolds	Abedor
a. Size of Sample (1) Tutorial Approach	X	X	X	X						
(2) Large Group					X	X	X	X	X	
(3) Small Group										X
b. Specification of Administrative Rules				X	X				X	X
c. Specification of Behavioral objectives	X	X	X	X	X	X	X	X	X	X
d. Construction of Criterion-Referenced Items	X	X	X	X	X	X	X	X	X	X
e. Pre Test	X	X	X	X	X	X	X	X	X	X
f. Post Test	X	X	X	X	X	X	X	X	X	X
g. Interim Test	X	X	X	X	X					X
h. Student, Teacher & Consultant Comments	X	X	X	X						X
i. Try out monitor observation	X	X	X	X						X
j. Tryout monitor interview	X	X	X	X						X
k. Analysis of data	X	X	X	X	X	X	X	X	X	X
l. Revision of data	X	X	X	X	X	X	X	X	X	X
m. Comparison with matched groups	X	X	X	X	X	X	X	X	X	X
n. Validation of data	X	X	X	X	X	X	X	X	X	X

appropriate size of sample for formative evaluation (b) specification of administrative rules for formative evaluation (c) specification of behavioral objectives and (d) construction of criterion-referenced test items.

(a) Selection of Size of Sample for Formative Evaluation

A formative evaluator has to decide on the number of subjects to use in his/her revision exercise. There are three main sizes of samples for formative evaluation, namely: (1) the use of one student at a time or the Tutorial Approach (2) the use of more than 20 students at a time or the Large Group Approach and (3) the use of 4-8 students at a time or the Small Group Approach.

(1) Tutorial Approach: This involves a situation in which a tutor interacts with one subject at a time as that subject uses a prototype instructional material. This interaction involves observing the subject for signs of difficulty and volunteering solutions. It also involves interviewing the subject to find out her problems. There are varying procedures for using the tutorial approach. Some of these are summarized by Susan Markle,[57]

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[57]Susan M. Markle: Empirical Testing of Programs. Programmed Instruction: The Sixty-Sixth Yearbook of the National Society for the Study of Education Part II. (ed) Phil C. Lange. Chicago, Illinois: The University of Chicago Press, 1964, p.

Gilbert,[58] Robeck[59] Silberman et al.,[60] and Horn [61]among others, have all used the tutorial approach for formative evaluation. In applying this approach Gilbert advocates:

> Get yourself one student. I repeat one student. You are about to perform an experiment in which you are permitted no degrees of freedom--that is, if the word "self" in self instruction can be taken seriously. Once you have discovered an efficient program for one student, you will have described the gross anatomy of the most generally useful program. 62

Robeck[63] used a single "bright" sixth-grade student to obtain feedback on a prototype programmed text. Revisions based on this feedback gave rise to a second draft which was

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[58]Thomas F. Gilbert: "On the relevance of laboratory Investigation of learning to Self-Instructional Programming": In Teaching Machines and Programmed Learning (eds) A.A. Lunsdaine and Robert Glaser Washington, Department of Audio-Visual Instruction. National Education Association, 1960, pp. 475-485.

[59]Robeck, M.D. Op. cit.

[60]Silberman, Harry: Use of exploratory research and individual tutoring techniques for the development of programming methods and theory. Final report. NDEA Project, 7-14-000-181. Santa Monica, California: Systems Development Corporation, 1964.

[61]Robert E. Horn: Developmental Testing Ann Arbor, Mi. Center for Programmed Learning for Business, 1964.

[62]Thomas F. Gilbert, op. cit. p.479

[63]Robeck, M.D.: op. cit.

again given to another student and led to the production of a third draft. Both the unrevised version of the prototype and the second and third drafts were tested on three matched groups of students. The results of the two revised versions were significantly better than the result obtained from the unrevised version.

Even though Robeck made mention of the use of experimental and control groups, he did not specify the sampling procedure adopted nor the processes used during the tutorial interaction to identify discrepancies. Despite these minor shortcomings, Robeck's study does show that data from a single student can be used for prototype revision.

Silberman et al.[64] developed a technique which they called "tutorial engineering," an acronym for tutorial approach for formative evaluation. This technique did not differ significantly from the work of Robeck except that the method for analyzing the feedback for consistency was presented. This analysis yielded "gap", "irrelevancy" and "mastery" hypotheses about major instructional problems common to the programs. The "gap" hypothesis refers to a major element of the program that was ommitted; the "irrelevancy" hypothesis points out what was included that should not have been in the program while the "mastery"

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[64]Silberman, Harry Op. cit.

hypothesis stipulates the accepted version of a part of a program which a student must master before proceeding further in the program.

This analysis of students' feedback for identification of discrepancies is similar to the technique used by Light and Reynolds[65] to revise an elementary mathematics curriculum. According to them:

> Each day all tests completed during the class period are examined...for each failure the question was asked, why did this student fail the test associated with these materials?... To locate a probable cause of failure, answers to these five questions were always sought by the evaluator:
>
> 1. What was similar about the items missed on the test?
> 2. How did the items missed differ from those...passed?
> 3. Where in the instructional materials was the content presented?
> 4. What in the instructional materials could have caused the test failure?
> 5. How can the hypothesized cause of failure be experimentally tested?

It must be pointed out that Light and Reynolds used only analysis of post test data from a large group of students. However, the formulation of these "hypotheses"by Silberman et al. as an aid for identifying possible causes of discrepancies, was an advancement over the work of Robeck.

Horn[66] is of the opinion that enough data can be obtained from three students to make significant revisions

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[65]Judy A. Light and Larry J. Reynolds op cit. p.55

[66]Robert E. Horn, op. cit. p.5.

in any instructional material. This is especially true if these students are carefully selected to represent the "most capable," the "lower ability" and the "average ability" students. After revision, three equivalent types of students can also be used to test out the revised materials. This is an advancement over Robeck's single "bright" student or Silberman's unclassified subjects. Horn also provided "administrative procedures" for using the tutorial approach for formative evaluation (Appendix B).

For those who advocate the use of the tutorial approach its advantages are based on the premise that use of more than one student is considered cumbersome for a tutor. Again, the large number of students may fail to expose "individual candid reactions" or the "stupid" questions which underlies a major program deficiency-Markle[67].

Some of the major disadvantages of the tutorial approach are:

1. It is expensive in terms of cost and time (Abedor)[68]
2. It is susceptible to bias on the part of the evaluator.
3. It may not be representative of the target population.

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[67] Susan M. Markle: op.cit. p.122

[68] Allan Joseph Abedor op. cit. p.31

Despite these disadvantages, Susan Markle[69] feels that the tutorial approach should form an integral part of the "developmental stages" or the "laboratory phase" of instructional development.

(2) The Large Group Approach: A study by Dick[70] showed that non professional inexperienced program writers "preferred to base their revision on data from a large sample (N=40 to 50) rather than from an individual student". Given seven types of data that included analysis of post test, error counts, student comments, teacher comments, list of correct and incorrect answers for all test items and page number where a specific item was taught in the text, Dick showed that these non professionals preferred error rate and teacher comments for their revision of a given instructional program. This present study is different from the work of Dick in that the respondents will not be presented with any instructional prototype to revise but rather will be requested to select an approach and techniques for formative evaluation as they consider suitable for their school system.

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[69] Susan M. Markle: op. cit. p.123

[70] Walter Dick: A Methodology for the Formative Evaluation of Instructional Materials. Journal of Educational Measurement, Summer, 1968, Vol. 5, No. 2, pp. 99-102.

Paulson,[71] VanderMeer et al.,[72] Light and Reynolds[73] Schwen and Keller[74] etc. have revised instructional materials using the large group approach. Paulson defines a large group approach as using feedback from twenty or more students for the revision of prototype instructional materials.[75] Light and Reynolds used the large group approach to "refine and improve on individualized mathematics curriculum employed in an elementary school classroom".[76] VanderMeer et al. used responses from intact classes to revise two

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[71] Paulson Casper F.:"Evaluation of Instructional Systems" (ed) Jack Crawford: National Research Training Manual Teaching Research Division of the Oregon System of Higher Education, Monmouth, Oregon, 1969.

[72] VanderMeer, A.W., Jack Morrison; Philip Smith: An Investigation of the Improvement of Educational Motion Pictures and a Derivation of Principles Relating to the Effectiveness of these Media. Pennsylvania: College of Education, The Pennsylvania State University, University Park, 1965, pp. 10-17.

[73] Judy A. Light and Larry J. Reynolds op cit p.45-77

[74] Thomas M. Schwen and John M. Keller: "A Case Study Developing Convergent Formative Evaluation Methodology." Journal of Instructional Development. Vol. 1. No. 1. Fall 1977, pp.31-35.

[75] Paulson Casper F. op cit p. iv-20

[76] Judy A. Light and Larry J. Reynolds op cit p.45

extant teaching films,[77] and Gropper et al[78] all used the large group approach to revise different types of instructional materials.

Some of the advantages of the large group approach as provided by Paulson[79] are:

a. it is easy to obtain intact classes

b. the instructional material prototype can be introduced in the class without sensitizing the students.

c. using an intact class provides more data base across the class and this increases the possibility of making correct decisions about instructional deficiencies.

Some of the disadvantages of the large group approach have been mentioned in the discussion on the Tutorial Approach.

(3) Small Group Approach: Despite the above advantages of the Large Group Approach and the Tutorial Approach, Abebor[80] developed his "MK I model" for formative evaluation and submitted it to seven university and community college faculty for use in formatively evaluating their

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[77] A.W. VanderMeer and RobertMontgomery op cit.

[78] George L. Gropper, Arthur A. Lumsdaine and Virginia Shipman, op cit

[79] Paulson Casper F. op cit p. iv-21

[80] Allan Joseph Abedor: "Second Draft Technology op.cit pp. 12-17

prototype instructional materials.[81] The MK I model consists of "technical review" by experts, "tutorial tryout" and "group tryout". Abedor found out that "the developers sampled were unwilling to apply the MK I procedures."[82] In particular, the concept of "iterative revisions" based on data from "experts, individual students and then large groups appeared totally out of the question because of the time and resources involved." Developers were unwilling to make multiple revisions of the whole set of interrelated instructional materials on the basis of a single student. On the other hand, the prospect of revising using the large group approach "seemed more acceptable but posed logistical and sequencing problems..."

From a review of literature on small group as "problem solving agencies" Abedor felt that "a more appropriate model for formative evaluation of multi-media lessons was one in which the necessary data were collected by means of face-to-face interaction or debriefing between the lesson developer and a small group of students. The task of problem identification and design of revisions could thus become a lesson developer/student group responsibility."[83]

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[81] Ibid, p.13

[82] Allan Joseph Abedor: Second Draft Technology op cit. p. 15.

[83] Ibid, p.18

Hence, the small group approach or the "MK II model" was developed to be used with 6-10 students during formative evaluation.

(b) Specification of Administrative Rules:

This involves stating clearly all the activities an evaluator has to perform prior to and during formative evaluation. Making these "ground rules" specific ensures that the same activities can be performed during a replicate performance.

Not all the authors considered provided administrative rules for formative evaluation (Table 2.2). However, those who advocate for it, Abedor,[84] Horn,[85] Dick[86] do so on the understanding that its absence can expose the process of formative evaluation, especially the tutorial approach to the whim and caprice of individual evaluators during their interaction with subject(s). Specimens of administrative rules by Abedor and Horn are presented as Appendix B.

(c) Specification of Behavioral Objectives:

Robert F. Mager defines an objective as:

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[84] Allan Joseph Abedor, "Development and Validation of a Model" op. cit. pp. 191-4.

[85] Robert E. Horn; op. cit. p. 6 and p. 12.

[86] Walter Dick, op. cit. pp. 101-102.

> A description of a performance you want learners to be able to exhibit before you consider them competent. An objective describes an intended result of instruction rather than the process of instruction itself. 87

All the formative evaluators considered in this review (Table 2.2) have testified to the importance of well specified behavioral objectives for formative evaluation. According to Sullivan, "assessment based upon instructional objectives is a crucial part of well designed formative evaluation."[88] An instructional product is developed to enable learners to acquire specific capabilities. The only way to ascertain if these learners have learned is by testing them on the instructional objectives of the product. Herein lies the importance of clearly specified objectives. Many authors such as Popham,[89] Merrill and Goodman,[90] Tyler[91] have explicated procedures for specifying behavioral objectives.

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[87] Robert F. Mager: Preparing Instructional Objectives 2nd Edition. Belmont, California: Fearon Publisher, Inc., 1962, p.25.

[88] Howard J. Sullivan: "Objectives, Evaluation and Improved Learner Achievement," In AERA Monograph Series on Curriculum Evaluation Instructional Objectives, by W. James Popham, Elliot W. Eisner, Howard J. Smith and Louise L. Tyler. Chicago; Rand McNally and Company, 1969, p.82.

[89] W. James Popham: Objectives and Instruction. In W. James Popham, Elliot W. Eisner, Howard J. Sullivan, Louise L. Tyler Instructional Objectives. Op. cit., p.32-52.

[90] David Merrill and R. Irwin Goodman. Selecting Instructional Strategies and Media: A Place to Begin. National Special Media Institutes. 1972, p. 1-196.

[91] Louise L. Tyler. "A Case History: Formulation of Objectives from a Psychoanalytic Framework" In W. James Popham, Elliot W. Eisner, Howard J. Sullivan, Louise L. Tyler, Instructional Objectives, op. cit., p. 100-119.

Despite the abundance of evidence on the importance of well specified objectives for formative evaluation, the work of Margaret Ammons[92] has shown that in practice some school systems rarely relied on well specified objectives to guide their educational programs. Reasons for this reluctance to use behavioral objectives have been explicated by Eisner[93]. The most important of these is the philosophical disposition of schools, teachers and administrators with regard to their "views about the nature of education". To those who believe in the application of scientific methods of management proposed by Francis Taylor at the beginning of the century, this means breaking down tasks into manageable units that could be taught and evaluated at every step of the production line. The same can also be said of the proponents of the behavioral school of psychology such as Thorndike, Watson, etc. The science of education and psychology was then evolving. Emphasis here was on empiricism. Thus, "if what education is after is a change in behavior--something you can bring about and then observe" then these behaviors should be stated in terms that could be measured. Such assessment of behavior gained impetus from the work of Skinner[94]

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[92]Margaret Ammons: "An Empirical Study of Progress and Product in Curriculum Development." Journal of Educational Research. Vol. 27, No. 9 pp 451-457. 1964.

[93]Elliot W. Eisner: "Instructional and Expressive Educational Objectives: Their formulation and use in curriculum" In W. James Popham, Elliot W. Eisner, Howard J. Sullivan, Louise L. Tyler Instructional Objectives, op. cit., pp. 1-31.

[94]B.F. Skinner Operant Behavior. American Psychologist Vol. 18 No. 8 August 1963 pp. 503-515.

who showed that complex behavior can be taught through his principle of "successive approximation". This involves breaking such complex behaviors into small attainable units and providing immediate feedback all along until the complex behavior is achieved.

However, the work of John Dewey[95] provided some encouragement to those who are opposed to this "mechanistic" view of education. According to John Dewey, man's relationship with his environment is transactional. Man is an organism who interacts with his environment. Man is not a matter to be molded but an individual who brings with him needs, potentialities and experiences with which to interact with his environment. What was important educationally for Dewey was for the child to gain increasing intelligent control in planning his own education. To do this, to be a master of his own educational journey required a teacher sympathetic with the child's background and talents. Such education is one concerned neither with molding behavior through extrinsic rewards, nor with formulating uniform quantifiable objective standardsfor appraising achievement.

This view of Dewey is echoed by many proponents of Cognitive Theory of Learning such as Brunner.[96] In an effort

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[95]John Dewey as In Elliot W. Eisner, op. cit.

[96]Jerome S. Bruner : Toward A Theory of Instruction Cambridge Massachusetts, Harvard University Press, 1966, p. 39-72.

to accommodate those who may be reluctant to specify behavioral objectives Eisner has proposed the term "expressive objectives" to distinguish this from "instructional (behavior) objectives". According to him:

> An expressive objective does not specify the behavior the student is to acquire after having engaged in one or more learning activities. An expressive objective describes an educational encounter. It identifies a situation in which children are to work, a problem with which they are to cope, a task in which they are to engage, but it does not specify what from that encounter situation, problem or task they are to learn. An expressive objective provides both the teacher and the student with an invitation to explore, defer or focus on issues that are of peculiar interest or import to the inquirer. An expressive objective is evocative rather than prescriptive. 97

Is formative evaluation still possible with such instructional "situations" where objectives have not been specified behaviorally? This is possible since the "educational encounters", "situations", "problems or tasks" must be "meaningful" to the child to be comprehended. Through formative evaluation, it will be possible to ensure that such materials presented to students are not meaningless.

(d) Construction of Criterion-Referenced Test Items

This is a form of achievement measure that tends to ascertain an individual's status with respect to some criterion or performance standard. It is a test based on course objectives that attempts to assess how far a student has shown

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[97] Elliot W. Eisner, op. cit.

mastery over these objectives--Glaser,[98] Popham,[99] Mehren and Lehmann,[100] Ebel.[101] There is thus an intimate relationship between clearly specified behavioral objectives and criterion-referenced measures for these are cued to ascertaining if these objectives are being attained.

This concept of criterion-referenced measure is distinguished from a second form of achievement measure known as norm-referenced measure. This aims at ascertaining an individual's performance in relationship to the performance of other individuals on the same measuring device. Glaser[102] Popham.[103]

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[98]Robert Glaser: "Instructional Technology and the Measurement of Learning Outcomes: Some Questions." American Psychologist. 1963, Vol. 18, No. 8, p.519.

[99]W. James Popham: Evaluating Instruction, Englewood Cliffs, New Jersey, 1973, p.25.

[100]William A. Mehrens and Irvin J. Lehmann. Measurement and Evaluation in Education and Psychology. 2nd ed. New York: Holt, Rinehart and Winston, 1978, p. 48-60.

[101]Robert L. Ebel: Essentials of Educational Measurement. 3rd Ed. Englewood Cliffs, New Jersey, Prentice-Hall, Inc., p. 10.

[102]Robert Glaser, op. cit. p. 520.

[103]W. James Popham: Evaluating Instruction. op. cit. p.25.

The distinction between these two forms of achievement measures may not be very glaring especially when one realizes that both can be based on a given content area and well specified objectives. However, when one compares the various uses to which they are put and how their test items are constructed this confusion tends to disappear. According to Popham, both forms of tests can be used to "make decisions about individuals". However,

> there is usually a difference in the context in which each decision is made. Generally, norm-referenced measure is used when a degree of selectivity is required; for example, when there is a competition to fill a position and the best candidate is needed. It is critical in such situations therefore that the test measure permit relative comparison among individuals. On the other hand, when we are only interested in whether an individual possesses a particular competence, and there is no constraints regarding how many individuals can possess that skill, criterion-referenced measures are suitable. 104

It is this ability of criterion-referenced measure to ascertain if an individual "possesses" a particular competence" that renders it most suitable for its second function--that of helping to determine the effectiveness of an instructional program. Thus according to Popham:

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[104] Ibid, p.26

> In decisions regarding treatments (programs) we might design a criterion-referenced measure which reflected a set of instructional objectives supposedly achieved by a replicable instructional sequence. By administering the criterion-referenced measure to appropriate learners who had completed the instructional sequences, we could decide the effectiveness of the sequence. 105

Many other authors are in support of this view about the pertinence of criterion-referenced measures to formative evaluation. According to Mehrens and Lehmanns:

> Employing the individually prescribed instruction or mastery model of learning is not the only use of criterion-referenced measures. One may also use such data to help evaluate (make decisions about) instructional programs. In order to determine whether a specific instructional treatment or procedures have been successful, it is necessary to have data about outcomes on the specific objectives the program was designed to teach. A measure comparing students to each other (norm-referencing) may not give so effective data as a measure comparing each student's performance to the objectives. 106

The suitability of criterion-referenced measure for formative evaluation is further magnified when one considers the procedures for "item construction" and "item improvement". According to Popham:

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[105] Ibid, p.26

[106] William A. Mehrens and Irvin J. Lehmann op cit. p.52.

> When an individual constructs items for norm-referenced tests he tries to produce variant scores so that individual performance can be contrasted. As a consequence, he makes all sorts of concessions, sometimes subtle, sometimes obvious to promote variant scores. He disdains items which are "too easy" or "too hard". He avoids multiple choice items with few alternative responses. He tries to increase the allure of wrong answer options. He does all these to develop a test which will produce different scores for different people. Sometimes this overriding criterion may reduce the adequacy of the measurement instrument for even irrelevant factors may be incorporated on items just to produce variance. 107

On the other hand, the designer of criterion-referenced items is guided by a different principle.

> His chief purpose is to make sure the item accurately reflects the criterion behavior. Difficult or easy, discriminating or indiscriminate, the item has to represent the class of behaviors delimited by the criterion.108

Can formative evaluation be possible if teachers exhibit tremendous opposition to constructing criterion referenced tests? The construction of criterion-referenced measures may represent an ideal situation. Every teacher has a means of assessing if his or her class is learning what he or she intends them to know. Such questions, whether criterion-referenced or norm-referenced, can serve a useful purpose for formative evaluation. This can serve as a starting point while teachers can gradually be led through in-service training on how to construct criterion-referenced tests.

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[107] W. James Popham: Evaluating Instruction. op. cit. p.30

[108] Ibid, p.30

2. Data Collecting Instruments

The following instruments are commonly used for collecting data for formative evaluation (e) Pretest (f) post test (g) Interim tests during a program (h) Student and consultant comments (i) Tryout monitor observation (j) Tryout monitor interview.

(e) Pretest

All the authors of formative evaluation models reviewed regard the pre-test as very essential for the process (Table 2.2). According to Light and Reynolds:

> Valid test results are required for the operation of the curriculum. Through testing, the student is placed at an appropriate level of the curriculum his strengths and weaknesses are determined for his level of the curriculum. 109

The Joint Committee on Criteria for Assessing Instructional Programs has strongly insisted on the necessity for pretesting before formative evaluation.[110] According to Susan Markle:

> A pretest gives a far more precise measure of the students starting point than do all the achievement and aptitude scores that can be obtained. 111

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[109]Judy A. Light and Larry J. Reynolds, op. cit. p. 48

[110]Joint Committee on Programmed Instruction and Teaching Machines, op. cit. p.119

[111]Susan M. Markle op. cit. p.128

(f) Post Test

Equally important in formative evaluation is the use of post tests. Whether it is during the actual revision exercise or during the validation process of formative evaluation, post tests are the most important instruments for determining the effectiveness of an instructional material for achieving stated objectives.

(g) Interim Tests

In addition to the above two types of test instruments many authors are of the opinion that "within program responses" while using an instructional material can equally provide useful information for program revision, Alkin and Baker.[112] There should be no difference between such interim test items and items used for post tests. In fact, efforts should be made to see that all test items are drawn from the same test population. The matrix sampling technique introduced by Popham,[113] Shoemaker,[114] Husek and Sirotnik[115] make this possible.

"Matrix sampling" or "item sampling" makes it possible for different subjects to complete different test items on a

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[112]Eva L. Baker and Marvic C. Alkin op cit. p. 394-396.

