

Improvisation and Utilization of Instructional Materials

By

Prof. Moses E. Inyang-Abia

Institute of Education
University of Calabar
Calabar

An invited presentation at
A National Workshop on ***Back to Basics: Skills Course in Pedagogy***
organized by
The Teachers Registration Council of Nigeria
in South-South Geopolitical Zone