[113]Popham, op. cit.

[114]David M. Shoemaker: "Evaluating the Effectiveness of Competing Instructional Programs." Educational Research Vol. 5, No. 5, May 1972, p. 5-8.

[115]Husek, T.R. and Sirotnik, K. "Matrix Sampling" Evaluation Comment. Vol. 1, No. 3, pp. 1-4, 1968.

given objective rather than completing identical test items. This permits the sampling of more behavior with "shorter tests" and is regarded as more "appropriate for evaluating instructional sequences" than the technique that is based on the principle of "everybody gets the same items" used to make decisions about individuals.[116] Popham presents an excellent illustration of how this is possible. Suppose an instructor has an instructional unit with 10 objectives and a pool of 10 test items for each objective. Rather than giving each student in the class this 100-item test, ten different tests could be prepared each with 10 different items. Suppose there are 20 students in the class. It is possible to randomly assign 2 students to a test. In the end, the tutor will obtain 20 different responses for each objective and thus can count on more information for the revision exercise.[117]

It can be seen from this exposition that what guides the selection of test items for the formative evaluation of instructional materials are the objectives which the material is supposed to help in achieving. This also has something to do with the validity of test items used for formative evaluation. According to Popham:

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[116] James Popham, op. cit. p.39

[117] Ibid, p. 40-41

> Criterion-referenced measures are validated primarily in terms of the adequacy with which they represent the criterion. A carefully made judgement based on the test's apparent relevance to the behavior delimited by the criterion is the best procedure for validating criterion-referenced measures. Measurement experts refer to this judgement-based operation as content validity. The more precisely instructional objectives can be explicated, therefore, the more accurately we can reach judgements regarding a test's content validity.118

Content validity is not the only type of validity essential for item construction but it is the most important for formative evaluation. Others are "predictive validity" in which predictions made by a test are confirmed by the later behavior of the subjects,or "construct validity" which is the extent "to which a particular test can be shown to measure a hypothethical construct" like "intelligence, anxiety, creativity."[119] These are regarded as "hypothetical constructs" because they are not directly observable but rather are inferred on the basis of their observable effects on behavior. According to Mehrens and Lehmann:

> Construct validity is the degree to which the test scores can be accounted for by certain explanatory constructs in a psychological theory. 120

Herein lies the importance of obtaining data from other sources outside students used for formative evaluation. Such other sources of data have been provided in Table 2.1 of this study and techniques for collecting them are discussed below.

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[118] Ibid, p.36

[119] Walter R. Borg and Meredith Damien Gall Educational Research, New York, Longman, Inc., 1979, p.216

[120] William A. Mehrens and Irvin J. Lehmann op cit. p.114

(h) Student, Teacher and Consultant Comments

In Table 2.1 (Abedor), several types of indicators were identified as being useful for the revision of prototype instructional material. This view is supported by Cunningham,[121] Alkin and Baker,[122] Ellis,[123] Vanderschmidt.[124] Abedor[125] used a Likert-type scale to obtain additional data about attitudes of students who participated in formative evaluation; Horn obtained additional data through a "dialogue" with his students. It is apparent that these types of instruments can provide additional data for formative evaluation.

(i) Tryout Monitor Observation

Observation is another means that can be used for formative evaluation. It entails observing a subject as he uses an instructional material and providing assistance whenever he or she shows any sign of confusion or difficulty. Most authors that use the tutorial or the Small Group Approach see this as a very valuable means for data collection.

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[121] Donald J. Cunningham, op.cit. p.112

[122] Eva L. Baker and Marvin C. Alkin, op. cit. p.404

[123] Henry C. Ellis, op. cit. p.209

[124] Hannelore Vanderschmidt: "Validation Data for Programmed Tests: A Checklist for Evaluation of Testing" In Trends in Programmed Instruction, op. cit. p. 211

[125] Allan Joseph Abedor, "Second Draft Technology..." op. cit. p.27

(j) Tryout Monitor Interview

Subjects used for formative evaluation can be interviewed to find out their attitudes towards the instructional material and to find out the appropriateness of the sequence of the content of instructional materials. Alkin and Baker,[126] Susan Markle,[127] Mager.[128]

3. Material Revision Techniques

Included in this category are such subunits as (k) Analysis of Data (l) Revision of Data (m) comparison with matched groups (n) Validation of Instructional Materials.

(k) Analysis of Data

The various criterion-referenced test items are given to the selected sample of students after they had been exposed to the instructional material. The results are analyzed so as to discover causes of discrepancies and to look for ways of remedying such discrepancies. Silberman et al.[129]; Light and Reynolds[130] have provided excellent procedures for this analysis of post test results. The result of other instruments are also analyzed and their findings incorporated for the revision exercise.

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[126]Eva L. Baker and Marvin C. Alkin op. cit. p.404-405

[127]Susan Markle, op. cit. p.122-123

[128]Robert F. Mager: "On the Sequencing of Instructional Content". Psychological Reports. 1961, Vol. 9, pp.405-413

[129]Harry Silberman, op. cit. p.

[130]Judy A. Light and Larry J. Reynolds op cit. p.55

(l) Revision of Data

All the authors also agree that a revision exercise is essential in order for the formative evaluation process to be complete. However, not all of the models explicate the manner in which the results of these analyses can be integrated with the original material, Abedor.[131] Neither is there a consensus of opinion as to the number of revisions that may take place before a material is considered effective. This is left to the whim and caprice of an individual evaluator. However, herein lies the importance of well specified objectives and performance standards for evaluating such objectives. Such performance standards can serve as a good yard stick for knowing when to stop the revision exercise. Cost is another factor that may determine the number of revisions that may take place during formative evaluation.

(m) Comparison With Matched Groups

All authors agree that both the revised and unrevised instructional materials should be tested with matched groups of students using the same test instruments for purposes of finding out if there is any significant gain in performance when the two are compared.

(n) Validation

Validation testing in the strict sense intended by the recommendations of the Joint Committee on Criteria for

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[131]Allan Joseph Abedor, op. cit. p.26

Assessing Instructional Programs should be followed by publication of the results of the revised materials and not by any further revision of the program so tested. Its purpose therefore is to precisely describe to the prospective user the performance characteristics of the instructional material. Such performance characteristics should be obtained under clearly specified conditions. Validation data is meant to provide an answer to the question: "Who learns what under what conditions in how much time?" As such both producers and users are expected to provide a validation report about an instructional materials they produced or have used--Joint Committee on Programmed Instruction and Teaching Machines, Horn,[132]

C. Factors Essential for Adoption of Innovations

Since the need for, and the absence of formative evaluation was determined in the preliminary survey, the implementation of such a formative evaluation model in the educational system of Imo State of Nigeria is viewed as an instructional innovation. Havelock defines innovation as:

> Any change which presents something new to the people being changed. 133

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[132]Robert E. Horn, op. cit. p.2

[133]Ronald G. Havelock: "The Change Agent's Guide to Innovation in Education" 4th ed. Englewood Cliffs, New Jersey Educational Technology Publications. 1978, p.4.

An instructional innovation therefore is any novel idea introduced to an educational system to enhance teaching and learning. Formative evaluation will be a novel idea in the secondary school system in Imo State of Nigeria. As something new, one cannot be sure it will receive general approval by teachers and administrators. This is why this study includes a strategy to find out factors that may hinder or facilitate adoption.

Rogers and Shoemaker (1971) identified one such factor that could affect the rate of acceptance of innovation as the "attributes" of the innovation itself. According to them, there are five such "attributes" namely:

1. The relative advantage of the innovation compared to what it intends to replace
2. The compatibility of the innovation with the existing practice
3. The complexity of the innovation
4. The trialability of the innovation in the system prior to full scale adoption
5. The observability of the results of the innovation which shows it to be an improvement over that which it intends to replace.[134]

Rogers and Shoemaker feel that "individual perceptions" of these attributes can be used in predicting the rate of adoption of an innovation. This is why prospective users of

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[134]Everett M. Rogers with F. Floyd Shoemaker. Communication of Innovation: A Cross-Cultural Approach. 2nd ed New York: The Free Press, 1971, pp. 138-156

formative evaluation have been asked to specify their perceptions using these "attributes" as guidelines in developing the questionnaire for this study. Authorities in innovation have also lauded the usefulness of using "the survey feedback method" to bring about speedy acceptance of an innovation. According to Huse:

> The survey feedback method is a standardized questionnaire instrument used to identify data within organizations and to have teams within the organization work on their own data to bring about planned change and development. 135

Even though such teams could not be assembled to discuss perceptions of "attributes" of formative evaluation, it is hoped that responses to the questionnaire will provide a useful data base for future studies.

It is not only the characteristics of an innovation that can influence its rate of adoption. According to Evans and Leppman[136] and Abedor and Sachs[137] individual attitudes,

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[135]Edgar F. Huse, Organization Development and Change Los Angeles:West Publishing Co., 1975, p.164-167.

[136]Richard I. Evans and Peter K. Leppmann: Resistance to Innovation in Higher Education. San Francisco, Jossey-Bass, Inc., Publishers, 1968, p.16.

[137]Allan Joseph Abedor and Steven G. Sachs: "The Relationship between faculty development (FD) Organizational Development (OD) and Instructional Development (ID): Readiness for Instructional Innovation in Higher Education" In Bass Ronald L.; Lunsden, Barry D.: and Dills Charles (eds) Instructional Development: State of the Art. Columbus Ohio: Collegiate Publishing Inc., 1978, p 7

values, beliefs, skills and knowledge can go a long way in determining if an instructional innovation will be accepted or not. Attitudes refer to how positive an individual feels towards self, teaching and the proposed change. Values refer to the amount of importance an adopter attaches to teaching and student learning while the amount of knowledge of subject matter, of innovations and teaching methods possessed by an individual can help that individual in his bid to adopt an innovation. One ,however, feels it is possible to find out about "personality variables" associated with innovativeness by finding out individual perceptions of the attributes of an innovation. Rogers and Shoemaker cite the work of Harp (1960) who "feels that the inclusion of personality variables in analyses of innovativeness will contribute little." Harp is of the opinion "that if other sociological variables are included in investigations of innovativeness, the effect of personality" may disappear.[138] That is, however, an empirical question that needs further analysis (Rogers and Shoemaker).

The "attributes" of an innovation may be perceived as favorable by prospective adopters who may possess the pre-requisite skills and knowledge but if the organization is not "ready" for the innovation, it has limited chances of acceptance. Abedor and Sachs define "readiness" as "that critical combination of characteristics pre-requisite to the

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[138]Everett M. Rogers and F. Floyd Shoemaker op.cit p. 187

adoption of an innovation."[139] Organizational readiness is a variable defined as a combination of characteristics which influence the acceptance or tolerance of an innovation in the organization. The following are organizational characteristics which appear to favor easy acceptance of instructional innovation.

1. Structure, which allows open and free communication and group problem solving
2. Rewards for teaching or related activities
3. Norms that support innovation
4. Resources to support innovation
5. Policies that permit trial of innovation.[140]

According to Abedor and Sachs:

> Unless the structure permits open and free communication, there will be resistance to the innovation because faculty are not aware of the potential benefits and have inaccurate information about it. Or, if the norms do not support innovation in general, the introduction of innovation will be controlled by a few senior faculty acting as gatekeepers. The existence of restrictive policies and/or lack of resources are likely to constrain acceptance of instructional innovations. Lack of rewards for teaching-related activities will probably have a negative influence on faculty who otherwise might explore instructional innovations. 141

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[139] Allan Joseph Abedor and Steven G. Sachs, op. cit. p.8

[140] Ibid, p.8

[141] Ibid, p. 8-9

These three elements of attributes of instructional innovation, individual factors and organizational factors are very central to the concept of "faculty renewal" as proposed by Jerry Gaff (1979). Faculty renewal is an effort to improve the quality of instruction through the introduction of innovative activities and raising the "level of readiness" of both the individual and the organization in order to enable that innovation to flourish. These three elements have been discussed as "Organizational Development," "Instructional Development," and "Faculty Development" (Gaff,[142] Bergquist and Phillips,[143] Huse[144] Abedor and Sachs[145] Bass, et al.[146]

From this review, it can be seen that these three elements are closely related. Introducing an innovation without ensuring that prospective users have favorable attitudes

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[142]Jerry G. Gaff: Toward Faculty Renewal San Francisco: Jossey-Bass Publishers, 1978.

[143]Bergquist, W.H. Phillips, S.R., and Quehl, G.: A Handbook for Faculty Development. Washington, D.C.: Council for the Advancement of Small Colleges, 1975.

[144]Edgar F. Huse, op. cit. pp. 61-82.

[145]Allan Joseph Abedor and Steven G. Sachs, op. cit. p. 2-5

[146]Bass, Ronald K.; Charles R. Dills and D. Barry Lumsden: "Instructional Development: The State of the Art" In Bass et al. (eds) Instructional Development: The State of the Art. Columbus, Ohio: Collegiate Publishing Inc., 1978

towards it or that the organizational climate will be suitable for its adoption will not augur well for that innovation. This is why this study has gone a step further to determine what factors will facilitate or hinder the adoption of formative evaluation in the secondary school system of Imo State of Nigeria.

Implications of the Review on the Present Study

This study attempts to determine the perceptions of secondary school teachers and administrators about the suitability of extant formative evaluation models to the secondary schools in Imo State of Nigeria. Towards this end a review of works on formative evaluation by different authors has been done. This has led to the identification of types of data considered essential for formative evaluation and the procedures for collecting and analyzing these data. It has also led to the identification of three types of approaches for formative evaluation.

These elements formed the basis for developing the questionnaire for this study. Basically each respondent was requested to select a formative evaluation approach considered most suitable for his/her school. This was followed by questions aimed at finding out their perceptions of the various procedures for their suitability for formative evaluation in their school as well as questions to determine the

extent to which they perceive themselves as possessing some skills pre-requisite for formative evaluation.

Since the ultimate goal of this study is the implementation of a continuous formative evaluation program in the secondary school system, respondents were requested to identify factors they perceive will facilitate or hinder the adaptation of such a formative evaluation program in their schools. It is hoped that such responses will provide baseline data that can further be tested before being introduced into the secondary school system.

CHAPTER III

DESIGN OF THE STUDY

Introduction

Many educators in Imo State of Nigeria have commented on the importance of high quality materials for effective instruction. They share the view articulated by instructional developers like Horn,[147] Brethower et al.[148] and Abedor[149] that high quality materials can be attained if the prototypes are revised based on formative evaluation. The results of a needs survey conducted with educators in Imo State of Nigeria shows that formative evaluation is seldom conducted during instructional material development (See Appendix B). While the concept of formative evaluation is known, there is no formal operationalization of it in Imo State of Nigeria.

The aim of this study was to identify procedures for formative evaluation that can be appropriately adapted for use by educators of Imo State. Towards this end, a list of procedures was extracted from extant formative evaluation models. These procedures formed the basis for developing the

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[147]Horn, op.cit.

[148]Dale M. Brethower; David G. Markle; Geary R. Rummler; Albert W. Schrader; Donald E.P. Smith. Programmed Learning: A Practicum. Ann Arbor, Publishers 1967

[149]Abedor op.cit.

final questionnaire (Appendix F) used to determine the perceptions of secondary school teachers and administrators of the suitability of the procedures. The study is also aimed at identifying factors that will hinder or facilitate the adaptation of formative evaluation in the secondary educational system of Imo State.

Research Questions

Data collected in this study were used to answer the following research questions:

1. What are the perceptions of secondary school teachers and administrators as to the suitability of formative evaluation procedures for secondary schools in Imo State of Nigeria?
2. To what extent do secondary school teachers and administrators perceive that they possess some selected skills for conducting formative evaluation?
3. What factors do secondary school teachers and administrators perceive will hinder or facilitate the utilization of a formative evaluation model in secondary schools in Imo State of Nigeria?
4. Based on secondary school teachers'and administrators'perceptions, what modification (if any) of existing models of formative evaluation is necessary to best serve the needs of secondary education in Imo State of Nigeria?

5. Based on secondary school teachers' and administrators' perceptions, what modifications (if any) in organizational structure of secondary educational system should be made in order to encourage the adaptation of formative evaluation in Imo State of Nigeria?

The Population

The population for this study comprised approximately 8,000 secondary school teachers and administrators in approximately 210 secondary schools in Imo State. All these teachers and administrators are employed by the Ministry of Education which is also responsible for their promotion and discipline.

All the administrators are college graduates with long years of teaching experience. Some have acquired additional professional qualifications. The teachers represent a more heterogenous population. Most of them are college graduates while others hold the National Certificate of Education--a three year program at the Advanced Teachers Colleges of Education for training professional teachers. Because of a shortage of teachers, a few of the teachers fall in the category of "auxillary teachers". These represent unqualified teachers who lack the pre-requisite qualifications and experience to teach in secondary schools.

The Sample

The sample that was studied was drawn from 42 out of the 210 secondary schools in the State. Out of the 42 schools 285 teachers and 42 school administrators were randomly selected for the study.

The Selection of the Sample

A list of all secondary schools in Imo State was obtained from the Ministry of Education. A table of random numbers was used to select the 42 schools and the 285 teachers used for the study.

Not all schools had the same number of teachers. There was a tendency for older institutions to have more and better qualified (graduate) teachers while the reverse was the case for younger institutions. In order to have a more representative sample of all categories of teaches from all schools selected for the study, the researcher arbitrarily decided to randomly select a specific number of teachers from each school based on an arbitrarily chosen ratio of staff strength of a school. (Table 3.1). Thus for schools with a maximum staff ratio of 1-12, the number of teachers randomly selected was four. There were sixteen such schools used for the study. The total number of teachers used from this category of schools was 64. Many of the newer schools belong to this category.

For schools whose staff strength fell within the range of 13-24, seven teachers were randomly selected from each school for the study. While for those schools whose staff

strength fell within the range of 25 and over, 10 teachers were randomly selected from each for the study. All the principals of randomly selected schools were used for the study.

A letter from the Ministry (Appendix C) was used to gain access to each school. On arrival, the letter was presented to the Principal who then directed the researcher to either the Vice Principal or to the Dean of Studies. The staff registry containing the names of all teaching staff was used in the random selection of teachers. No attempt was made to select teachers on the basis of teaching experience or other qualifications.

TABLE 3.1 NUMBER OF ACADEMIC STAFF SELECTED BASED ON STAFF STRENGTH OF SCHOOLS

Academic Staff Strength	Number of Teachers Selected	Number of Schools Used	Approx. Total # of Teachers	Total # of Teachers Used	Total # of Principals Used	Grand Total
1-12	4	16	192	64	16	80
13-24	7	13	312	91	13	104
25-Over	10	13	325	130	13	143
		42	829	285	42	327

The grand total number of respondents used for the study was 327 teachers and Administrators inclusive (see Table 3.1). This represents 36.4 percent of the approximate total number of respondents (teachers and Administrators inclusive) making up the population from which the sample was drawn.

Source of Data

The data used in this study was collected through a questionnaire (Appendix F) responded to by the randomly selected sample of classroom teachers and administrators.

Development of the Questionnaire

In order to develop the final questionnaire for this study (Appendix F) the researcher identified procedures used by 10 authors to conduct formative evaluation (See Table 2.2). Most of the instruments used by these authors to collect data were in the form of criterion-referenced test items. Only Abedor[150] developed a Likert-type scale for "debriefing" or finding out the attitude of students during the "post-tryout interview". Horn's[151] "post-tryout interview" was in the form of a "dialogue" between the "programmer" and the student to determine "special difficulties encountered in the program".

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[150]Joseph Allan Abedor, "Second Draft Technology..." op cit. p.

[151]Robert E. Horn, op. cit. pp 18-19

Light and Reynolds[152] provided a checklist of questions for use in analyzing post test results for discrepancies. Dick[153] provided a list of 7 items to instructional developers for them to select the ones they most preferred for formative evaluation.

It is apparent that none of these instruments wholly met the aim of this study which is to determine the perception of teachers and administrators of the suitability of formative evaluation procedures for secondary schools in Imo State. But ideas were abstracted from each for the development of the questionnaire for this study.

Borg and Gall point out that:

> The student who is planning to collect information about attitudes should first search the literature to determine whether a scale suitable for his purpose had already been constructed. If a suitable scale is not available, it will be necessary to develop one. 154

From the analysis of these 10 models (Table 2.2) 3 major "approaches" for conducting formative evaluation were identified, namely, the Tutorial Approach, the Large Group Approach and the Small Group Approach. The characteristics, advantages and disadvantages of each approach was specified as well as data collecting instruments common to all of them.

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[152] Judy A. Light and Larry J. Reynolds op cit. p56

[153] Walter Dick op cit. p.100

[154] Walter R.Borg and Meredith D. Gall op cit. p.299

These formed the basis for developing this questionnaire. The aim is to determine the extent to which teachers and administrators perceive these approaches and the various data collecting instruments as suitable for their school systems.

The questionnaire (Appendix F) is organized into five sections. In Section 1, the three approaches were presented to respondents for them to select one considered suitable for their schools.

Section 2 contains statements aimed at finding out why a respondent selected a preferred approach. This means that some of the characteristics, advantages and disadvantages of the approaches formed the basis for developing this section. For instance, item 9 in section 2 is to find out "if a respondent thinks the possibility that face-to-face interaction will yield more data about program deficiency influenced his/her choice of approach." Some items in this section were repeated in a different form in Section 5. For instance, item 11 in Section 2 is related to items 41 and 43 in Section 5. Analysis of these items will show if there is any consistency in responses.

Section 3 contains statements about procedures for formative evaluation. These procedures are related to course objectives, selection of samples, the place of observation, and interview during formative evaluation and the place of test instruments. The aim is to determine the extent to which

respondents considered these procedures as suitable for formative evaluation.

Section 4 contains statements aimed at determining the extent to which respondents perceived themselves as possessing some selected skills for formative evaluation.

Section 5 contains statements about factors respondents perceive may facilitate or hinder the adaptation of formative evaluation in their school system.

To generate a statement in Section 2 through 5 in the questionnaire, the researcher first of all wrote down the characteristics, advantages, disadvantages and the various procedures for formative evaluation. Statements were next generated and cued to these characteristics and procedures. Originally, personal pronouns were used to start each statement (See Appendix D). This personalization of the statements was dropped because respondents during the pilot study felt "threatened" by it. Borg and Gall point out that when a respondent "received a questionnaire containing threatening items," they seldom return it and when they do, little confidence can be placed in the accuracy of his reply because of his ego involvement in the situation.[155]

Each respondent was requested to rate each statement in Section 2 to 5 based on a Likert-type scale of Strongly Disagree, Disagree, Agree and Strongly Agree. Several

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[155] Ibid, p.312.

different procedures have been used to develop measures of attitude. Title and Hill "compared the effectiveness of these attitude scales (Likert, Guttman, Semantic Differential, Thurstone, Self-Rating) in predicting objective indices of voting behavior and found the Likert-type scale superior to all others."[156]

The decision to use 4 response alternatives of "Strongly Disagree, Disagree, Agree and Strongly Agree" instead of 5 such as Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree as proposed in the Likert-type scale arose from analysis of results of the pilot instrument. None of the respondents checked the Undecided category.

Responses to statements in Section 1-3 in the questionnaire are aimed at providing answers to research questions 1 and 4 in this study. Responses to statements in Section 4 are aimed at providing answers to research question 2 while responses to statements in Section 5 provide answers to research questions 3 and 5 in the study.

Pilot Study

Two pilot tests were conducted for this study. The first was with 10 Nigerian students doing their post graduate studies at Michigan State University. These 10 Nigerians were teaching in various secondary schools in Nigeria prior

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[156]Charles R. Title and Richard J. Hill, "Attitude Measurement and Predictions of Behavior: An Evaluation of Conditions and Measurement Techniques", Sociometry. Vol. 30 (1967): pp. 199-213.

to their coming to Michigan State University. While this group may not be representative of the actual population in Imo State (especially since their training at Michigan State University may have influenced their responses to the pilot questionnaire), their comments were still useful in modifying ambiguous terminology and instructions in the questionnaire. The first questionnaire used with these 10 Nigerians is provided as Appendix D.

Operating on the assumption that the concept of formative evaluation used in the questionnaire may be unfamiliar to respondents in Imo State, a letter explaining the three approaches for formative evaluation, the advantages and disadvantages of each accompanied the second questionnaire (Pages 1, 2, 3 of Appendices E and F).

Since the responses of the original pilot group might possibly have been influenced by their education at Michigan State University and therefore may not provide an essential level of unbiased information for revising the questionnaire, the doctoral committee recommended that a further pilot study using teachers and administrators in Imo State of Nigeria was necessary. The second questionnaire (Appendix E) was thus further pilot tested using 3 classroom teachers and 3 administrators in Imo State. The second pilot study was in the form of an oral interview and the revised questionnaire. The researcher had prepared a question format from which questions were posed to respondents (See Appendix G). During

the interview, the aim of the study and the characteristics of the 3 formative evaluation approaches were explained to respondents. The questions in Appendix G were next posed to respondents. These questions were related to specific research questions in the study and were aimed at obtaining additional data to be included or used to modify the questionnaire.

The 6 respondents used for this second pilot study were next given the second questoinnaire (Appendix E) to complete. Two additional sections 6 and 7 were provided to them. In Section 6, respondents were requested to indicate any additional factor(s) that may hinder or facilitate the adaptation of formative evaluation by teachers and administrators in their schools while Section 7 requested them to review the questionnaire to see how it could be improved.

All the respondents used in this second pilot study commented on the comprehensiveness of the questionnaire. However, this pilot test did not generate significant new facts that would warrant revising the original questionnaire. However, some of the respondents in response to Section 6 suggested that such terms as behavioral objectives and criterion-referenced measured be further explained in the questionnaire.

The revised or final questionnaire (See Appendix F) was typed into stencil and duplicate copies were produced. Some photocopies of this revised questionnaire were also produced for distribution.

Administration and Collection of Questionniare

Prior to visiting Nigeria, the researcher posted a letter to the Permanent Secretary of the Ministry of Education in Imo State. A similar letter was also sent to the Commissioner for Education (Appendices I and J). In this letter, the researcher requested permission to use selected secondary schools in the State to conduct this research. To ensure that these letters got to their destinations, similar copies were also sent by hand through a Nigerian travelling to Imo State.

On getting to the Ministry of Education, the researcher presented a photocopy of this letter to the Permanent Secretary who gave his approval and directed one of his Chief Education officers in charge of Academic matters to be of assistance.

After explaining the research to this officer, a letter (Appendix C) was drafted and typed into stencil. Copies of this letter were duplicated and addressed to Principals of the randomly selected secondary schools. Copies of these letters were also forwarded to Area Inspectors of Education for their attention and cooperation.

The researcher personally distributed the questionnaires to each school. Formative evaluation was explained to members of the staff prior to the distribution of the questionnaire. Two assistants also helped the researcher to collect the completed questionnaires from some selected schools. These

assistants received no special training for this collection exercise. In any case, the principals had been informed of this arrangement in which the assistants were to collect the questionnaires from their schools. The researcher also received co-operation from his colleagues in his undergraduate University in Nigeria, most of whom were teachers in these secondary schools. Of the 327 questionnaires distributed, 206 or about 63% were completed and returned to the researcher or to his two assistants. All of the questionnaires collected were fully completed.

Data Analysis

The data collected from Nigeria was hand coded by the researcher and sent to the Scoring Center, Michigan State University for key punching. The punched cards were later sent to the Computer Center at Michigan State University for analysis using the Statistical Package for the Social Sciences (SPSS). This analysis was in the nature of descriptive statistics which was used to describe the frequency and percentage of the responses to the various statements (numbered 4 through 51 in Sections 2 through 5 including responses to the 3 approaches in Section 1) covered in the questionnaiare (Appendix F).

Data analysis was organized to provide answers to the research questions used for the study. Part of research question 1 was to find out which formative evaluation approach teachers and Administrators preferred using in their

schools. The frequencies and percentages of Teachers and Administrators preferring each approach were calculated. A bar graph was used to present these preferences (See Figures 4.1). Based on the type of formative evaluation approach selected, the frequencies and percentages of teachers and administrators Strongly Disagreeing, Disagreeing, Agreeing or Strongly Agreeing with each statement 4 through 51 in Sections 2 through 5 of the questionnaire were also calculated.

Realizing that the type of formative evaluation program selected by teachers and administrators would not be affected by the degree of disagreement or agreement to the statements in the questionnaire, the research collapsed the rating scales from 4 to 2 as shown in Table 3.2

TABLE 3.2 ORIGINAL AND FINAL SCALES USED FOR ANALYSIS AND RESPONSES

Original Scale	Final Scale
Strongly Disagree	DISAGREE
Disagree	
Agree	AGREE
Strongly Agree	

This means that for each approach chosen by teachers or administrators, the frequency and percentage of those who disagreed or strongly disagreed were combined into the new category of Disagree. The frequency and percentage of those who disagreed with each statement was calculated. The frequency and percentage of respondents (teachers and administrators) opting for each approach who agreed or strongly agreed with each statement were also combined into the new category of Agree. These findings are presented as Tables 4.3 through 4.8 in this study.

To interpret the results of responses, a decision rule was chosen such that any statement with which 70-100 percent of respondents agreed was viewed as highly suitable for conducting formative evaluation in their schools; any statement which 50-69% respondents agreed with was regarded as being moderately suitable for formative evaluation; any statement which only 0-49 percent of the respondents agreed with was perceived as not suitable for formative evaluation in their schools. The perception of teachers were compared with those of administrators to determine any consistency in responses with regard to each statement. Responses to statements that are related were also compared for consistency. Finally, these responses were compared with what obtains in the literature for consistency. This formed the basis for making inferences and recommendations in Chapters 4 and 5.

CHAPTER IV

ANALYSIS OF RESULTS

Introduction:

The purpose of this study is to determine the perceptions of secondary school teachers and administrators of the suitability of extant formative evaluation procedures for secondary schools in Imo State of Nigeria. The study also attempts to find out what factors can facilitate or hinder the adaptation of such formative evaluation procedures in the secondary school system of the State. In order to determine the perceptions of teachers and administrators, a review of the works of ten authors on formative evaluation was conducted and procedures were identified which formed the basis for developing the questionnaire for this study.

This chapter contains the analysis of responses to this questionnaire.

Percentage of Responses

Of the 327 questionnaires distributed for this study, 206 or 63.1 percent were completed and returned to either the researcher or his representatives. All the returned questionnaires were fully completed.

The following is a distribution of the responses from the two groups -- administrators and teachers used in the study.

TABLE 4.1: PERCENTAGE OF RETURNED QUESTIONNAIRES TO THE NUMBER DISTRIBUTED

Type of Respondents	Number of Questionnaires Distributed	Number Returned	Percentage
Principals	42	25	59.5
Teachers	285	181	62.9
TOTALS	327	206	63.1

Out of 42 Administrators used for the study only 25 or 59.5 percent completed and returned their questionnaires. Of the 285 secondary school teachers used, only 181 or 62.9 percent completed and returned their questionnaires.

The questionnaire was divided into five sections. Section 1 of the questionnaire contains the three approaches for conducting formative evaluation. Respondents were requested to select an approach they considered suitable for conducting formative evaluation in their schools. Based on their choice of formative evaluation approach, respondents were to rate each statement in Sections 2, 3, 4 and 5 of the questionnaire (Appendix F) in accordance with the rating scale provided. Sections 1, 2 and 3 of the questionnaire provided data for

research questions 1 and 4; section 4 of the questionnaire provided data for research question 2 while section 5 provided data for research questions 3 and 5.

The following revised rating scale was used in this analysis. Rating scales of strongly disagree and disagree were combined into a new category of Disagree while rating scales of agree and strongly agree were combined into the new category of Agree (See Table 4.2). The decision to collapse the rating scales from 4 as in the questionnaire to 2 was based on the realization that the type of program for formative evaluation to be developed for use in Imo State of Nigeria, would not be affected by the degree of agreement or disagreement to statements in the questionnaire. For example, if a respondent agrees that she cannot construct valid test items and another strongly agrees with this statement, this will not lead to the production of 2 different programs to raise their competence.

TABLE 4.2 SCALES USED FOR ANALYSIS OF RESULTS

Original Rating Scale	Revised Rating Scale
Strongly Disagree	Disagree
Disagree	
Agree	Agree
Strongly Agree	

Analysis of these responses is in the nature of descriptive statistics which is used to describe the frequency and percentage of the responses to the various statements covered in the questionnaire.

The following decision rules were used for interpreting the percentage of the various responses. This is presented as Column 4 in Tables 4.3 through 4.8.

1. Statements in the questionnaire in which 70-100 percent of respondents agreed were regarded as of high priority in their perceptions.
2. Statements in the questionnaire in which 50-69 percent of respondents agreed were regarded as of moderate priority in their perceptions.
3. Statements in the questionnaire in which 0-49 percent of respondents agreed were regarded as of low priority in their perceptions.

This means the percentage of respondents from the Tutorial, Large Group and Small Group Approaches who agreed or disagreed with statements 4 through 51 in the questionnaire will be summed up and provided as Column 4. For example, in Column 4 of Table 4.3, 76 percent of administrators agreed that the ease of obtaining subjects influenced their choice of formative evaluation approach. Using the decision rule, this means that a high percent of administrators agreed that it is easy to obtain subjects for formative evaluation and that this influenced their choice of formative evaluation

approach. The percentage calculation for each approach is based on the number of respondents opting for each approach.

Research Question 1:

What are the perceptions of secondary school teachers and administrators of the suitability of formative evaluation procedures for secondary schools in Imo State of Nigeria?

Sub-Research Questions:

Data for research question 1 will be arranged to respond to the following sub-research questions:

1.1 What are the perceptions of secondary school teachers and administrators of the suitability of formative evaluation approaches for conducting formative evaluation in their secondary school systems?

1.2 What formative evaluation procedures do secondary school teachers and administrators consider suitable for conducting formative evaluation in their school systems?

Research Question 1.1

What are the perceptions of teachers and administrators of the suitability of formative evaluation approaches for conducting formative evaluation in their secondary school systems?

The bar graph (Figure 4.1) depicts the percentage of teachers and administrators preferring each of three formative evaluation approaches as perceived suitable for their school systems.

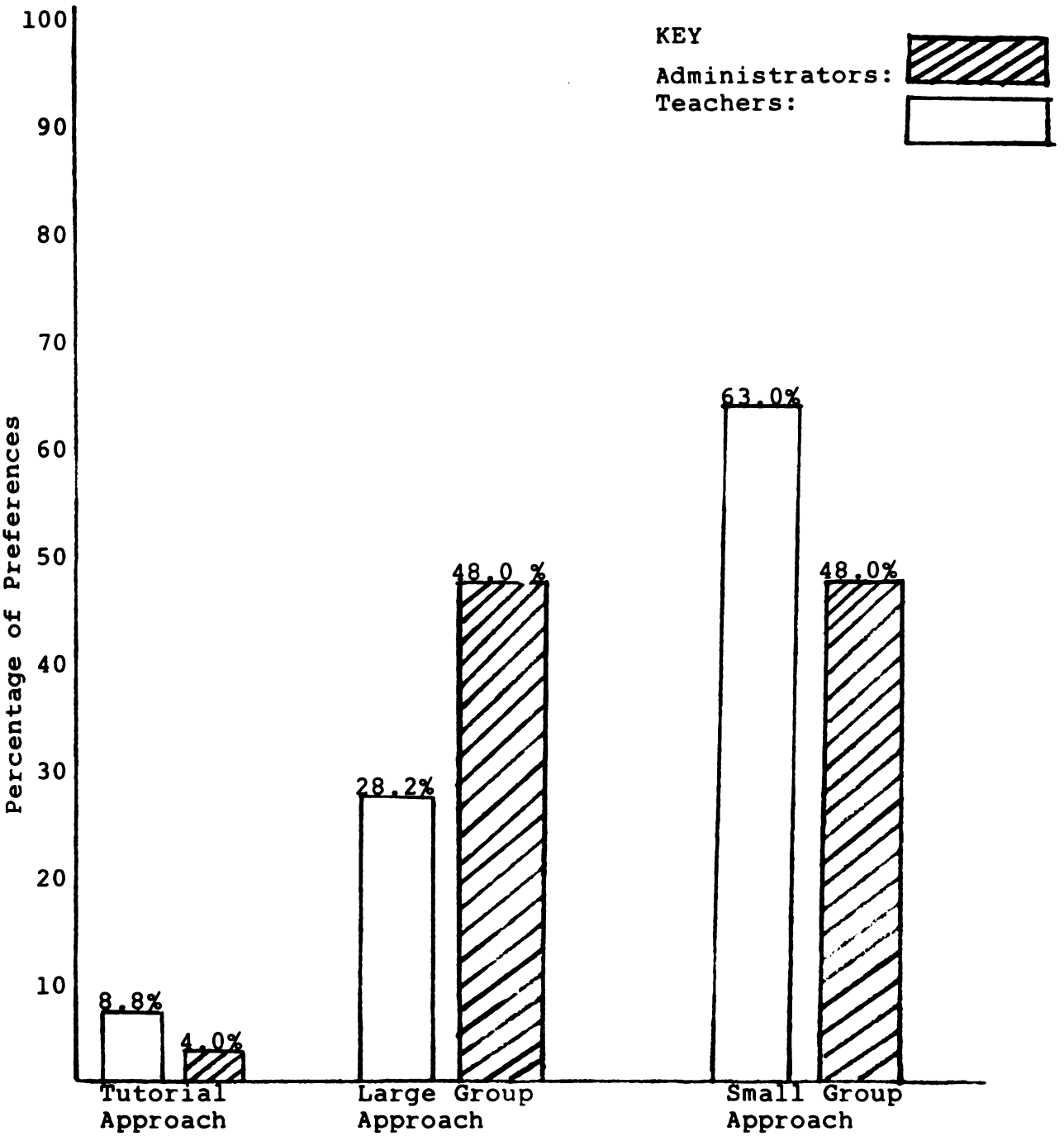


FIGURE 4.1 Percentage of Teachers and Administrators Preferring Each of 3 Approaches for Formative Evaluation.

Using the decision rules for interpreting the results of this study, it can be said that a moderate percent of teachers (63 percent) preferred the Small Group Approach while a low percent preferred the Large Group Approach (28.2 percent) or the Tutorial Approach (8.8 percent). On the other hand, a low percent of administrators preferred the Small Group Approach (48 percent) and the Large Group Approach (48 percent) while only 4 percent preferred the Tutorial Approach.

Research Question 1.2

What formative evaluation procedures do secondary school teachers and administrators consider suitable for conducting formative evaluation in their school systems?

Tables 4.3 and 4.4 present the responses of secondary school teachers and administrators on statements regarding the suitability of the various procedures for formative evaluation. These secondary school teachers and administrators have been grouped in accordance with the type of formative evaluation approach preferred. Column 4 of Tables 4.3 and 4.4 present the priority of rating of each statement based on the decision rules for interpreting a response. This priority rating scale depicts the summation of the percentage of administrators from each approach agreeing or disagreeing with statements used for answering research question 1.2 For example, in statement 4 of Table 4.3, 76 percent of administrators agreed that the ease of obtaining

TABLE 4.3 PERCEPTIONS OF ADMINISTRATORS OF THE SUITABILITY OF FORMATIVE EVALUATION PROCEDURES (N=25)

Statements on Procedures	1 TUTORIAL APPROACH Disagree Freq	%	Agree Freq	%	2 LARGE GROUP APPROACH Disagree Freq	%	Agree Freq	%	3 SMALL GROUP APPROACH Disagree Freq	%	Agree Freq	%	4 Final % Rating Using Decision Rules (70-100% high, 50-69% moderate, 0-49% low) DISAGREE	AGREE
Choice of formative evaluation approach is influenced by:														
4. The ease of obtaining subjects	0	0.0	1	4.0	4	16.0	8	32.0	2	8.0	10	40.0	24	(76)
5. Ability of Approach to avoid biases	0	0.0	1	4.0	0	0.0	12	48.0	2	8.0	10	40.0	8	92
6. Similarity of Appraoch to the type used in my school	1	4.0	0	0.0	3	12.0	9	36.0	12	48.0	0	0.0	64	36
7. Approach selected is less complex than others	0	0.0	1	4.0	3	12.0	9	36.0	3	12.0	9	36.0	24	76
8. Approach has capability for obtaining attitudinal data from subjects	0	0.0	1	4.0	0	0.0	12	48.0	1	4.0	11	44.0	4	96
9. The possibility of face-to-face interaction using selected approach.	0	0.0	1	4.0	5	20.0	7	28.0	4	16.0	8	32.0	36	64
10. The possibility of administrative support	0	0.0	1	4.0	6	24.0	6	24.0	4	16.0	8	32.0	40	60
11. The availability of resources	1	4.0	0	0.0	6	24.0	6	24.0	3	12.0	9	36.0	40	60
Procedures essential for formative evaluation are:														
12. Behavior objectives	0	0.0	1	4.0	3	12.0	9	36.0	0	0.0	12	48.0	12	88
13. Formative evaluation is possible even if behavioral objectives are not specified	0	0.0	1	4.0	9	36.0	3	12.0	11	44.0	1	4.0	80	20
14. Select students of varying abilities for revision exercise	0	0.0	1	4.0	1	4.0	11	44.0	0	0.0	12	48.0	4	96
15. Students should be selected randomly	0	0.0	1	4.0	3	12.0	9	36.0	1	4.0	11	44.0	16	84
16. Observe and interview students during formative evaluation	0	0.0	1	4.0	0	0.0	12	48.0	0	0.0	12	48.0	0	100
During an interview, students can be asked:														
17. To comment on clarity of statements	0	0.0	1	4.0	0	0.0	12	48.0	1	4.0	11	44.0	4	96
18. To comment on clarity of illustrations	0	0.0	1	4.0	0	0.0	12	48.0	2	8.0	10	40.0	8	92
19. To comment on appropriateness of the sequence	0	0.0	1	4.0	4	16.0	8	22.0	1	4.0	11	44.0	20	80
20. To comment on how boring a material is	0	0.0	1	4.0	6	24.0	6	24.0	3	12.0	9	36.0	36	64
21. To encircle difficult terms	0	0.0	1	4.0	3	12.0	9	36.0	1	4.0	11	44.0	16	84
During their use of instructional materials students can be observed for:														
22. Difficult in operating equipment	0	0.0	1	4.0	2	8.0	10	40.0	1	4.0	11	44.0	12	88
23. Frowns on their faces	0	0.0	1	4.0	2	8.0	10	40.0	4	16.0	8	32.0	24	76
24. Students should be pretested	0	0.0	1	4.0	4	16.0	8	32.0	2	8.0	10	40.0	24	76
25. Posttest scores can be used to determine level of understanding	0	0.0	1	4.0	0	0.0	12	48.0	1	4.0	11	44.0	4	96
26. Short written quizzes should be given during a lesson	0	0.0	1	4.0	0	0.0	12	48.0	1	4.0	11	44.0	4	96
Results of Posttest should be analyzed to find out:														
27. What was similar about items missed	0	0.0	1	4.0	1	4.0	11	44.0	0	0.0	12	48.0	4	96
28. How items missed differ from those passed	0	0.0	1	4.0	0	0.0	12	48.0	0	0.0	12	48.0	0	100
29. What in the material could have caused the failure	0	0.0	1	4.0	0	0.0	12	48.0	0	0.0	12	48.0	0	100
30. How to rectify cause of failure	0	0.0	1	4.0	0	0.0	12	48.0	0	0.0	12	48.0	0	100

TABLE 4.4 PERCEPTIONS OF TEACHERS OF THE SUITABILITY OF FORMATIVE EVALUATION PROCEDURES (N=181)

Statements on Procedures	1 TUTORIAL APPROACH Disagree Freq	%	Agree Freq	%	2 LARGE GROUP APPROACH Disagree Freq	%	Agree Freq	%	3 SMALL GROUP APPROACH Disagree Freq	%	Agree Freq	%	4 Final % Rating Using Decision Rules (70-100%high 50-69% moderate, 0-49% Low) DISAGREE	AGREE
Choice of formative evaluation approach is influenced by:														
4.The ease of obtaining subjects	8	4.4	8	4.4	19	10.5	32	17.7	28	15.5	86	47.5	30	70
5. Ability of approach to avoid biases	7	3.9	9	4.9	7	3.9	44	24.3	21	11.6	93	51.4	19	81
6.Similarity of approach to the type used in my school	10	5.5	6	3.3	23	12.7	28	15.5	87	48.0	27	15.0	66	34
7.Approach selected is less complex than others	9	4.9	7	3.9	23	12.7	28	15.5	52	28.9	62	34.3	46	54
8.Approach has capability for obtaining attitudinal data from subjects	4	2.2	12	6.6	1	0.6	50	27.6	7	3.9	107	59.1	7	93
9.The possibility of face-to-face interaction using selected approach	7	3.9	9	4.9	36	19.9	15	8.3	37	20.4	77	42.5	44	56
10.The possibility of administrative support	5	2.8	11	6.0	16	8.8	35	19.4	48	26.5	66	36.5	38	62
11.The availability of resources	10	5.5	6	3.3	29	16.0	22	12.2	45	24.9	69	38.1	46	54
Procedures essential for formative evaluation are:														
12.Behavioral objectives	0	0.0	16	8.8	2	1.1	49	27.1	6	3.3	108	59.7	4	96
13.Formative evaluation is possible even if behavioral objectives are not specified	14	7.7	2	1.1	45	24.9	6	3.3	98	54.1	16	8.8	87	13
14.Select students of varying abilities for revision exercise	4	2.2	12	6.6	1	0.6	50	27.6	14	7.7	100	55.3	10	90
15.Students should be selected randomly	5	2.8	11	6.0	10	5.5	41	22.7	22	12.1	92	50.9	20	80
16.Observe and interview students during formative evaluation	2	1.1	14	7.7	2	1.1	49	27.1	9	6.9	105	58.1	7	93
During an interview students can be asked														
17.To comment on clarity of statements	0	0.0	16	8.8	4	2.2	47	26.0	23	12.7	91	50.3	15	85
18.To comment on clarity of illustrations	5	2.8	11	6.0	5	2.8	46	25.4	22	12.1	92	50.9	18	82
19.To comment on appropriateness of the sequence	7	3.9	9	4.9	22	12.2	29	16.0	48	26.5	66	36.5	43	57
20.To comment on how boring a material is	5	2.8	11	6.0	30	16.0	21	11.6	38	21.0	76	42.0	40	60
21.To encircle difficult terms	2	1.1	14	7.7	4	2.2	47	26.0	15	8.3	99	54.7	12	88
During their use of instructional materials can be observed for:														
22.Difficulty in operating equipment	0	0.0	16	8.8	3	1.7	48	26.5	8	4.4	106	58.6	6	94
23.Frowns on their faces	6	3.3	10	5.5	13	7.2	38	21.0	41	22.7	73	40.3	33	67
24.Students should be pretested	6	3.3	10	5.5	11	6.0	40	22.2	28	15.5	86	47.5	25	75
25.Posttest scores can be used to determine level of understanding	6	3.3	10	5.5	1	0.6	50	27.6	15	8.3	99	54.7	12	88
26.Short written quizzes should be given during a lesson	0	0.0	16	8.8	3	1.7	48	26.5	9	4.9	105	92.1	7	93
Results of Post tests should be analyzed to find out:														
27.What was similar about items missed	2	1.1	14	7.7	7	3.9	44	24.3	18	9.9	96	53.1	15	85
28.How items missed differ from those passed	2	1.1	14	7.7	2	1.1	49	27.1	17	9.4	97	53.6	12	88
29.What in the material could have caused the failure	8	4.4	8	4.4	3	1.9	48	26.5	22	12.2	92	50.8	18	82
30.How to rectify cause of failure	5	2.8	11	6.0	0	0.0	51	28.2	11	6.0	103	59.0	9	91

subjects influenced their choice of formative evaluation approach. Using the decision rule, this means that a high percent of administrators agreed that it is easy to obtain subjects for formative evaluation and that this influenced their choice of formative evaluation approach.

Below is a summary of perceptions of teachers and administrators as to the suitability of formative evaluation procedures.

I. Procedures Which a High Percentage of Teachers and Administrators Perceived as Suitable for Formative Evaluation

(a) Specification of Behavioral Objectives

80 percent of administrators and 96 percent of teachers perceived well specified behavioral objectives as very essential for formative evaluation.

(b) Selection of Students of varying Abilities

96 percent of administrators and 90 percent of teachers favored selecting students of varying abilities for formative evaluation.

(c) Observation and Interviewing of Students

100 percent of administrators and 93 percent of teachers agreed with the need to observe and interview students during formative evaluation.

(d) Comment on Clarity of Written Instruction by Students During Interviews

96 percent of administrators and 85 percent of teachers favored the use of student comments on the clarity of written instructions during formative evaluation.

(e) Comment on Clarity of Instructional Illustrations by Students

92 percent of administrators and 82 percent of teachers agreed that student comments during interview on the clarity of instructional illustrations can yield useful data for formative evaluation.

(f) Identification of Difficult Terms by Students

84 percent of administrators and 88 percent of teachers agreed on the importance of encircling difficult terms they do not understand during formative evaluation.

(g) Observation of Student Facility in Using Instructional Equipment

88 percent of administrators and 96 percent of teachers agreed that students should be observed for problems while using instructional equipment.

(h) Collection of Entry Behavior on Students

76 percent of administrators and 75 percent of teachers favored the pretesting of students prior to formative evaluation.

(i) Collection of Interim Test Data on Student Learning

100 percent of administrators and 93 percent of teachers favored using interim tests during formative evaluation.

(j) Use of Post Test Scores

96 percent of administrators and 88 percent of teachers favored the use of post test scores for formative evaluation.

96 percent of administrators and 85 percent of teachers favored analysis of post test scores for identifying what was similar about items missed; 100 percent of administrators and 88 percent of teachers favored identifying how items missed differed from those passed; 100 percent of administrators and 82 percent of teachers favored analyzing instructional materials for what could have caused the failure.

2. Procedures Which a Moderate Percent of Administrators and Teachers Perceived as Suitable for Formative Evaluation.

   (a) Collection of Student Comments on how Boring/Involving an Instructional Material is:

   64 percent of administrators and 60 percent of teachers agreed with this procedure.

3. Procedures Which a High Percent of Administrators but a Moderate Percent of Teachers Agreed with:

   (a) Collection of Student Comments on the Appropriateness of the Sequence of Instructional Materials.

   80 percent of administrators and 57 percent of teachers agreed on the importance of using such comments for formative evaluation.

   (b) Observing Students for Frown on Their Faces While Using a Material

   76 percent of administrators and 67 percent of teachers agreed on observing students for frown on their faces as source of data for formative evaluation.

Research Question 2

To what extent do secondary school administrators perceive themselves as possessing some selected skills for conducting formative evaluation?

Tables 4.5 and 4.6 present the frequency distribution and the percentages of teachers and administrators agreeing or disagreeing as to whether they perceived themselves as possessing some selected skills for formative evaluation.

These results are summarized under the following headings:

1. Skills a high percentage of teachers and administrators perceive that they possess for formative evaluation.
2. Skills a high percentage of administrators but a moderate percentage of teachers perceive they possess.

1. Skills A High Percentage of Administrators and Teachers Perceive That They Possess

   (a) 80 percent of administrators and 73 percent of teachers perceived themselves as possessing the skills for specification of behavioral objectives.

2. Skills A High Percentage of Administrators But A Moderate Percentage of Teachers Perceive That They Possess.

   (a) 100 percent of administrators but 68 percent of teachers perceived themselves as possessing the skills for constructing valid criterion test instruments.

TABLE 4.5: SKILLS ADMINISTRATORS PERCEIVE THAT THEY POSSESS FOR CONDUCTING FORMATIVE EVALUATION (N=25)

	1				2				3				4	
Skills	TUTORIAL APPROACH				LARGE GROUP APPROACH				SMALL GROUP APPROACH				Final Percent Rating Using Decision Rules (70-100% high, 50-69% moderate, 0-49% low)	
	DISAGREE		AGREE		DISAGREE		AGREE		DISAGREE		AGREE			
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	DISAGREE	AGREE
31. I can specify behavioral objectives	1	4.0	0	0.0	2	8.0	10	40.0	2	8.0	10	40.0	20	80
32. I can construct valid criterion test instruments	0	0.0	1	4.0	0	0.0	11	48.0	0	0.0	12	48.0	0	100
33. I can objectively observe and interview a subject	0	0.0	1	4.0	0	0.0	12	48.0	2	8.0	10	40.0	8	92

TABLE 4.6 SKILLS TEACHERS PERCEIVE THAT THEY POSSESS FOR CONDUCTING FORMATIVE EVALUATION (N=181)

Skills	1 TUTORIAL APPROACH DISAGREE Freq	%	AGREE Freq	%	2 LARGE GROUP APPROACH DISAGREE Freq	%	AGREE Freq	%	3 SMALL GROUP APPROACH DISAGREE Freq	%	AGREE Freq	%	4 Final Percent Rating Using Decision Rules (70-100% high, 50-69% moderate, 0-49% low) DISAGREE	AGREE
31. I can specify behavioral objectives	8	4.4	8	4.4	13	7.2	38	21.0	28	15.5	86	47.5	27	73
32. I can construct valid criterion test instruments	9	4.9	7	3.9	13	7.2	38	21.0	36	19.9	78	48.1	32	68
33. I can objectively observe and interview a subject	9	4.9	7	3.9	17	9.4	34	18.8	49	27.1	65	35.9	41	59

(b) 92 percent of Administrators but 59 percent of Teachers perceived themselves as possessing the skills for observing and interviewing a student during formative evaluation.

Research Question 3

What factors do secondary school administrators and teachers perceive will facilitate or hinder the adaptation of formative evaluation in their schools?

Tables 4.7 and 4.8 present the frequency distribution and percentages of responses of administrators and teachers for the 3 approaches of formative evaluation as to factors that will facilitate or hinder the adaptation of formative evaluation in their schools. Column 4 of Tables 4.7 and 4.8 contain the priority rating of the perceptions of respondents based on the decision rules established for this analysis. Below is a summary of the perceptions of Administrators and Teachers on factors identified from the literature review that can facilitate or hinder the adaptation of formative evaluation.

1. Factors Essential for the Adoption of Innovation Which Respondents Perceived as Existing in Their School Systems

(a) 84 percent of administrators and 77 percent of teachers recognize the existence of opinion leaders in their schools. However, only 56% of administrators and 44% of teachers agreed that formative evaluation must be originated by the opinion leaders in order for it to succeed.

TABLE 4.7 FACTORS ADMINISTRATORS PERCEIVE WILL FACILITATE OR HINDER ADAPTATION OF FORMATIVE EVALUATION IN THEIR SCHOOLS (N=25)

FACTORS	1 TUTORIAL APPROACH DISAGREE Freq.	%	AGREE Freq	%	2 LARGE GROUP APPROACH DISAGREE Freq	%	AGREE Freq	%	3 SMALL GROUP APPROACH DISAGREE Freq	%	AGREE Freq	%	4 Final percent Rating Using Decision Rules (70-100% high, 50-69 moderate, 0-49% low) DISAGREE	AGR
Factors Relating to School Organization														
34. There exists opinion leaders in this organization	1	4.0	0	0.0	1	4.0	11	44.0	2	8.0	10	40.0	16	84
35. Formative evaluation to succeed must be originated by opinion leaders	1	4.0	0	0.0	3	12.0	9	36.0	7	28.0	5	20.0	44	56
36. To succeed, formative evaluation must be supported by the highest ranked officers	1	4.0	0	0.0	5	20.0	7	28.0	3	12.0	9	36.0	36	64
37. Many channels of information will hinder awareness of formative evaluation	1	4.0	0	0.0	5	20.0	7	28.0	11	44.0	1	4.0	68	32
38. Teachers will be promptly informed about formative evaluation	0	0.0	1	4.0	1	4.0	11	46.0	1	4.0	11	44.0	8	92
39. There exists a task force in this organization	0	0.0	1	4.0	6	24.0	6	24.0	6	24.0	6	24.0	48	52
Formative Evaluation will be hindered by:														
40. Lack of time	0	0.0	1	4.0	4	16.0	8	32.0	4	16.0	8	32.0	32	68
41. Lack of opportunity for in-service	0	0.0	1	4.0	1	4.0	11	44.0	0	0.0	12	48.0	4	96
42. Lack of qualified staff	1	4.0	0	0.0	4	16.0	8	32.0	1	4.0	11	44.0	24	76
43. Lack of opportunity for workshop/seminars	1	4.0	0	0.0	0	0.0	12	48.0	1	4.0	11	44.0	8	92
Promotion in this School is Based on:														
44. An officer's year of graduation	0	0.0	1	4.0	6	24.0	6	24.0	1	4.0	11	44.0	28	72
45. An officer's job performance	1	4.0	0	0.0	2	8.0	10	40.0	6	24.0	6	24.0	36	64
46. The advantages of formative evaluation outweighs its disadvantages	0	0.0	1	4.0	0	0.0	12	48.0	4	16.0	8	32.0	20	80
47. Formative evaluation will not run counter to norms	0	0.0	1	4.0	0	0.0	12	48.0	2	8.0	10	40.0	8	92
48. Formative Evaluation will not be easy to try out	1	4.0	0	0.0	10	40.0	2	8.0	8	32.0	4	16.0	76	24
49. Formative evaluation is simple to understand	1	4.0	0	0.0	0	0.0	12	48.0	5	20.0	7	28.0	24	76
50. Formative evaluatin is easy to use	0	0.0	1	4.0	0	0.0	12	48.0	6	24.0	6	24.0	24	76
51. Formative evaluation will be easy to observe	0	0.0	1	4.0	0	0.0	12	48.0	2	8.0	10	40.0	8	92

TABLE 4.8 FACTORS TEACHERS PERCEIVE WILL FACILITATE OR HINDER ADAPTATION OF FORMATIVE EVALUATION IN THEIR SCHOOLS (N=181)

	1				2				3				4	
	TUTORIAL APPROACH				LARGE GROUP APPROACH				SMALL GROUP APPROACH				Final Percnet Rating Using Decision Rules (70-100% high, 50-69% moderate, 0-49% low)	
	DISAGREE		AGREE		DISAGREE		AGREE		DISAGREE		AGREE			
FACTORS	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	DISAGREE	AGREE
Factors Relating to School Organization														
34. There exists opinion leaders in this organization	5	2.8	11	6.0	16	8.8	35	19.4	21	11.6	93	51.6	23	77
35. Formative Evaluation to succeed must be originated by opinion leaders	11	6.0	5	2.8	24	13.3	27	14.9	66	36.5	48	26.5	56	44
36. To succeed, formative evaluation must be supported by the highest ranked officers	6	3.3	10	5.5	18	9.9	33	18.3	54	29.9	60	33.1	43	57
37. Many channels of information will hinder awareness of formative evaluation	14	7.7	2	1.1	37	20.5	14	7.7	93	51.4	21	11.6	80	20
38. Teachers will be promptly informed about formative evaluation	2	1.1	14	7.7	11	6.0	40	22.2	7	3.9	107	59.1	11	89
39. There exists a task force in this organization	7	3.9	9	4.9	33	18.3	18	9.9	65	35.9	49	20.1	58	42
Formative Evaluation will be hindered by:														
40. Lack of time	2	1.1	14	7.7	28	15.5	23	12.7	61	33.7	53	29.3	50	50
41. Lack of opportunity for in-service	2	1.1	14	7.7	14	7.7	37	20.5	18	9.9	96	53.1	19	81
42. Lack of qualified staff	4	2.2	12	6.6	15	8.3	36	19.9	29	16.0	85	47.0	27	73
43. Lack of opportunity for workshop/seminar	2	1.1	14	7.7	9	4.9	42	23.2	12	6.6	102	56.4	13	87
Promotion in this school is based on:														
44. An officer's year of graduation	6	3.3	10	5.5	14	7.7	37	20.5	36	19.9	78	43.1	31	69
45. An officer's job performance	14	7.7	2	1.1	20	11.1	31	17.1	59	32.6	55	30.4	53	47
46. The advantages of formative evaluation outweighs its disadvantages	7	3.9	9	4.9	4	2.2	47	26.0	21	11.6	93	51.4	18	82
47. Formative evaluation will not run counter to norms	2	1.1	14	7.7	4	2.2	47	26.0	13	7.2	101	55.8	10	90
48. Formative Evaluation will not be easy to try out	8	4.4	8	4.4	30	16.6	21	11.6	77	42.5	37	20.5	64	36
49. Formative evaluation is simple to understand	11	6.0	5	2.8	16	8.8	35	19.4	33	18.2	81	44.8	33	67
50. Formative evaluation is easy to use	6	3.3	10	5.5	24	13.2	27	15.0	55	30.4	29	32.6	47	53
51. Formative evaluation will be easy to observe	4	2.2	12	6.6	16	8.8	35	19.4	26	14.4	88	48.6	25	75

(b) 92 percent of administrators and 89 percent of teachers agreed that teachers will be promptly informed of the existence of a formative evaluation program in their schools. This is supported by 68 percent of the administrators and 80 percent of teachers who do not think that the existence of many channels of information as represented by an administrative hierarchy, will hinder awareness of formative evaluation.

2. Factors Essential for the Adoption of Innovations Which a Moderate Percent of Administrators and Teachers Agreed With

(a) 64 percent of administrators and 57 percent of teachers agreed there is a possibility of administrative support for formative evaluation.

3. Factors Considered Essential for the Adoption of Innovations Which a Moderate Percent of Administrators and a Low Percent of Teachers Agreed With

(a) 52 percent of administrators and 42 percent of teachers agreed that there exists a task force in their schools that will ensure that a formative evaluation program is carried out expeditiously.

(b) 54 percent of administrators and 47 percent of teachers agreed that promotion is based on job performance.

4. Attributes of Formative Evaluation Are Highly Perceived as Facilitating its Adaptation

(a) 80 percent of administrators and 82 percent of teachers thought the advantages of formative evaluation far outweigh the disadvantages.

(b) 92 percent of administrators and 90 percent of teachers thought that formative evaluation will not run counter to the norms of schools, teachers and society.

(c) 92 percent of administrators and 75 percent of teachers thought the effect of formative evaluation will be easy to observe.

(d) 76 percent of administrators and 70 percent of teachers thought it will be easy to obtain a student sample for formative evaluation.

5. Attributes of Formative Evaluation a High Percentage of Administrators but a Moderate Percentage of Teaches Perceived as Facilitating Its Adaptation.

(a) 76 percent of administrators and 67 Percent of teachers thought it will be easy to understand formative evaluation procedures.

(b) 76 percent of administrators and 53 Percent of teachers thought it will be easy to use formative evaluation procedures in their school systems.

(c) 74 percent of teachers and 64 percent of administrators thought it will be easy to try out formative evaluation.

6. Factors Considered as Hinderances Which a High Percentage of Administrators and Teachers Agreed With

(a) 81 percent of administrators and 96 percent of teachers agreed that lack of opportunity for in-service will hinder adaptation of formative evaluation.

(b) 87 percent of administrators and 92 percent of teachers agreed that lack of opportunity for workshops/Seminars will hinder adaptation of formative evaluation.

(c) 76 percent of administrators and 73 percent of teachers agreed that lack of qualified staff will hinder adaptation of formative evaluation.

(d) 72 percent of administrators and 69 percent of teachers agreed that promotion is based on year of graduation and longetivity of service.

7. Factors Considered as Hinderances Which a Moderate Percentage of Administrators and Teachers Agreed With

(a) 68 percent of administrators and 50 percent of teachers agreed that lack of time will hinder adaptation of formative evaluation.

Research Question 4

Based on teachers' and administrators' perceptions, what modifications of existing models of formative evaluation is necessary to best serve the needs of secondary education in Imo State of Nigeria?

The perceptions of administrators and teachers with regard to procedures for conducting formative evaluation did not deviate highly from those explicated by authorities in the field. The only deviation was from those opting for the Large Group Approach. All administrators opting for the Large Group Approach (48%) and 27.1 out of 28.2 percent of teachers also opting for the Large Group Approach favored

observation and interviewing of subjects during formative evaluation. Observation and interviewing are possible with the Tutorial and Small Group Approaches. Thus a modification envisaged in the use of the Large Group Approach is the application of face-to-face interaction techniques of observation and interviewing, during formative evaluation.

Research Question 5

Based on teacher and administrator perceptions, what modifications in organizational structure of secondary educational system can be made in order to encourage the adaptation of formative evaluation?

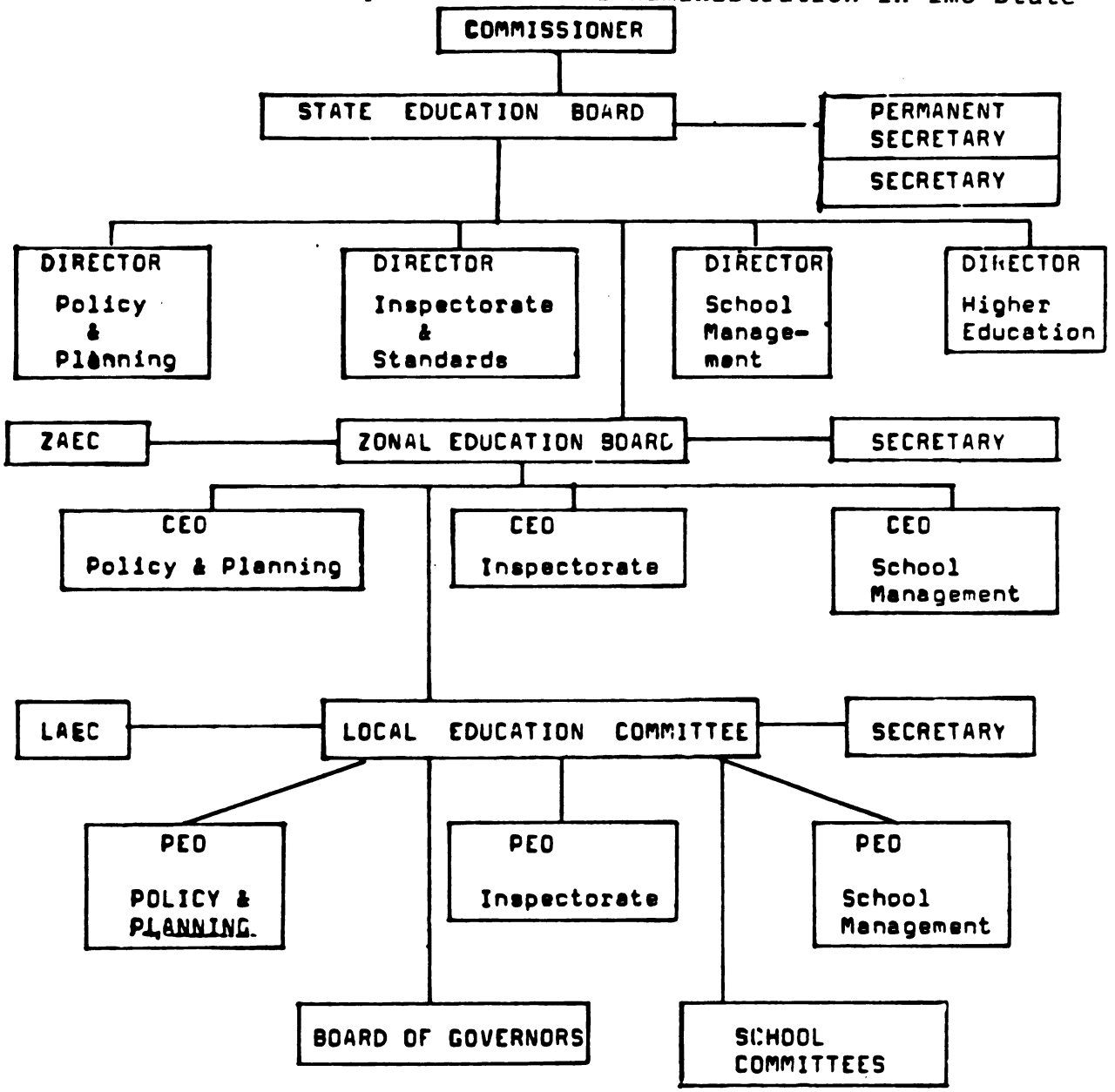
In order to consider what modifications are possible in the organizational structure of secondary schools in Imo State, a brief discussion of present administrative machinery of secondary education in the State is pertinent.

Figure 4.2 is a Schematic representation of the new Zonal System of school administration in Imo State. It is made up of:

1. State Education Board with 4 major divisions namely:
   (a) School Management
   (b) Policy Formulation and Planning
   (c) Inspectorate and Standards
   (d) Higher Education

Each of these divisions is headed by a Director. Members of this State Education Board are:

FIGURE 4.2 Zonal System of School Administration in Imo State



ORGANIGRAM:
MINISTRY OF EDUCATION
OWERRI, IMO STATE.

EDUCATION REVIEW COMMISSION

DEC. 1979.

(a) The Commissioner for Education who is the Chairman

(b) 5 Chairmen of the Zonal Educational Board

(c) The 4 Directors of Divisions

(d) One representative from Higher Education

(e) The Permanent Secretary, Ministry of Education

2. Zonal Education Boards: Imo State is divided into 5 zones and each zone has an education board whose members consist of a Chairman and 3 other members appointed by the Commissioner for Education. Other agencies that will help these 2 major Boards in the execution of their duties are the Local Education Committee and the Zonal Advisory Education Committee.

Responses of Teachers and Administrators that Could Lead to Possible Modifications in the Present Educational Organization to Accommodate Formative Evaluation

84 percent of administrators and 77 percent of teachers recognized the existence of opinion in their school systems. However, only 52 percent of administrators and 42 percent of teachers recognized the existence of a task force in their schools. 81 percent of administrators and 96 percent of teachers felt there is lack of opportunity for in-service training while 76 percent of administrators and 73 percent of teachers agreed that there is lack of qualified staff in the present educational organization in Imo State. These responses formed the basis for modifications recommended in Chapter 5.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary of the problem, the need, limitations, purpose, methodology for the study, as well as major findings, conclusions and recommendations emanating from the study.

Summary of Statement of the Problem

The major problem that necessitated this study was a realization of the importance of formative evaluation for effective instructional materials through a review of the works of experts in instructional development. A needs survey conducted with educators in Imo State of Nigeria has shown that practical application of formative evaluation procedures is not a guiding factor in the development of instructional materials in the State. The establishment of an Educational Service Unit in the Imo State Ministry of Education for the selection, production, utilization of instructional materials has heightened the need for a formative evaluation program that can be used for the quality improvement of these instructional materials. This study is to provide a framework for developing a formative evaluation program that can be

taught through the "pre-service" and "in-service" training programs for teachers for quality improvement of instructional materials. The study also attempts to determine factors that will facilitate or hinder the adaptation of such a formative evaluation program in the educational system of Imo State of Nigeria.

Limitations of the Study

The following limitations influenced the course of this study:

1. Because of time, cost, transportation constraints, this study was limited to a selected sample of secondary schools in Imo State of Nigeria (42 out of 210).
2. The study did not attempt to develop and formatively evaluate instructional materials. Rather it is interested in the suitability of procedures for formative evaluation identified from extant formative evaluation models for quality improvement of prototype instructional materials.
3. The study did not attempt to draw respondents from commercial producers and distributors of instructional materials. Rather, it was limited to secondary school teachers and administrators.
4. The study is designed as an exploratory study attempting to derive base line data for the development of a formative evaluation program which can

be further tested for greater generalization across the target population.

Methodology for the Study

The instrument used for collecting data for this study was a Likert-type questionnaire completed by a randomly selected sample of secondary school teachers and administrators from the 42 randomly selected secondary schools in Imo State of Nigeria.

The questionnaire was organized into 5 sections. In Section 1, the 3 approaches were presented to respondents for them to choose one considered suitable for their schools. Section 2 contained statements aimed at finding out why a respondent selected an approach. Section 3 contained statements about procedures for formative evaluation. Section 4 contained statements aimed at determining the extent to which respondents perceived themselves as possessing some selected skills for formative evaluation. Section 5 contained statements about factors respondents perceived may facilitate or hinder the adaptation of formative evaluation in their school systems.

The questionnaire was first pilot tested with Nigerian students doing their post graduate studies at Michigan State University. A second pilot study was conducted in Imo State with appropriate administrators and teachers. This second pilot study was in two forms. The first was in the form of an oral interview with questions cued to obtaining more data on the research questions. The second part was in the form of a written questionnaire (Appendix E). Two

additional sections, sections 6 and 7 were included for respondents to provide any additional information they desired.

Permission to conduct this research was granted by the Permanent Secretary and a letter to this effect was written to principals of the 42 randomly selected secondary schools. The researcher personally distributed the questionnaires to each school. Two assistants, who received no formal training, assisted the researcher in collecting the questionnaires.

The data collected was analyzed using the Statistical Package for the Social Sciences (SPSS) at the Computer Center at Michigan State University. Descriptive statistics in the nature of frequencies and percentages were used to analyze the responses of respondents to the various statements numbered 4 through 51 in Sections 2 through 5 including responses to the 3 approaches in Section 1 of the questionnaire. A decision rule was used to classify the responses as to which of the statements in the questionnaire respondents had a high, moderate, or low perception. This formed the basis for the findings in this study.

Findings from the Study

Findings from this study are organized under the following headings:

1. Procedures considered essential for formative evaluation by experts with which respondents highly agreed.
2. Procedures considered essential for formative evaluation by experts with which respondents moderately agreed.
3. Factors respondents perceived as hinderances to adaptation of formative evaluation.
4. Factors respondents perceived as facilitators to adaptation of formative evaluation.
5. Skills respondents perceived themselves as possessing for conducting formative evaluation.

1. Procedures Essential for Formative Evaluation Highly Agreed With by Respondents.

The following procedures considered essential for formative evaluation by authorities in the field were perceived as highly suitable for conducting formative evaluation in the secondary school system of Imo State of Nigeria by teachers and Administrators (See decision rules in Column 4, Tables 4.3 to 4.8).

(a) Specification of behavioral objectives
(b) Selection of Students of varying abilities
(c) Random selection of students
(d) Observation and interviewing of students
(e) Comment on written instruction by students

(f) Comment on clarity of instructional illustrations by students

(g) Identification of difficult terms by students

(h) Observation of student facility in using instructional equipment

(i) Collection of entering behavior data on students

(j) Use of post test scores to determine what was similar about items missed; to find out how items missed differed from those passed; to determine what in the instructional material could have caused the failure and to identify how to rectify cause of failure.

(k) Collection of interim test data on student learning

2. Procedures essential to Formative Evaluation Which Respondents Moderately Agreed With

(a) During interviews collect student comments on how involving/boring is an instructional material.

(b) During interviews collect student comments on the appropriateness of the sequence of instructional materials.

3. Factors Perceived as Hinderances For Conducting Formative Evaluation

(a) Lack of full administrative support for formative evaluation.

(b) Absence of a task force in the organization

(c) Lack of time.

(d) Lack of opportunity for in-service, workshop/ seminar.

(e) Lack of qualified staff.

(f) A promotion system that is based on longetivity of service.

(g) Lack of resources .

4. Factors Respondents Perceived as Facilitators for Conducting Formative Evaluation

(a) Ease of obtaining subjects.

(b) Effective channels of communication.

(c) Relative advantage of formative evaluation.

(d) Formative evaluation is easy to try out.

(e) Consistency of formative evaluation with the norms of schools, teachers.

(f) Ease of observing the results of formative evaluation .

(g) Ability of approaches to avoid biases.

(h) Simplicity/non-compexity of formative evaluation.

5. Skills Administrators Perceived They Possessed

(a) Skills for specifying course objectives in behavioral terms.

(b) Skills for constructing valid test instruments.

(c) Skills for observing and interviewing subjects during formative evaluation.

6. Skills Teachers Highly Perceived They Possessed

(a) Skills for specifying course objectives in behavioral terms.

7. Skills Teachers Moderately Perceived They Possessed

(a) Skills for constructing valid test instruments

(b) Skills for observing and interviewing subjects during formative evaluation.

Conclusions

From the results of the analysis of data collected, it can be seen that currently most teachers and administrators do not apply formative evaluation procedures as a guiding factor during the development of instructional materials and programs in the educational system of Imo State. This conclusion is based on the percentage of administrators (36 percent) and teachers (34 percent) who agreed that the type of approach they had selected is similar to the type used in their schools. This low response of administrators and teachers is consistent with the responses obtained in the needs survey for this study. All the educators contacted in the needs study responded that formative evaluation programs are non-existent in their educational systems.

However, from the responses of teachers and administrators, introducing formative evaluation will not run counter to the norms of teachers, the school and the society. The concept of evaluation is not alien to the educational tradition of Imo State. Great importance is attached to diplomas obtained after the end of the secondary education examination. Thus, even though formative evaluation is almost

non-existent in Imo State, its introduction will not run counter to the norms of teachers, the school or the society since the concept of evaluation is not alien to the educational system of Imo State.

Most administrators and teachers preferred using either the Small Group or the Large Group Approaches for conducting formative evaluation. However, a high percentage of administrators and teachers opting for the Large Group Approach are in support of the use of such procedures as the face-to-face interaction techniques of observation and interviewing of subjects--techniques which are characteristic of the Tutorial and the Small Group Approaches. One reason that may be suggested for this preference is that in the normal classroom teaching, teachers are known to interact with their students. There is active participation from students in a manner that simulates the face-to-face interaction techniques used for the Tutorial and the Small Group Approaches of formative evaluation. The above explanation may also suggest why administrators and teachers in the Large Group agreed this approach is similar to the type of formative evaluation conducted in their schools (See responses to Statement 6, Section 2 of Appendix F).

However, the difference between this type of interaction taking place during normal classroom teaching and the face-to-face interaction during the Tutorial or the Small Group approach of formative evaluation is that the former is

never formalized, that is, never geared to be used specifically for revising the instructional material whereas in the latter, concerted efforts are made in this direction. What might be needed therefore is a modified Large Group Approach in which procedures that will enable a teacher to consciously utilize the face-to-face interaction during a formative evaluation of instructional material is possible. This entails providing the prototype, ensuring that conditions essential for its usage are satisfied, presenting the questions meant for assessing the effectiveness of the material, analyzing the results and observing and interviewing subjects to find out more about program deficiencies. The revised and unrevised versions of the instructional materials can then be tested using matched groups of students.

A high percentage of teachers and administrators support random selection of students of varying abilities. One way this random selection can be achieved is by using previous grades of students and the class register. Having selected his subjects the tutor can particularly observe these selected subjects and can interact with them as they use the prototype during a normal class session. One of the requirements for a thorough "post tryout interview" or "debriefing" is to ensure that the conditions established during an interview simulates the actual environment in which the instructional material will eventually be used, Horn.[157] It

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[157]Robert E. Horn, op. cit. p.2

is hoped that adopting this strategy will take care of this requirement.

Whereas administrators perceived themselves as possessing some selected skills such as how to specify course objectives in behavioral terms; how to construct valid test instruments and how to observe and interview subjects, some teachers did not perceive themselves as possessing skills for constructing valid test instruments and for observing and interviewing subjects. Teachers, however, indicated they can specify course objectives in behavioral terms. Lack of skills in these areas will form a stumbling block for effective implementation of formative evaluation procedures in Imo State. Those teachers who did not perceive themselves as possessing some of these selected skills will require a training program that will help to raise their level of competence for carrying out formative evaluation. However, the high percentage of administrators who perceived themselves as competent in these skills might form the nucleus of a training unit for teachers.

Administrators and teachers perceived that most of the procedures considered essential for conducting formative evaluation by the experts, as being suitable for use in secondary schools in Imo State. The only two procedures they moderately agreed with were asking students to comment on how boring or involving an instructional material is and to comment on the appropriateness of the sequence of instructional materials.

Since these aspects are considered essential by authorities for formative evaluation they should be incorporated in the training program to be recommended for the training of faculty.

Administrators and teachers were of the opinion that the existence of many channels of information will not hinder the free flow of information but rather that teachers on entrance into the system will be promptly informed about the existence of a program for formative evaluation in their schools. It would seem the existence of staff rooms where notices can be posted on boards and where staff meetings can be held in the various schools may have led to the unanimous agreement by teachers and administrators with the above statements. However, no attempt was made in this study to find out how this prompt information was to be delivered. Neither was the statement about being "promptly informed" (See Statement 38, Section 5, Appendix F) directed to determine if administrators themselves will equally be "promptly informed" and how.

Both administrators and teachers testified to the existence of opinion leaders in the schools although formative evaluation does not need to be originated by those opinion leaders to succeed. The recognition that formative evaluation does not need to be originated by opinion leaders to succeed implies that an "external change agent" can work his way through the organization to introduce formative evaluation. There is no organized task force in the educational system

to ensure that formative evaluation is executed expeditiously. The establishment of such a task force made up of some "opinion leaders" will augur well for the implementation of formative evaluation. This is based on the assumption that the views of such "opinion leaders" have often been consulted for providing solutions to problems.

There is an absence of qualified staff for conducting formative evaluation in the secondary schools. Absence of qualified staff is a perennial problem confronting education in Imo State and all other states in Nigeria.[158] Here lies the importance of instituting a training program which will provide teachers with opportunity for improving their competence for formative evaluation. (See recommendations under training program and Figure 5.1).

Developing a training program without provision for in-service training is counter productive. A high percent of administrators and teachers, it must be recalled, are of the opinion that lack of opportunity for in-service training will hinder the implementation of formative evaluation. Opportunities for in-service training, workshops and seminars, are crucial if teachers are to be abreast of developments in their professions. Since schools enjoy three month long holidays this period might be used for organizing such in-service training programs.

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[158]Federal Republic of Nigeria Implementation Committee for the National Policy on Education BLUEPRINT 1978-1979 op. cit. p.23.

There does not seem to be a possibility of full administrative support for conducting formative evaluation. The moderate perception of administrative support by teachers and administrators requires concerted effort to ensure effective adaptation. Many adoption models have been proposed by Havelock,[159] Rogers and Shoemaker,[160] and Huse.[161] By using these adoption strategies, it might be possible to obtain fuller support for formative evaluation. Another strategy might be to use the "short gunning" effect as supported by Hamerus,[162] Kemp,[163] Vogel[164] and Cyrs[165]. Kemp's advice of "start small, prove your worth" or Cyrs's advice of "use little projects to get big projects" are examples of "short-gunning".

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[159]Ronald G. Havelock, op. cit. p. 43-140

[160]Everett M. Rogers with F. Floyd Shoemaker op cit. p.100

[161]Edgar F. Huse, op.cit. p.95-100

[162]Dale Hamreus as in Robert A. Braden and William R. Torrell, "The Challenge from Within: Some Unpopular Views on Instructional Development Topics" in Ronald K. Bass and D. Barry Lumsden Instructional Development: The State of the Art. Columbus, Ohio. Collegiate Publishing Inc., 1978, p.223.

[163]Jerrold Kemp as in Robert A. Branden and William R. Torrell, Ibid, p.223.

[164]George Vogel as in Robert A. Branden and William R. Torrell, Ibid, p.223.

[165]Thomas Cyrs as in Robert A. Branden and William R. Torrell, Ibid, p.223

The reward system in the educational establishment of Imo State is considered by respondents to be based on year of graduation. The use of year of graduation for promotion decisions avoids complaints of favoratism rampant after a promotion exercise. But this is at the expense of excellence for it is bound to dampen initiative. Promotion is one of the essential elements for maintaining the morale of faculty of any organization. Where such promotion is linked with job performance, faculty receive more incentive to work harder. It would seem that what is needed is a system of faculty evaluation and promotion based on performance that encourages innovativeness.

Recommendations

In this study procedures for conducting formative evaluation considered suitable for secondary educational systems in Imo State of Nigeria have been identified in addition to factors that will facilitate or hinder the adaptation of such formative evaluation procedures. The following recommendations are offered to ensure fuller adaptation of such a formative evaluation program into the educational system of Imo State.

A. Establishment of an Evaluation Unit in the Ministry

The responses of teachers and administrators used in the study indicated the existence of opinion leaders in the

school organization. However, such opinion leaders are not organized as a task force that will ensure that a formative evaluation program is executed expeditiously. What is needed therefore is a unit for Evaluation in the Ministry. Under the new Zonal System of secondary school administration (see Figure 4.2) such a unit should be an arm of the directorate for Inspectorate and Standards. The function of the directorate for Inspectorate and Standards is to supervise teaching so as to ensure that the right methods and materials are used in the teaching process. This makes this directorate the most appropriate for locating the new Evaluation Unit. To ensure that this Evaluation Unit receives the administrative backing it needs to survive, it is proposed that an Assistant Director be created in the Directorate for Inspectorate and Standards (See Figure 5.1). Such an assistant director would coordinate the activities of the Book Development Unit, Curriculum Development Unit, Instructional Media Center and the Evaluation and Standards Unit. Each of these units should be headed by a Chief Education officer who reports to the Assistant Director. However, the Evaluation and Standards Unit should be able to interact with the other units during all the processes of instructional material/program development. The functions of such an Evaluation and Standards Unit should be:

1. To work with the other units to formatively evaluate the prototype instructional materials

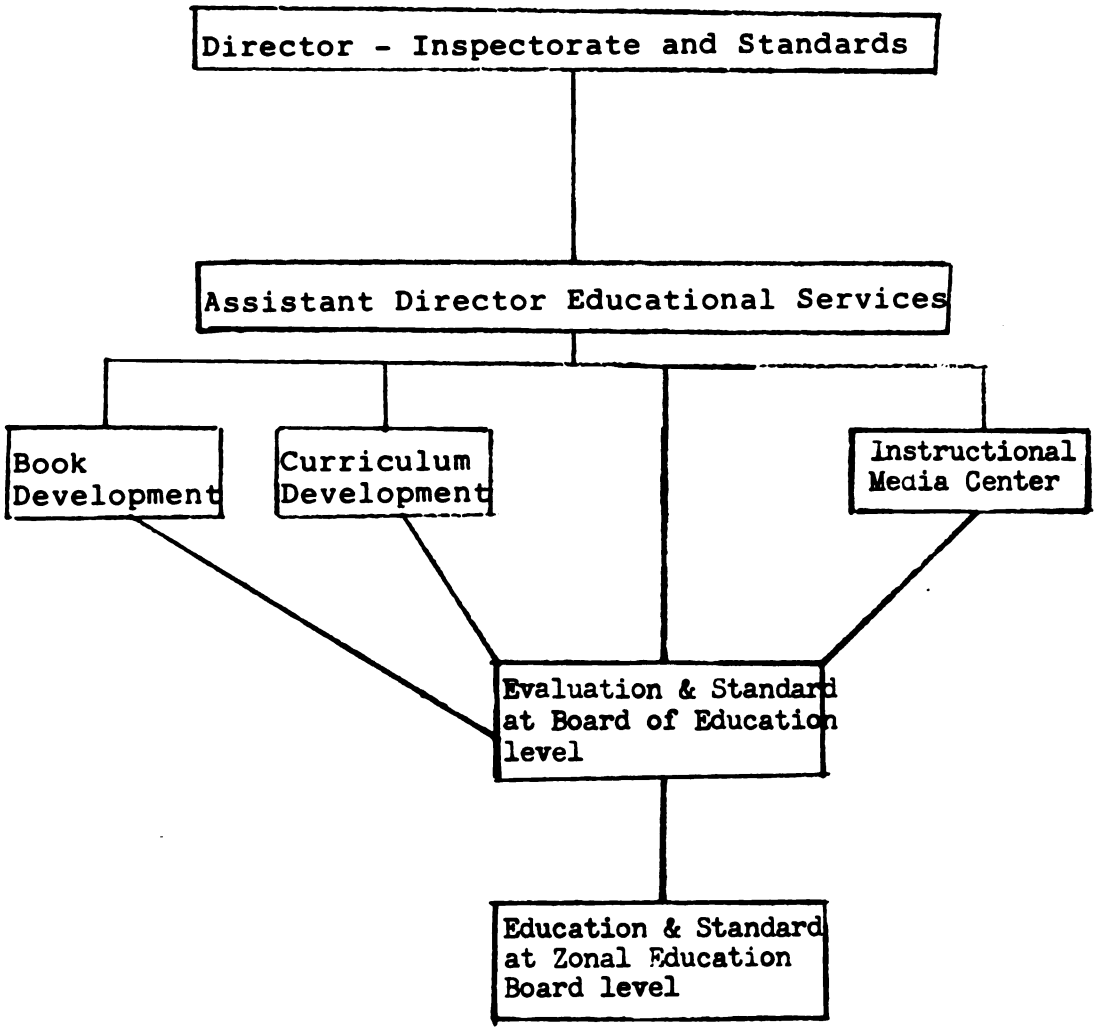

Figure 5.1 Schematic representation showing Task Force for Evaluation and Standards in the Ministry of Education

2. To develop and continuously update a formative evaluation program for the formative evaluation of prototype materials.
3. To organize training programs to raise the level of competencies of faculty on formative evaluation and instructional development
4. To interface with secondary school administration to ensure that opportunities are available for the formative evaluation of prototype instructional materials.
5. To provide guidelines for the selection/purchase of instructional materials.
6. To ensure that validation reports about instructional materials provided by commercial producers are authentic.

B. Ensuring Administrative Support

The responses of teachers and administrators also revealed that there might not be full administrative support for formative evaluation even though it is not inconsistent with the norms of teachers, schools and society. This calls for a utilization of an adoption model to get formative evaluation fully adapted. In this regard, Havelock's[166] 6 step model for adopting an innovation might be used. The first phase of this model is concerned with Establishing A Relationship

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[166]Ronald G. Havelock, op. cit. p.43-140

with a client organization. This entails identifying the decision makers and using face-to-face interaction techniques to inform these decision-makers about formative evaluation. In the Ministry of Education, these officers are the Commissioner, the Permanent Secretary, the Chairman of the Zonal Education Boards, the Directors of Education (See Figure 4.2). Face-to-face interaction can be buttressed with slide presentations on what formative evaluation is all about. The second phase of Havelock's adoption model is Diagnosis of the problem in the educational establishment for which formative evaluation is essential. Already a needs survey had been conducted showing the lack of formative evaluation in the educational system. Using such survey techniques in which members of a client organization are actively involved in identifying problems and solutions to problems gives an innovation a better chance of success in that organization. This is because members have a sense of "ownership" in the new solution provided, Huse.[167] The third phase deals with the Acquisition of relevant data for solving the identified problem. The research evidence on formative evaluation and the procedures identified from analysis of works of 10 authors on formative evaluation can be used as sources of data. Getting members involved in suggesting solutions through the use

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[167]Edgar F. Huse op. cit. p.93

of Delphi techniques,[168] Nominal Group technique[169] or Force Field Analysis technique[170] gives members a sense of commitment and pride and encourages speedy acceptance of an innovation. The remaining 3 phases deal with Choosing, Acceptance and Self-Renewal. As for choosing, teachers and administrators have preferred the Large Group and the Small Group Approaches and have perceived most procedures for formative evaluation as suitable for the school systems. Acceptance demands trying out the procedures and providing results to prove that formative evaluation works. Self-Renewal involves training faculty to ensure that there is a continuity in the use of formative evaluation.

By using this adoption strategy it is possible to increase the level of administrative support for formative evaluation. Evidence of administrative support can come by the provision of opportunity for in-service, workshops and seminars for the training of faculty and introducing a reward system that rewards those who conduct formative evaluation of their instructional materials. Since schools enjoy 3 month holidays, this period could be used for organizing this training period.

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[168] Norman P. Uhl; Identifying Institutional Goals. Durham, North Carolina: National Laboratory for Higher Education, 1971, pp. 7-14

[169] Andre L. Delbecq; Andrew H. Van de Ven: David H. Gustafson. Group Techniques for Programmed Planning. Scott, Forseman & Co., Glenview, Illinois, 1975

[170] Ibid

C. Overcoming The Problem of Time

Lack of time has been a major cause of rejection of innovation in schools. Teachers complain of being overworked and often frown at any new assignment that will increase this burden. To overcome the problem of lack of time, formative evaluation can be conducted in an intact class during a course of instruction. The teacher selects his groups of subjects and conducts his interviews with these selected groups. Since a teacher can be in charge of a subject for different classes of the same grade level, it is possible for the selected group in class A to serve as the control group while the selected group in Class B serves as the experimental group. By adopting this strategy it is hoped that this complaint about lack of time can be overcome.

D. Training Program for Faculty

One of the factors recognized as a hinderance to effective adaptation of formative evaluation is the lack of qualified staff. This calls for the development of a training program which can be used to raise the level of competence of faculty for conducting formative evaluation. This training program will consist of 2 sections. The first section is organizational and involves drawing a schedule, getting an approval for this schedule and developing the program itself. The second section is concerned with the actual carrying out of formative evaluation. To be included in this schedule are place, time, cost, number of participants and criteria for

selecting participants. The place will depend on the time for conducting this training. If it is during the long holidays, then the place has to be one with facilities for accommodation and feeding. If the training is during school session, schools can be zoned together so that a centrally located school can be used. Selected faculty can then commute for the training. It is expected this training will last 1 to 2 weeks. The cost will be reasonable and will consist of allowances to participants according to government rate for local training, cost of paper for producing materials and purchase of books and equipment if these are not available.

Developing the training program is concerned with specifying the content areas to be covered during the training. These are:

1. Specification of behavioral objectives
2. Construction of criterion or norm referenced test instruments
3. Techniques for random selection of subjects
4. Techniques for observation and interviewing of subjects

(1) Specification of Objectives

Under this unit a definition of behavioral objectives will be presented with illustrations. The ABCD model[171] might

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[171] Tom Kepner and Lanny Sparks Objectives Market Place Game. What You Always Wanted to Know About Performance Objectives But Were Afraid to Ask. National Special Media Institute, 1972, p. 1-37

be used to teach components of a well specified objective. The A in this model stands for Audience or the target population to use the instructional material, the B stands for Behavior. The behavior to be learned should be stated in observable, quantifiable terms using "action verbs". The C stands for the Conditions under which the behavior is to be performed and the D stands for the Degree or Criteria for assessment.

(2) Test Construction

The training program on test construction will consist-of specification of objectives in terms of specific learning outcomes, outlining the content area and building a table of specification in which each instructional objective is matched against a specific content area as in Table 5.1. Test items that call for the specific behavior described by a learning outcome are next written to fit the table of specification.

(3) Techniques for Random Selection of Subjects

By random selection of subjects is implied that technique which affords all the individuals in the defined population an equal and independent chance of being selected as a member of the sample. This can be achieved by assigning serial numbers to members of the population and using a table of random numbers to draw the required sample. Rather than using a table of random numbers the identification mark for each member is written on a piece of paper and these are placed in a container. The required numbers are drawn from

TABLE 5.1 TABLE OF SPECIFICATION FOR INSTRUCTIONAL OBJECTIVES AND CONTENT AREAS

Content Area \ Instructional Objective	Understanding Of					Total Items
	Terms	Facts	Concepts	Principles	Procedures	
Reproduction	5	5	6	4	4	24
Excretion	4	4	4	2	3	17
Heat	5	5	4	3	2	29
Electricity	5	4	3	6	4	22
Elements	6	4	4	1	5	24
TOTAL ITEMS	25	22	21	16	18	116

the container. Another technique that can be used is the stratified sampling technique. This technique is useful when it is essential to select a certain proportion of sub-groups in the population in relation to their number in that population.

(4) Interviews and Observation

The essense of this training is to enable the interviewee to avoid "inadvertent teaching" during the interview. Horn[172] provides an illustration of "inadvertent teaching" during formative evaluation.

The following heuristics are also pertinent as a guide during an interview:

1. Do not provide answers that will discourage students from making future comments about a program
2. Establish an informal atmosphere that will create a cooperative attitude on the part of students.
3. Orientate students on the importance of their information and solicit that they be as frank as possible without any inhibition.
4. Ensure that a conduc ive environment is available for the interview especially ensure that a replica of the environment in which the instructional material will be used is available.

As regards observation of subjects, an evaluator ought to position herself where a subject will not be aware he is being

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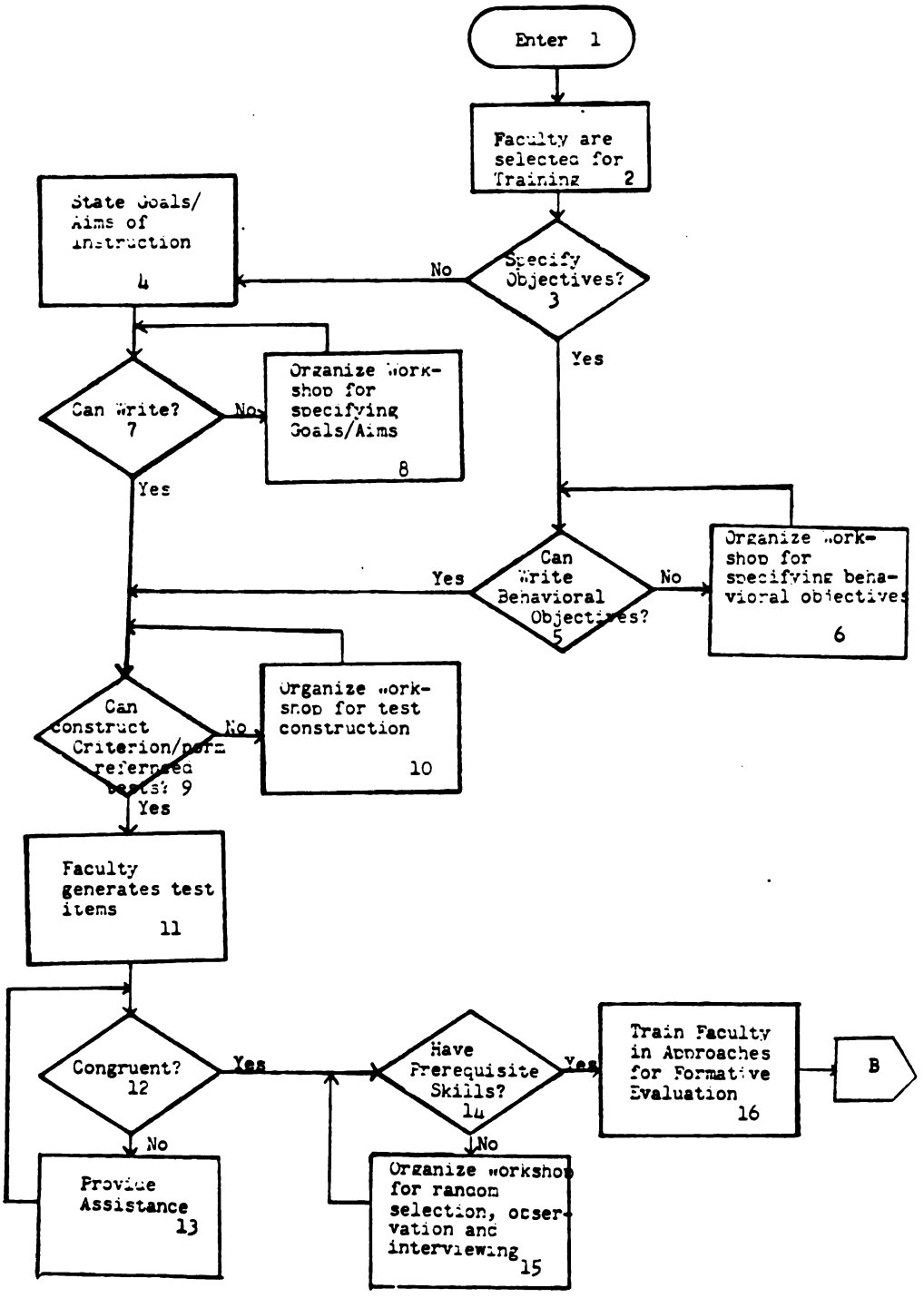
[172]Robert E. Horn, op. cit. p.2.

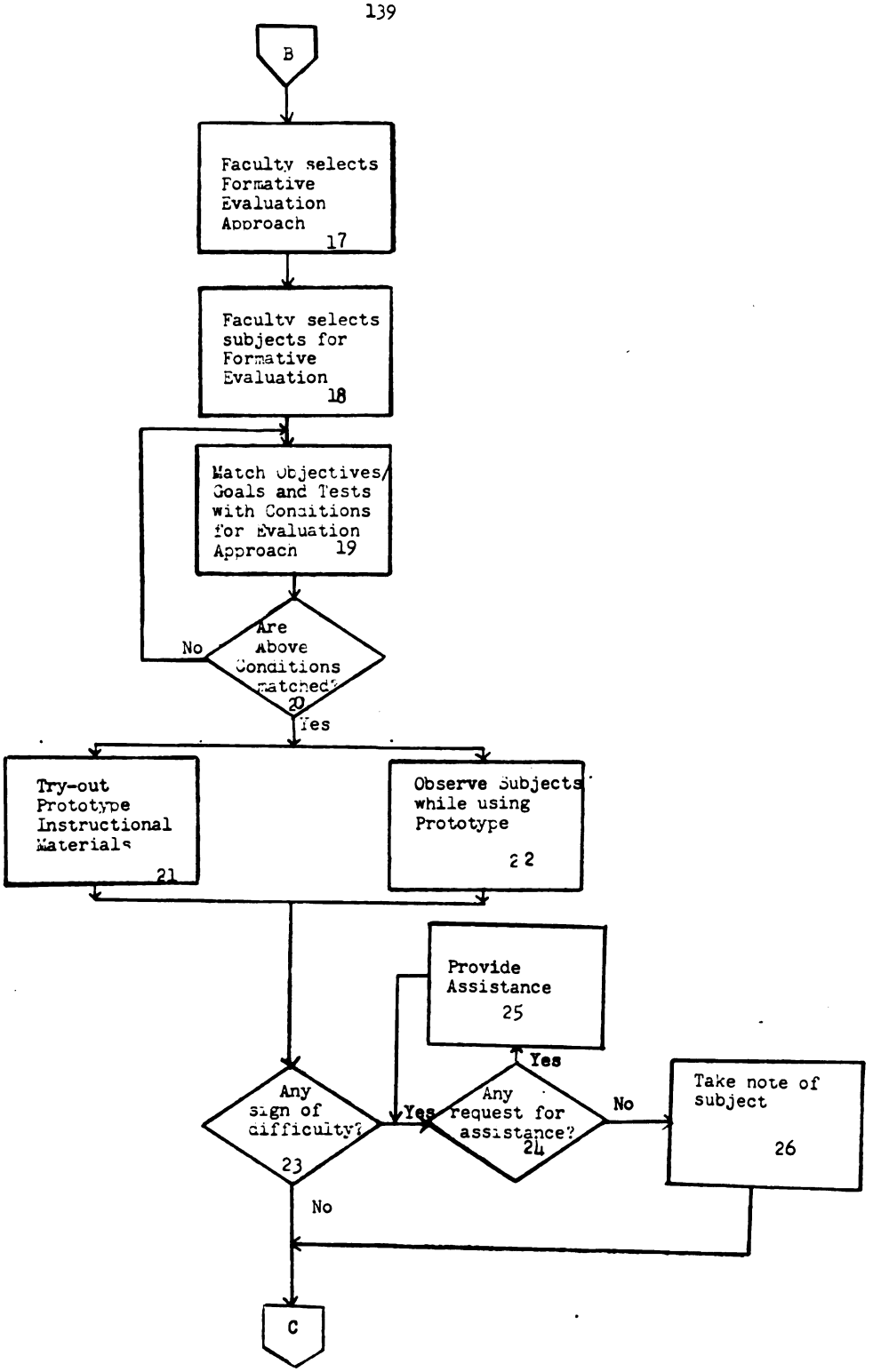
observed. The evaluator should note down what was observed and use this information for discussion during the interviews.

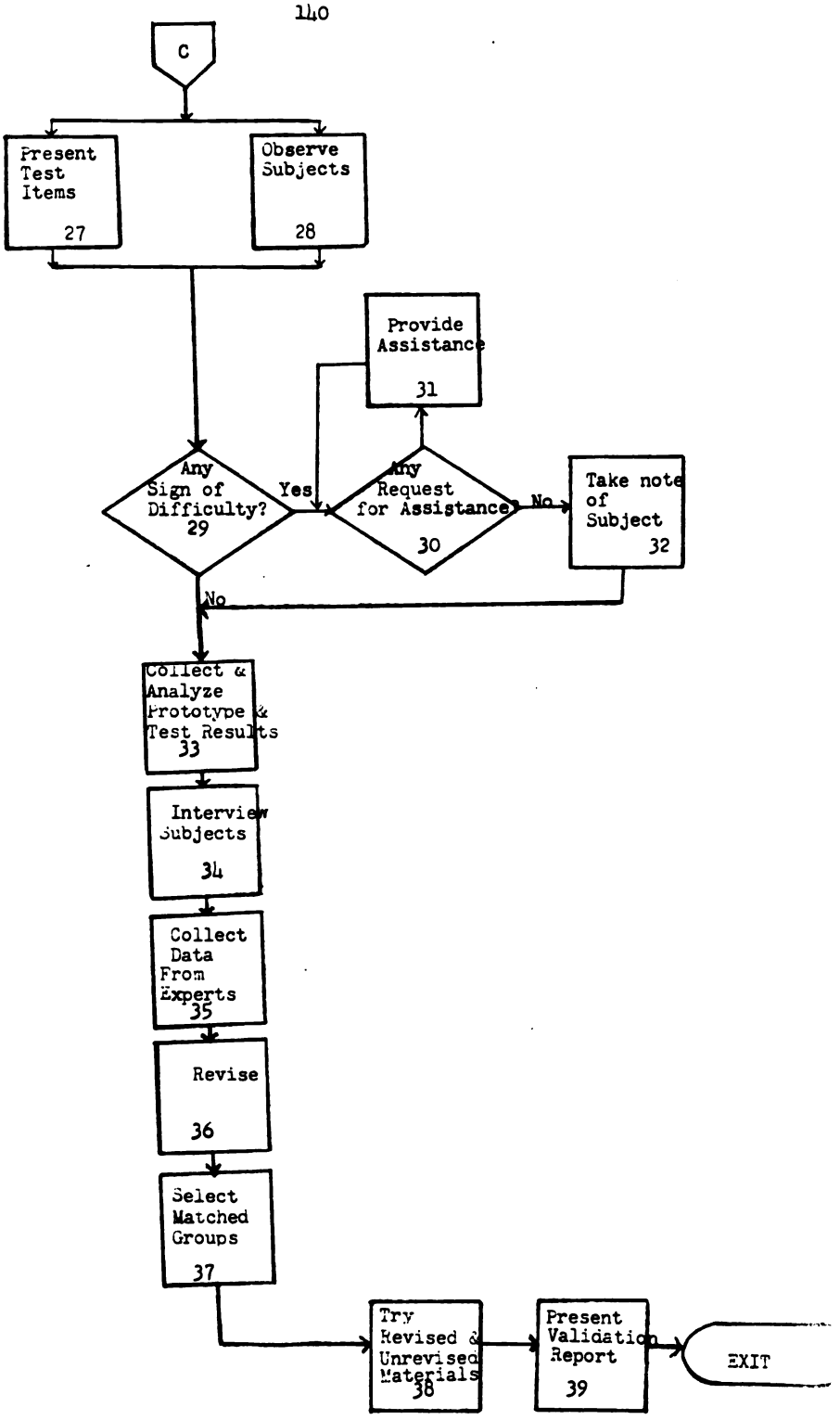
The first section of this training program had been concerned with the organizational aspects. This second section is concerned with the actual carrying out of formative evaluation by selected faculty. Figure 5.2 is a schematic representation or flow chart model of a program for this actual practice of formative evaluation. It consists of processes and decision points. Each process is an activity while emanating from each decision point are alternative activities that will lead to effective formative evaluation. The discussion of Figure 5.2 that follows is based on the numbering in the rectangular blocks used in the flow chart.

1. Enter. This signals the commencement of the formative evaluation process.
2. Faculty are selected for formative evaluation training program.
3. This decision point is aimed at finding out those faculty members who view as essential the specification of course objectives in behavioral terms.
4. Those faculty members who are opposed to the specification of behavioral objectives are encouraged to state goals/aims of their instruction, instead.
5. This decision point is to find out if those faculty members who support the specification of behavioral objectives have the necessary writing skills.

Figure 5.2 Schematic Representation of a Training Program for Formative Evaluation.




B
Faculty selects Formative Evaluation Approach 17
Faculty selects subjects for Formative Evaluation 18
Match Objectives/ Goals and Tests with Conditions for Evaluation Approach 19
Are Above Conditions matched? 20
No
Yes
Try-out Prototype Instructional Materials 21
Observe Subjects while using Prototype 22
Provide Assistance 25
Any sign of difficulty? 23
Yes
Any request for assistance? 24
Yes
No
Take note of subject 26
No
C


C
Present Test Items 27
Observe Subjects 28
Provide Assistance 31
Any Sign of Difficulty? 29
Yes
Any Request for Assistance 30
No
Take note of Subject 32
No
Collect & Analyze Prototype & Test Results 33
Interview Subjects 34
Collect Data From Experts 35
Revise 36
Select Matched Groups 37
Try Revised & Unrevised Materials 38
Present Validation Report 39
EXIT

6. For those who lack the skills a workshop is organized to provide them with this training.
7. This decision point is to find out if faculty has the necessary skills for specifying goals/aims.
8. For those who lack the skills a workshop is organized to provide them with this training.
9. This decision point is to determine if faculty members have the skills for constructing criterion and norm referenced test items.
10. For those who cannot, a workshop is also organized to provide them with this training.
11. Faculty members now generate Pre, Post and interim test items for their prototype.
12. This decision point is to determine if test items are congruent with the aims/objectives of the instruction.
13. If there is lack of congruence, faculty members are provided with assistance.
14. This decision point is to find out if faculty members possess the skills for random selection of subjects and for observing and interviewing subjects. If faculty members can perform these tasks, they are ready for the next phase of the training which is learning about formative evaluation approaches.
15. If faculty members lack these skills, a workshop is provided to raise their competence.
16. Faculty members are exposed to the 3 approaches for Formative Evaluation. This consist of

presenting them with works of authors who had used the various approaches for formative evaluation. The characteristics, advantages, and disadvantages of each approach will be elaborated. Faculty members are now ready to tryout what they have learned in a real situation.

B. Symbol indicating off page connector

17. Faculty members now select formative evaluation approach.

18. Subjects to be used for formative evaluation are also selected.

19. Faculty members match course objectives and test items with specific conditions for a formative evaluation approach.

20. This decision point is to determine if the conditions for use of prototype are congruent with conditions for the selected formative evaluation approach.

    If there is no congruence, this is checked and rectified.

21. If there is congruence, the prototype is presented.

22. Subjects are observed as they use the prototype.

23. This decision point is to determine if subject(s) exhibit any sign of difficulty while using the prototype.

24. This decision point is to determine if subject(s) request(s) for assistance as a result of difficulty encountered while using the prototype.

25. If subjects request for assistance this is provided without "inadvertently teaching" them.
26. If subject does not signal for assistance, faculty member takes notes of subject and notes down what was observed.

C. Symbol indicating off page connector

27. Test items are next presented to subjects.
28. Subjects are also observed as they use test items.
29. This decision point is to find out if subjects are encountering any difficulty.
30. This decision point is to find out if subjects are in need of assistance.
31. If subjects request for assistance, this is to be provided without "inadevertently teaching" them.
32. If subjects do not signal for assistance, take note of what was observed.
33. Collect and analyze prototype material and reponse to test items.
34. Faculty member interviews subjects
35. Faculty member(s) gather(s) additional information from subject matter experts
36. Instructional materials are revised using feedback from interviews, post test scores and experts
37-38. Faculty members randomly selected matched groups for trying the unrevised prototype and the revised instructional material.
39. Faculty member writes a validation report specifying the nature of formative evaluation that was conducted and the results.

Implication for Further Research

This study has concentrated on determining the Perceptions of secondary school teachers and administrators of the suitability of formative evaluation procedures for adaptation into their schools in Imo State of Nigeria. It must be stressed that one's perceptions over matters that are attitudinal may vary with circumstances.

Thus, even though administrators and teachers used for this study perceived the various procedures for conducting formative evaluation as suitable for their school systems, the following additional research are considered essential in order to find out if there is any congruence between what is perceived and what obtains in practice.

1. A study to determine the extent to which teachers and administrators possess the necessary skills for specification of objectives and construction of valid test instruments and the extent to which these are made manifest in their teaching.
2. A network analysis to identify channels of communication, methods of dissemination of information and causes of problems associated with flow of information related to formative evaluation in the educational system of Imo State.
3. A study to identify successful and unsuccessful application of formative evaluation in the secondary educational system of Imo State of Nigeria, their originators, characteristics and consequences.

4. A study to determine evaluation strategies and reward systems operating in secondary school systems in Imo State.
5. A comparative study of three prototypes to determine which of the 3 formative evaluation approaches is most suitable for secondary schools in Imo State.
6. A study to compare the effectiveness of instructional materials formatively evaluated using feedback from "experts" and target users.
7. A study to determine the minimum level of formative evaluation sufficient to improve instructional materials.
8. A study to validate a formative evaluation training program developed for use by administrators and teachers in secondary schools in Imo State of Nigeria.
9. A study to determine the extent to which secondary schools in Imo State of Nigeria use formative evaluation information in their selection of commercially produced instructional materials.
10. A study to determine the extent to which commercial producers conduct formative evaluation in the process of producing instructional materials.

APPENDICES

APPENDIX A

Division of Educational
Systems Design
College of Education
Michigan State University
East Lansing, Michigan 48824

May 27, 1980

Dear Educator:

LETTER TO EDUCATORS ON THE NEED FOR FORMATIVE EVALUATION

I am a Nigerian studying for my Ph.D. in Educational Systems Development (Educational Technology) at Michigan State University. After graduating from the University of Nigeria, Nsukka in 1972, I taught Biology at Federal Government College in Maiduguri; Kano Teachers' College, Kano and worked as an education officer in the UNESCO division of the Federal Ministry of Education, Lagos.

I am conducting a survey research for my Ph.D. dissertation. My topic of interest is: Perceptions of secondary school teachers and school administrators of the suitability of formative evaluation procedures for adoption in Imo State of Nigeria.

By formative evaluation I mean the procedure of giving a prototype instructional material to a student or a class of students, testing them to find out about their performance, interviewing them to find out about their difficulties while using the prototype instructional materials and based on feedback from this student or group of students, correcting and revising the prototype material until its quality is improved to the desired level of effectiveness.

The purpose of this letter is two-fold and are embodied in the three statements below. You can help me to fulfill this purpose by rating the statements according to the following scale: 1 stands for Strongly Disagree; 2 stands for Disagree; 3 stands for Agree; 4 stands for Strongly Agree.

1. Formative evaluation as defined above exists in my educational system

1	2	3	4
SD	D	A	SA

2. Formative evaluation is necessary for improving the quality of instructional materials.

1	2	3	4
SD	D	A	SA

3. Information on formative evaluation of an instructional material should guide the selection of such materials

1	2	3	4
SD	D	A	SA

This brief survey will help me ascertain if the need exists for this dissertation. Your prompt response to the above statements will therefore be highly appreciated. A self-addressed and stamped envelope has been enclosed to expedite your return of your completed response.

Thanks for your co-operation.

Yours Sincerely,

Hyacinth I. Dike

APPENDIX B

CHECKLIST FOR THE FIRST TRYOUT SESSION

READ THE CHECKLIST NOW, BUT DO NOT ATTEMPT TO MEMORIZE ANY OF IT. YOU ARE EXPECTED TO BE FAMILIAR WITH ITS CONTENTS IN THE MATERIAL WHICH FOLLOWS.

___1. The programmer should first explain to the tryout student that the materials he is to be given are intended to help him learn subject matter designated in the title.

___2. The programmer should emphasize that the role of the student is to help the programmer evaluate some new educational materials. Comments and suggestions that the student makes will help the programmer make revisions.

___3. The programmer should then explain that he has to know how much the student already knows about the subject matter and whether or not the student has all of the prerequisites to learn from the materials. He should then give the student the pre-test (always) and the prerequisites test (if required)* timing the student on both. Both of these may be done when the test subjects are being selected.

___4. When the tests have been completed, the programmer should show the student the program and explain again that it is the material, not the student, that is to be tested from now on. This is an especially important point about which the student should have no question.

___5. The student should be given a ball point pen with which to write his answers. (This will prevent him from erasing potentially valuable information for revising the program.) He should be provided with answer sheets, if any.

___6. Tell the student to put an "X" next to the items he thinks he got wrong after he has checked his answer. If the program contains open-ended questions, tell the student about this.

___7. Explain to the student that if he doesn't know an answer, he should take a guess and write "guess" on the answer sheet. If he simply can't think of an answer, he should leave the answer blank and place an "X" next to the item on the answer sheet.

___8. Tell the student the time limits placed on the tryout session and that he can take a break whenever he feels like stopping.

___9. Re-emphasize that any comments he wants to write or express to the programmer will be useful and welcomed.

___10. Then ask the student to commence with the materials. (If the student asks what he should do or asks if he's doing it right, the programmer should gently insist that all the directions necessary are given in the materials. It is important to try out the directions, too.)

___11. The programmer should note carefully the time at the beginning and end of each tryout session and keep track of "break time".

*You give a prerequisites test if the program assumes skills such as mathematics or vocabulary knowledge that the students might not have. For example, a statistics program should have an arithmetic and algebra prerequisites test.

You do not need a prerequisites test if the population can be assumed to have the required background. For example, management programs will not generally require a prerequisites test on company organization because a knowledge of this is assumed.

"AGENDA" FOR
MK II TRYOUT/DEBRIEFING

Instructional Development Tryout Session

I. Preflight Facility:

Check software installation and operation in each carrel. Check for required number of workbooks, pre- and post-tests, answer sheets, keys, data matrices, reactionnaires, audio recording equipment and problem posting flip chart, and refreshments.

II. Student Arrival:

1. Pass out name tags

2. Create atmosphere of informality and low threat

Students have volunteered for this session and are unsure as to whether this will adversely affect their grade in the course, future employment, or other more horrible reprisals. They must be put at ease or very little constructive criticism will be forthcoming. Therefore, wear informal clothes (the student will) and make small talk as students arrive.

III. Introductory Remarks:

1. Welcome:

Thank students for their willingness to help you revise your "first draft" materials. Assure them that their frank and honest opinions are of crucial importance and that nothing they say will in any way affect their grade, job, or pose other threats. It is the author and the program which is under the gun--not them.

2. Role of Students:

To help you identify weaknesses in the materials, procedures, or exams, and to make comments and/or suggestions for improvement. You are looking for comments pro and con on "relevance," "redundancy," "boredom," "obscurity," "clarity of visuals," "needless make work," poor exam questions, etc.

3. Role of Author:

Your role is to gather data and suggestions for revising the materials and to provide tutorial assistance to the students on any aspect of the lesson.

4. Overview of the Procedure:

The tryout will begin with a pre-test (to assess how much they know to start with); then use the lesson materials; then a post-test (to determine how much they have learned from the materials); followed by an opinionnaire and then a break, with refreshments. After the break will be a group debriefing.

IV. General Instructions:

1. Test Scoring: Both pre-test and post-tests are self-scoring; students score their own. Please mark incorrect answers on the answer key--not in the test booklet.

Scores do not count towards a grade; they are for your information and to show us weaknesses in the lesson.

2. Be Honest: Don't look at the answer key before or during the exams. If you artificially inflate your score, we don't really know how good (or bad) the lesson is.

3. Guessing: Guess at the answers you don't know, and place a question mark after your answer on the test booklet. If you don't understand the question, place a question mark in front of the question in the test booklet and the answer key.

4. Ask for Help: If you have problems during the lesson, raise your hand and I will come over. Do not talk to your neighbor.

5. Write Down Your Problems: When you have a problem, write it down in the workbook.

6. Reactionnaire: We need your opinion on several critical aspects of the lesson design. Be frank and honest as you fill this out.

7. Break: Have a coke and donut and don't go away. We need you for the debriefing.

8. Debriefing: We will reconvene to discuss the lesson, using exam scores, reactionnaire data, and your notes and comments to organize the discussion. Remember, any comments you make will be useful.

"CHECKLIST" FOR MK II

TRYOUT AND DEBRIEFING

AH 111 Instructional Development SLATE Tryout Procedure 21 October 1970

AGENDA

I. INTRODUCTORY REMARKS

1. Welcome: thank students for their willingness to participate in the tryout.

2. Introduction: doctoral research experimenter and AH grad assistants.

3. Name Tags: pass out name tags and explain they will help identification throughout the session.

4. Role of Student: to help designer identify weaknesses in the set of new materials. Comments and suggestions WILL be utilized for revisions.

5. Overview of Procedure:

   a. Pre-test: We must find how much you already know about the subject matter to determine how much you have learned tonight and see how good or bad the materials are--hence the pre-test.

   b. Sure or Unsure Measure: we need to know if you "really know" something or if you were a good guesser. Circle S or U on tests.

   c. Take the Program: again reiterate it is the materials not the students being evaluated.

   d. During the Program: designer will circulate to answer questions.

      1. Do not talk to each other--ask the designer.

      2. Write your comments/questions in the margin of the workbook "not clear," "too fast," "irrelevant," "busywork," etc.

      3. Raise your hand and designer will come to you.

      THESE COMMENTS AND QUESTIONS ARE CRITICAL--SO DON'T BE SHY

      4. You may smoke, or take a short (1-2 min.) break when you want to.

e. Post-test: same as the pre-test, and will give us a measure of the teaching effectiveness of the materials--weaknesses.

f. Reactionnaire: immediately after post-test, while your memory is fresh, answer several questions about how you felt about important design aspects of the materials.

g. Break: 15 minute, coffee and coke, donuts supplied by the house.

h. Debriefing: very critical discussion following the break to explore your questions and comments, and obtain your recommendations on what and how to revise the materials.

APPENDIX C

GOVERNMENT OF IMO STATE OF NIGERIA

MINISTRY OF EDUCATION
OWERRI.

MOE/IN/SEC.4/Vol.II/431 — 2nd October, 1980

The Principal,

.....
.....
.....

Request for Permission to Conduct Research in Secondary Schools in Imo State

I am directed to inform you that permission has been granted to Mr. Hyacinth I. Dike, a Research Student on a Doctoral Programme at Michigan State University U.S.A. to give out his questionaire to be completed by teachers and the school Principal.

2. You are therefore requested to give him maximum co-operation.

E.C. Nwokoma
for Permanent Secretary

MOE/IN/SEC.4/Vol.II/431A
Ministry of Education
2nd October, 1980

Copy to:

Area Inspector of Education
Area.Inspectorate.Office,.
.....

Above for information please.

E.C. Nwokoma
for Permanent Secretary
Ministry of Education.

APPENDIX D

"PERCEPTION OF SECONDARY SCHOOL TEACHERS ON THE SUITABILITY OF FORMATIVE EVALUATION PROCEDURES FOR ADOPTION IN NIGERIA"

Michigan State University

College of Education

Dear Educator,

The purpose of the enclosed questionnaire is to get your response on the relevance/suitability of procedures for conducting formative evaluation for secondary education in Nigeria. These procedures are derived from a review of existing formative evaluation models. Your responses will be used to develop a program to be used in conducting formative evaluation of instructional programs and for future adoption of such a program in our secondary educational system.

What is formative evaluation?: This is a process of subjecting a freshly prepared lesson plan or any instructional product to a student or a group of students and based on feedback from them, revising this original /fresh material. This revision process can continue until the instructional material is of high quality.

Procedures:

The following techniques stated below are widely used for formative evaluation. Below each technique is a brief description of what the technique implies. This will be followed by some questions. The spaces provided are for you to rate your responses according to the importance you attach to the questions using the numerical scales provided.

It would be appreciated if you could return the questionnaire using the self addressed and stamped envelope.

Tutorial Approach- Definition: This is the process of using a single student for conducting formative evaluation.

Instruction: Equate each activity according to the following scale and check your response by the appropriate number. Scale: One stands for Strongly disagree 2 for Disagree; 3 for Do not understand; 4 for Agree ; 5 for Strongly Agree.

1. In collecting data for revising my lesson plan or for any instructional material I consider the use of a single student appropriate

1	2	3	4	5
SD	D	DK	A	SA

2. I consider the use of a single student appropriate because of the ease in obtaining one

3. I consider the use of a single student appropriate because the face-to-face interaction leads to finding out the exact problem in a lesson plan

1	2	3	4	5
SD	D	DK	A	SA

4. I consider the use of a single student inappropriate because a single student is not representative of the class

1	2	3	4	5
SD	D	DK	A	SA

5. I consider the use of a single student inappropriate because it is time consuming

1	2	3	4	5
SD	D	DK	A	SA

6. I consider the use of a single student inappropriate because it is subject to the idiosyncratic responses of individual learners and tutors

1 SD 2 D 3 DK 4 A 5 SA

Large Group Approach: This entails obtaining feedback from 40-50 students for revision of a lesson plan or instructional material

7. In collecting data for revising a lesson plan I will prefer the use of a large group.

1 SD 2 D 3 DK 4 A 5 SA

8. I will prefer the use of a large group because this can be obtained from an intact class

1 SD 2 D 3 DK 4 A 5 SA

9. I will prefer the use of a large group because this provides more data about program deficiency

1 SD 2 D 3 DK 4 A 5 SA

10 The use of large group will not be preffered because the absence of face-to-face interactionmakes the identification of exact problems difficult

1 SD 2 D 3 DK 4 A 5 SA

11. The use of large group approach is preferred because it is economical for an instructional material made up of many units

Combination of Tutorial and Large Group approach: This is the use of both a single student and an intact class

12. In collecting data for revising a lesson plan I will prefer the use of a combined approach of single and large students

1 SD 2 D 3 DK 4 A 5 SA

13. A combined approach is preferred because it takes care of deficiencies of using a single student and a large group

1 SD 2 D 3 DK 4 A 5 SA

Selection Procedure: Rate the following selection procedures as you would prefer to use them in conducting formative evaluation

14. In selecting my sample for revising my lesson plan or instructional material I would prefer using random selection technique

1	2	3	4	5
SD	D	DK	A	SA

15. In selecting my sample for revising my lesson plan or instructional material I would prefer picking any student(s) that I see

1	2	3	4	5
SD	D	DK	A	SA

16. In selecting my sample for revising my lesson plan or instructional material, I would prefer using students of :

	1	2	3	4	5
High subject matter competence	SD	D	DK	A	SA
Average subject matter competence	SD	D	DK	A	SA
Low subject matter competence	SD	D	DK	A	SA

17. In selecting student(s) for revising my lesson plan or instructional material, I would prefer using student(s) of high ability, another of average ability, and another of Low ability in that order

1	2	3	4	5
SD	D	DK	A	SA

18. Why have you responded the way you did in the above questions on Selection?

Specification of course objectives:

19. Well specified course objectives help in the selection of teaching aids for assisting instruction

1	2	3	4	5
SD	D	DK	A	SA

20. Well specified course objectives help in the selection of teaching methods for instruction

1	2	3	4	5
SD	D	DK	A	SA

21. Well specified course objectives help in stating learning activities for achieving learning objectives

1 SD 2 D 3 DK 4 A 5 SA

22. Well specified course objectives can help in evaluating learning outcome

1 SD 2 D 3 DK 4 A 5 SA

Comments

23. Why did you respond the way you did in the questions above?

Use of Error Counts:

24. Error counts or mistakes in a students performance can be used to ascertain if course objectives are being achieved

1 SD 2 D 3 DK 4 A 5 SA

25. Students mistakes or error counts can be used to revise a lesson plan or instructional material

1 SD 2 D 3 DK 4 A 5 SA

26. Students can be asked how they like a subject matter or why they do not like a subject matter and this information can be used to revise a lesson plan

1 SD 2 D 3 DK 4 A 5 SA

27. Student(s) can be asked to comment on the clarity of statements, illustrations in a lesson plan or instructional material and this information can be used to revise a lesson plan

1 SD 2 D 3 DK 4 A 5 SA

28. Student(s) can be asked to comment on the appropriateness of the sequence of the content of a lesson plan and this information can be used for revision

1	2	3	4	5
SD	D	DK	A	SA

29. Student(s) can be asked to encircle vocabularies they do not understand and this information can be used to revise a lesson plan or instructional material

1	2	3	4	5
SD	D	DK	A	SA

Comments

30. Why did you respond the way you did in the above questions?

Observation and Interviewing of students

31 In collecting data for revising my lesson plan or instructional materials, I would observe student(s) and use their feedback for revision

1	2	3	4	5
SD	D	DK	A	SA

32. Interviewing student(s) during their use of instructional material can provide feedback for revision

1	2	3	4	5
SD	D	DK	A	SA

Certain skills are essential for conducting formative evaluation. The questions below are to find out your competence with these skills

Specification of course objectives

33. In specifying a course objective, I always state in writing the audience for whom the objective is meant

1	2	3	4	5
SD	D	DK	A	SA

34. In specifying a course objective, I always state the conditions under which learning is to occur

1	2	3	4	5
SD	D	DK	A	SA

35. I always specify my course objectives in measurable behavioral terms

1	2	3	4	5
SD	D	DK	A	SA

36. In specifying my course objectives, I always state the criterion for assessing student performance

1	2	3	4	5
SD	D	DK	A	SA

Criterion-referenced test: This is a test based on course objective that attempts to assess how far a student has shown mastery of these objectives. It is different from norm-referenced tests which attempts to assess a student's performance relative to other students in the class

37. I always assess my students based on stated course objectives, the conditions for attaining the objectives and the stated criterion for assessment

1	2	3	4	5
SD	D	DK	A	SA

38. I can use error counts or mistakes in astudents test performance to to revise a lesson plan

1	2	3	4	5
SD	D	DK	A	SA

39. I can use students comments on how they like a subject matter to revise my lesson plan

1	2	3	4	5
SD	D	DK	A	SA

40. I can use students comments on the clarity of statements or illustrations in a lesson plan for revision

1	2	3	4	5
SD	D	DK	A	SA

41. I can use students comments on the appropriateness of the sequence of instructional content to revise my lesson plan

1	2	3	4	5
SD	D	DK	A	SA

42. I can use students comments on difficulty of vocabularies in a lesson plan for revision

1	2	3	4	5
SD	D	DK	A	SA

Comments

43. Why did you respond the way you did in the above questions?

Skills for interviewing and observing students

44. In observing student(s), I would look for frowns on their faces

1	2	3	4	5
SD	D	DK	A	SA

45. Briefly describe what you would do if you observe frowns?

46. During an observation, I would watch out for difficulty in operating an equipment

1	2	3	4	5
SD	D	DK	A	SA

47. How would you use such information for revision?

48. During an observation, I would watch for distractions in using an instructional material

1	2	3	4	5
SD	D	DK	A	SA

49. How would you use such information for revision?

50. During an interview, I would ask student(s) to comment on the appropriateness of cues in a lesson plan or instructional material

1	2	3	4	5
SD	D	DK	A	SA

51. During an interview, I would ask students to comment on the clarity of statements, illustrations in a lesson plan

1	2	3	4	5
SD	D	DK	A	SA

FOUR

52. During a revision exercise of my lesson plan or instructional material:

One revision exrcise is enough

Two revision exercises are enough

More than two revision exercises are enough

53. Why have you responded the way you did on the above questions

54. During a revision exercise, I would prefer: (Check the one(s) you prefer)

Use of Pretest( )Post test( )Interview( )Observation( )Students comments( )

Teachers comments( )Experts comments( )

55. Revision can be performed by the:

Instructor alone

Instructor and subject matter expert

Subject matter expert alone

56. After revision, the revised material should be tried with:

The same group of students that provided the original feedback

A different group of student(s) altogether

A different but equivalent group of student(s)

57. Which of the approaches would you prefer:

Tutorial approach

Large Group approach

A combination of tutorial and Large group

58. Why did you respond the way you did above?

THREE

The following characteristics (1-3) are peculiar to organizations. Each characteristic will be defined and this definition will be followed by a set of questions for finding out characteristics in your Ministry.

Structure: Every organization has a hierarchy of status which indicates how interactions occur among members of the organization:

58. Well specified official ranks and duties associated with each rank is characteristic of my organization

1 SD _____ 2 D _____ 3 DK _____ 4 A _____ 5 SA

59. It is not possible to obtain official information from another officer in my unit without getting clearance from an immediate boss

1 SD _____ 2 D _____ 3 DK _____ 4 A _____ 5 SA

60. Only Heads of divisions can discuss official information at meetings

1 SD _____ 2 D _____ 3 DK _____ 4 A _____ 5 SA

61. There are too many channels of communication for information to be used in my organization

1 SD _____ 2 D _____ 3 DK _____ 4 A _____ 5 SA

62. I am always promptly aware of major developments in my Ministry

1 SD _____ 2 D _____ 3 DK _____ 4 A _____ 5 SA

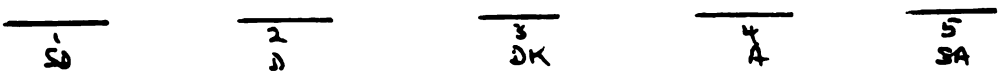
63. I always recieve information on policies right on time

1 SD _____ 2 D _____ 3 DK _____ 4 A _____ 5 SA

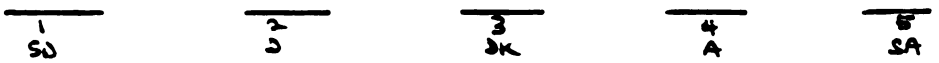
64. There exists a group of officers whose opinions are highly respected in my Ministry

1 SD _____ 2 D _____ 3 DK _____ 4 A _____ 5 SA

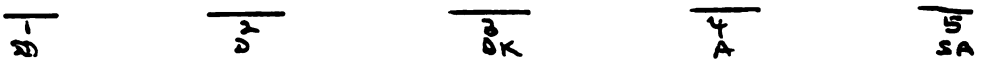
65. For a project to succeed, it must be supported by these highly respected opinion leaders



66. For a project to succeed, it must be originated by the highest placed officers

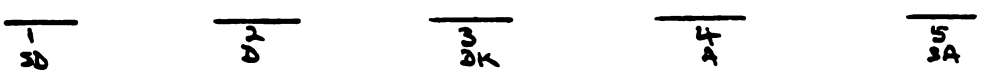


67. There exists a task force in the Ministry responsible for ensuring that problems are solved expeditiously

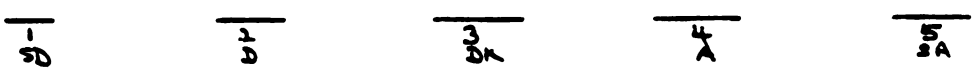


68. Officers in the Ministry are encouraged to volunteer policy suggestions for deliberation

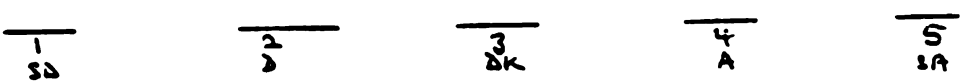
69. Policy suggestions are freely discussed in open sessions before decision is taken in the Ministry



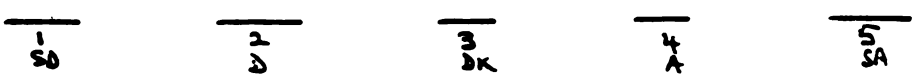
70. I am not aware of the origin of policies/projects in this Ministry



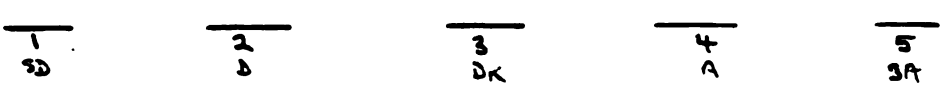
71. I am motivated to work hard in this Ministry because most of the time, I feel happy as a member



72. Because I am happy in this Ministry, I always put in my best effort in my work.



73. I am motivated to work hard in this Ministry because most of the time, I derive satisfaction from my work



74. I am motivated to work hard in this Ministry because I find the reward system encouraging

1	2	3	4	5
SD	D	DK	A	SA

75. I am motivated to work hard in this Ministry because my opinions/suggestions are given fair consideration

1	2	3	4	5
SD	D	DK	A	SA

76. Lack of facilities/resources is a hinderance to effective implementation of projects in this Ministry

1	2	3	4	5
SD	D	DK	A	SA

77. Lack of opportunity for in-service training is a hinderance for implementation of projects in this Ministry

1	2	3	4	5
SD	D	DK	A	SA

78. Lack of qualified staff is a hinderance to effective implementation of projects in this Ministry

1	2	3	4	5
SD	D	DK	A	SA

FIVE

79. I would want the present organizational structure in my Ministry to be modified

1	2	3	4	5
SD	D	DK	A	SA

80. Why have you responded the way you did above?

81. I would want a more open system that allows a free flow of information to be created in this Ministry

1	2	3	4	5	
SD	D	DK	A	SA	

82. I would prefer an organization in which my opinions are respected and encouraged

1	2	3	4	5
SD	D	DK	A	SA

83. I would prefer an organization in which officers are rewarded for being innovative.

1	2	3	4	5
SD	D	DK	A	SA

84. Please supply the following information

Name of place in which my school is located _____

Qualification(s) _____

Years of teaching experience _____

Sex of school(Boys or Girls?) _____

Dear colleague,

I have to thank you immensely for completing this pilot study questionnaire. I recognize that no human being is ever perfect. For this reason, please feel very free to criticize this questionnaire as much as you can.

Specifically, please state:

1. Which questions you consider ambigouos, Irrelevant, repeatitive or you do not understand
2. Do vou consider it proper to define some of the procedures/techniques before presenting the questions. In other words, do you think such definition "sensitizes" you and thus biases your responses?
3. Do vou think the questions are too long?
4. Do vou think the questions are time consuming? Please specify the amount of time it took you to complete the questions
5. What other improvements would vou recommend?

Please use the attached plain sheets for your reactions. Once again, many thanks for alotting some of your time to me

H.I. DIKE

APPENDIX E

Division of Educational Systems
Development
College of Education
Michigan State University
East Lansing, Michigan 48824

September 10, 1980

Dear Colleague,

DOCTORAL DISSERTATION QUESTIONNAIRE

Each year the government of Nigeria invests a substantial amount of her annual budget on education. This is based on the belief that education can help her citizens to acquire the knowledge and skills which they can use for improving their environments.

Part of this government expenditure is used to purchase instructional materials and to develop new ones for use in our schools. There are research evidences to show that these materials are seldom tried out and revised before utilization. If instructional materials are seldom tried out and revised before utilization, one can hardly avouch for their quality and effectiveness. In other large industrial establishments, products are first tried out and revised with feedback from users before they are mass produced for consumption.

This try out and revision process is known as FORMATIVE EVALUATION. There are three different types of formative evaluation procedures namely: (1) The Tutorial Approach or the use of one student at a time (2) The Large Group Approach or the use of 40 or more students and (3) The Small Group Approach or the use of 4-8 students at a time. Each of the three types are described below:

1. In using the Tutorial Approach, the tutor selects his student, gives him a pre-test to determine his entry level, lets him go through the material (notes of lesson, films, cassettes, transparencies, etc.) and gives him a post test. The tutor then revises the original material using the post test scores. While the student is using the material the tutor gives him short written quizzes to find out his difficulties. The tutor can also interview and observe this student to discover problems this student is

encountering. Using these feedbacks, the tutor revises the original material. The revised material is again tried to see if it is effective. If it is not, the process is repeated.

An advantage of the tutorial approach is that the face-to-face interaction between a tutor and a student helps in identifying more detailed deficiencies about a material. Its disadvantage is the use of one student and the likelihood of introducing bias during the interaction.

2. It is for this reason that the Large Group Approach is used by some evaluators. In this approach only the pre-test and the post test are used. There is no face-to-face interactions as we have during interviews and observations of subjects.

An advantage of the Large Group Approach is that data is collected from many students while its big disadvantage is the absence of face-to-face interaction.

3. To overcome these disadvantages of both the Tutorial and the Large Group Approaches some evaluators use the Small Group Approach. This involves using the face-to-face interaction as in tutorial approach as well as obtaining observational and written feedback from 4-8 students.

I am conducting a survey research for my doctoral dissertation entitled:

"Perceptions of Secondary School Teachers and Administrators of the Suitability of Formative Evaluation Procedures for Adaptation in Secondary Schools in Nigeria."

My aim is to find out how suitable the various Formative Evaluation Procedures used in other countries can be for our educational system and to identify factors that may facilitate or hinder its adoption.

Using the elements for conducting formative evaluation identified from past research, I have developed a questionnaire aimed at identifying teacher and administrator perceptions of the suitability of these various elements for secondary education IN NIGERIA.

You have been randomly selected for this study. Since the ultimate goal of this research is to develop a formative evaluation program for the State, your honest and sincere responses to the questionnaire will be highly appreciated.

Complete anonimity will be maintained in this research. Towards this end, no name is in any way required on the questionnaire.

Thanks for your co-operation.

Yours faithfully,

Hyacinth Ibe Dike

PROCEDURES FOR FORMATIVE EVALUATION

DIRECTIONS

The following statements represent various perceptions of some of the activities necessary for revising instructional materials (notes of lessons, films, slides, cassettes, transparencies, etc.). Indicate by marking (X) the degree to which you agree or disagree with each of the statements below.

SCALE: SD stands for Strongly Disagree; D for Disagree; A for Agree and SA for Strongly Agree.

SECTION 1:

Based on the letter accompanying this questionnaire describing and explaining the three models for formative evaluation and your understanding of your school system, please check by marking (X) in one of the boxes below which of the following formative evaluation approaches you would consider selecting for conducting formative evaluation in your school.

1. Tutorial Approach ☐
2. Large Group Approach ☐
3. Small Group Approach ☐

SECTION 2:

Indicate by marking (X) the degree to which you Agree or Disagree as to which of the following characteristics of formative evaluation models influenced your choice of approach.

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
4. The ease of obtaining sample influenced my choice of formative evaluation model				
5. Ability of the approach selected to avoid introducing biases during a revision exercise influenced my choice				
6. The approach selected is similar to the type of formative evaluation conducted in my school				
7. The approach selected is less complex than other approaches				
8. The approach selected can lead to the collection of more detailed data from a more representative sample				

SECTION 2 (Cont)

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
9. The possibility that a face-to-face interaction will yield more data about program deficiency while using this approach influenced my choice				
0. The possibility of administrative support for using this approach influenced my choice				
11. The availability of resources for using this approach influenced my choice				

SECTION 3

Indicate by marking (X) the extent to which you agree or disagree with each of the following statements about formative evaluation.

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
12. Well specified course objectives are very essential for conducting formative evaluation				
13. Formative evaluation is possible even if a tutor does not know the course objectives				
14. In selecting a sample for revising an instructional material (notes of lesson, films, cassettes, etc.), one should select students of varying abilities (i.e. high ability, average ability and low ability students)				
15. Students used in formative evaluation should be selected randomly				

SECTION 3 (Cont)

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
16. Students can be observed and interviewed while using an instructional material and this information can be used for revision				
During an interview, students can be asked:				
17. To comment on the clarity of statements				
18. To comment on the clarity of illustrations				
19. To comment on the appropriateness of the sequence of contents of instructional materials				
20. To comment on how boring the material is				
21. To encircle difficult vocabularies which they do not understand				
During their use of an instructional material, students can be observed for:				
22. Difficulty in operating equipment used to present the material				

SECTION 3 (Cont)

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
23. Frowns on their faces as a sign of difficulty with the material				
24. Students should be pretested to find out if they possess the entry skills necessary for instruction				
25. Students scores on a post test can be used to find out if they understand the main points in a lesson				
26. During a lesson, students should be given short written quizzes to find out how they are doing				
Results of post tests should be analyzed to find out:				
27. What was similar about items missed				
28. How items missed differ from those passed				

SECTION 3 (Cont)

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
29. What in the instructional material could have caused the failure	_____	_____	_____	_____
30. How the cause of this failure can be rectified	_____	_____	_____	_____

SECTION 4

Certain skills are essential for formative evaluation. Indicate by marking (X) the extent to which you are capable of doing the following:

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
31. I can specify course objectives in behavioral terms	_____	_____	_____	_____
32. I can construct valid test instruments aimed at finding out student achievement of stated objectives	_____	_____	_____	_____
33. I have sufficient skills to objectively observe and interview a subject	_____	_____	_____	_____

SECTION 5 (Cont)

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
Promotion in this organization is based on:				
44. An officer's year of graduation	____	____	____	____
45. An officer's performance on tasks	____	____	____	____
46. The advantages of conducting formative evaluation for instructional materials outweighs the disadvantages of not doing so	____	____	____	____
47. Conducting formative evaluation will not run counter to the norms of teachers, the school and the society	____	____	____	____
48. It will not be easy to try out formative evaluation procedures in my school system	____	____	____	____
49. I consider formative evaluation procedures simple to understand	____	____	____	____

SECTION 5 (Cont)

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
50. I consider formative evaluation procedures easy to use in my school system	____	____	____	____
51. It will be easy to observe the effects/results of formative evaluation in my educational establishment	____	____	____	____

SECTION 5

Please indicate your position on the following statements about factors that facilitate or hinder the use of formative evaluation in your organization.

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
34. Besides the top most officers in this organization there exists another group of officers whose opinions are highly respected				
35. For formative evaluation to succeed in this organization it must be originated by these group of officers whose opinions are highly respected				
36. For formative evaluation to succeed here it must be originated and supported by the top most officers				
37. Because information passes through many hands before reaching me I will not be aware of how to use formative evaluation				

SECTION 5 (Cont)

	STRONGLY DISAGREE SD	DISAGREE D	AGREE A	STRONGLY AGREE SA
38. Teachers will be promptly informed about formative evaluation in this school through the use of newsletter, in-service activities workshops and seminars				
39. There exists a task force in this organization that will ensure that formative evaluation is executed expeditiously				

The implementation of formative evaluation will be hindered by the following:

40. Lack of time				
41. Lack of opportunity for in-service training				
42. Lack of qualified staff				
43. Lack of opportunity for workshop/seminars				

SECTION 6

In the space below, please indicate any additional factors or condtions that will hinder or facilitate the adaptation or use of formative evaluation by teachers in your school. These factors can be those particular to you, to the norms of your school and/or the norms of the culture.

SECTION 7

Please look through this questionnaire once more and see how you can help me to improve it. What would you do to make it more understandable? Please refer to specific questions or sections. Thank you.

APPENDIX F

Division of Educational Systems
Development
College of Education
Michigan State University
East Lansing, Michigan 48824

September 10, 1980

Dear Colleague,

DOCTORAL DISSERTATION QUESTIONNAIRE

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Part of this government expenditure is used to purchase instructional materials and to develop new ones for use in our schools. There are research evidences to show that these materials are seldom tried out and revised before utilization. If instructional materials are seldom tried out and revised before utilization, one can hardly avouch for their quality and effectiveness. In other large industrial establishments, products are first tried out and revised with feedback from users before they are mass produced for consumption.

This try out and revision process is known as FORMATIVE EVALUATION. There are three different types of formative evaluation procedures namely: (1) The Tutorial Approach or the use of one student at a time (2) The Large Group Approach or the use of 40 or more students and (3) The Small Group Approach or the use of 4-8 students at a time. Each of the three types are described below:

1. In using the Tutorial Approach, the tutor selects his student, gives him a pre-test to determine his entry level, lets him go through the material (notes of lesson, films, cassettes, transparencies, etc.) and gives him a post test. The tutor then revises the original material using the post test scores. While the student is using the material the tutor gives him short written quizzes to find out his difficulties. The tutor can also interview and observe this student to discover problems this student is

encountering. Using these feedbacks, the tutor revises the original material. The revised material is again tried to see if it is effective. If it is not, the process is repeated.

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2. It is for this reason that the Large Group Approach is used by some evaluators. In this approach only the pre-test and the post test are used. There is no face-to-face interactions as we have during interviews and observations of subjects.

An advantage of the Large Group Approach is that data is collected from many students while its big disadvantage is the absence of face-to-face interaction.

3. To overcome these disadvantages of both the Tutorial and the Large Group Approaches some evaluators use the Small Group Approach. This involves using the face-to-face interaction as in tutorial approach as well as obtaining observational and written feedback from 4-8 students.

I am conducting a survey research for my doctoral dissertation entitled:

"Perceptions of Secondary School Teachers and Administrators of the Suitability of Formative Evaluation Procedures for Adaptation in Secondary Schools in Imo State of Nigeria."

My aim is to find out how suitable the various Formative Evaluation Procedures used in other countries can be for our educational system and to identify factors that may facilitate or hinder its adoption.

Using the elements for conducting formative evaluation identified from past research, I have developed a questionnaire aimed at identifying teacher and administrator perceptions of the suitability of these various elements for secondary education in Imo State.

You have been randomly selected for this study. Since the ultimate goal of this research is to develop a formative evaluation program for the State, your honest and sincere responses to the questionnaire will be highly appreciated.

Complete anonimity will be maintained in this research. Towards this end, no name is in any way required on the questionnaire.

Thanks for your co-operation.

Yours faithfully,

Hyacinth Ibe Dike

PROCEDURES FOR FORMATIVE EVALUATION

Section 1

Directions:

Based on the letter accompanying this questionnaire describing and explaining the three models for formative evaluation and your understanding of your school system, please check by marking (X) in one of the boxes below to indicate which of the following formative evaluation approaches you would consider selecting for conducting formative evaluation in your school.

1. Tutorial Approach ☐
2. Large Group Approach ☐
3. Small Group Approach ☐

Section 2:

Directions:

Indicate by marking (X) the degree to which you agree or disagree as to which of the following characteristics of formative evaluation models influenced your choice of approach.

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
4. The ease of obtaining subjects influenced my choice of formative evaluation model				
5. Ability of the approach selected to avoid introducing biases during a revision exercise influenced my choice				
6. The approach selected is similar to the type of formative evaluation conducted in my school				
7. The approach selected is less complex than other approaches				
8. The approach selected can lead to the collection of more detailed attitudinal data				

SECTION 2 (Cont)

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
9. The possibility that a face-to-face interaction will yield more data about program deficiency while using this approach influenced my choice	_____	_____	_____	_____
10. The possibility of administrative support for using this approach influenced my choice	_____	_____	_____	_____
11. The availability of resources for using this approach influenced my choice	_____	_____	_____	_____

SECTION 3

Indicate by marking (X) the extent to which you agree or disagree with each of the following statements about formative evaluation.

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
12. Well specified course objectives are very essential for conducting formative evaluation				
13. Formative evaluation is possible even if a tutor cannot specify course objectives				
14. In selecting a sample for revising an instructional material (notes of lesson, films, cassettes, etc.), one should select students of varying abilities (i.e. high ability, average ability and low ability students)				
15. Students used in formative evaluation should be selected randomly				

SECTION 3 (Cont)

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
16. Students can be observed and interviewed while using an instructional material and this information can be used for revision	_____	_____	_____	_____
<u>During an interview, students can be asked</u>:				
17. To comment on the clarity of statements	_____	_____	_____	_____
18. To comment on the clarity of illustrations	_____	_____	_____	_____
19. To comment on the appropriateness of the sequence of contents of instructional materials	_____	_____	_____	_____
20. To comment on how boring the material is	_____	_____	_____	_____
21. To encircle difficult terms which they do not understand	_____	_____	_____	_____
<u>During their use of an instructional material, students can be observed for</u>:				
22. Difficulty in operating equipment used to present the material	_____	_____	_____	_____

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
23. Frowns on their faces as a sign of difficulty with the material	_____	_____	_____	_____
24. Students should be pre-tested to find out if they possess the entry skills necessary for instruction	_____	_____	_____	_____
25. Students scores on a post test can be used to find out if they understand the main points in a lesson	_____	_____	_____	_____
26. During a lesson, students should be given short written quizzes to find out how they are doing	_____	_____	_____	_____

Results of post tests should be analyzed to find out:

27. What was similar about items missed	_____	_____	_____	_____
28. How items missed differ from those passed	_____	_____	_____	_____

SECTION 3 (Cont)

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
29. What in the instructional material could have caused the failure	_____	_____	_____	_____
30. How the cause of this failure can be rectified	_____	_____	_____	_____

SECTION 4

Certain skills are essential for conducting formative evaluation. One such skill is the ability to specify course objectives in behavioral terms and the second is the ability to construct criterion referenced tests. These terms are defined below:

Behavioral objective: This is a description of a performance you want learners to be able to perform before you consider them competent. To be well stated, a behavioral objective must specify:

(1) the intended audience to use the instruction
(2) the behavior in measurable (action or doing) terms for example "to write down the names of an object" can be measured whereas to understand or to know something" cannot.
(3) the conditions under which learning is to occur and,
(4) the criterion for assessment.

Criterion-referenced measure: This is a test item that measures specifically a stated course objective. It is different from a Norm-referenced measure which helps to discriminate or select among individuals in a group. Simple or difficult items are included to produce variant scores, Criterion-referenced test measures the course objectives. It is aimed at finding out how far an individual has masterd a given task. Test items can be difficult or easy, discriminating or non-discriminating provided they test stated objectives.

Indicate by marking (X) the extent to which you are capable of doing the following:

		STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
31.	I can specify course objectives in behavioral terms	_____	_____	_____	_____
32.	I can construct valid test instruments aimed at finding out student achievement of stated objectives	_____	_____	_____	_____
33.	I have significant skills to objectively observe and interview a subject	_____	_____	_____	_____

SECTION 5

Please indicate your position on the following statements about factors that facilitate or hinder the use of formative evaluation in your organization.

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
34. Besides the top most officers in this organization there exists another group of officers whose opinions are highly respected	_____	_____	_____	_____
35. For formative evaluation to succeed in this organization it must be originated by these group of officers whose opinions are highly respected	_____	_____	_____	_____
36. There is a possibility of support by the highest ranked officers in the organization for formative evaluation	_____	_____	_____	_____
37. Because information passes through many hands before reaching me I will not be aware of how to use formative evaluation	_____	_____	_____	_____

SECTION 5 (Cont)

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
38. Teachers will be promptly informed about formative evaluation in this school				
39. There exists a task force in this organization that will ensure that formative evaluation is executed expeditiously				

The implementation of formative evaluation will be hindered by the following:

40. Lack of time				
41. Lack of opportunity for in-service training				
42. Lack of qualified staff				
43. Lack of opportunity for workshop/seminars				

SECTION 5 (Cont)

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
Promotion in this organization is based on:				
44. An officer's year of graduation	_____	_____	_____	_____
45. An officer's performance on tasks	_____	_____	_____	_____
46. The advantages of conducting formative evaluation for instructional materials outweighs the disadvantages of not doing so	_____	_____	_____	_____
47. Conducting formative evaluation will not run counter to the norms of teachers, the school and the society	_____	_____	_____	_____
48. It will not be easy to try out formative evaluation procedures in my school system	_____	_____	_____	_____
49. I consider formative evaluation procedures simple to understand	_____	_____	_____	_____

SECTION 5 (Cont)

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
50. I consider formative evaluation procedures easy to use in my school system	_____	_____	_____	_____
51. It will be easy to observe the effects/results of formative evaluation in my educational establishment	_____	_____	_____	_____

APPENDIX G

ORAL INTERVIEW INSTRUMENT

Introduction:

The researcher explains to his respondent the importance of the study as embodied in the letter to accompany each questionnaire. The Three models are also explained including their advantages and disadvantages.

The following questions will be asked to collect data relating to each research question in this study.

Research Question 1:

1. Given my explanation of the three types of formative evaluation, do you think that teachers personally use formative evaluation in developing their instructional materials (notes of lesson, films, slides, transparencies, etc.)?
2. Respondent replies, If yes is the answer,then the following additional questions will follow:
    a. From whom did you obtain your feedback--from individual students, groups of students, "experts", etc.?
    b. What were your selection criteria for selecting your subjects?
    c. What (if any), were the critical attributes of the people you selected for your try out exercise?
    d. What kinds of feedback data did you try to obtain--achievement data, attitudinal data, background data?
    e. How did you gather the various kinds of data--through tests, interviews, etc.?
    f. How did you determine that revision was really necessary?

If no is the answer, then the following additional questions will follow:

If you were to conduct formative evaluation,

a. From whom would you obtain feedback?

b. What would be your selection criteria?

c. What types of data would you try to collect?

d. What types of instruments would you use to gather your data?

e. How would you determine if revision was necessary?

Research Question 2:

Given what you know about the three models of formative evaluation, what skills do you think you might need in order to conduct formative evaluation using:

a. Tutorial approach

b. Large group approach

c. Small group approach

Researcher: So you think that to be able to use the tutorial approach a tutor ought to be able to(paraphrases one the skills), can you explain to me further what you mean by the possession of (mention the skill stated by respondent).

4. Respondent replies.

Research Question 3:

Given what you know about the three models of formative evaluation, would you think it would be feasible to use:

a. Tutorial approach

b. Large group approach

c. Small group approach

What do you see as the major problems that will prevent effective use of formative evaluation in your school system? What factors in your present school system do you think will encourage the use of Tutorial approach, Large group approach, and Small group approach? Do you think there is any attribute of formative evaluation as you presently understand it that will turn people away from using it? To what extent do you think formative evaluation is compatible with what exists in your school system now? To what extent is formative evaluation different from what obtains in your school now? Do you see any cultural values that will encourage or hinder the use of formative evaluation?

Research Question 4:

(Researcher at this juncture recapitulates the three models). With my explanation of the three models do you see the need to modify these models in any way to make them acceptable and useful in your school? (To facilitate comprehension, a diagrammatic representation of the models will be shown to respondents).

Research Question 5:

In what ways do you think your school organization should change in order for formative evaluation to be used in it?

APPENDIX H

MICHIGAN STATE UNIVERSITY

COLLEGE OF EDUCATION
DEPARTMENT OF SECONDARY EDUCATION AND CURRICULUM
ERICKSON HALL

EAST LANSING • MICHIGAN • 48824

September 17, 1980

TO WHOM IT MAY CONCERN:

This is to certify that Mr. Hyacinth Ibe Dike is currently enrolled in the doctoral program in Educational Systems Development (Educational Technology), College of Education, Michigan State University. He came to us in September, 1978 and completed his M.A. degree in this department. He then applied and was immediately accepted in the doctoral program. I served as his M.A. adviser and continue as Chairman of his Doctoral Committee.

As part of Mr. Dike's requirement for completing his Ph.D., he must conduct an original field study, report his finding to M.S.U. in the form of a dissertation and defend his research in an oral examination. In view of his experience and status as an educator in Nigeria, it was considered desirable for him to conduct a study in and for the ultimate benefit of his country.

Consequently, Mr. Dike will soon leave for Nigeria where during the month of October he will collect data to be used in his approved field study: "Perceptions of Secondary School Teachers and Administrators of the Suitability of Formative Evaluation Procedures for Adaptation in Secondary Schools in the State of Nigeria".

Following completion of his study, Mr. Dike will return to Nigeria.

Representing his committee, I am asked to say that we would very much appreciate any assistance provided Mr. Dike toward this end.

Sincerely,

C. G. Gentry

Castelle G. Gentry, Director
Professional Programs in
Educational Systems Development

CGG/kc

APPENDIX I

Division of Educational
System Design
College of Education
Michigan State University
East Lansing, Michigan 48824

August 30, 1980

The Commissioner for Education
Ministry of Education
Owerri
Imo State of Nigeria

Dear Sir:

REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN SECONDARY SCHOOLS IN IMO STATE

I am a Nigerian from Imo State currently enrolled in a Doctoral program in Educational Systems Design (Educational Technology) at Michigan State University, East Lansing.

I hope to come home this September 1980 to collect data for my Ph.D. dissertation. My topic of interest is:

"Perceptions of Secondary School Teachers and Administrators on the Suitability of Formative Evalution Procedures for Adoption in Secondary Schools in Imo State of Nigeria."

The meaning for formative evaluation used in this research is "the process of trying out components of prototypes of instructional materials with students and based on feedback from them, revising the original program". This process of revision continues until the quality of the instructional material is at the desired level of effectiveness.

My research depends on determining teacher and administrator perceptions on formative evaluation procedures. To this end I have developed, with my Doctoral committee's approval, a questionnaire to be completed by teacher and administrator in a selected sample of secondary schools in Imo State.

The purpose of this letter is to ask for your permission that I may submit my questionnaire to selected teachers and administrators. It would be appreciated if you could give me a letter to Principals of the selected secondary schools for this research.

Thanks for your co-operation.

Yours Sincerely

Hyacinth I. Dike

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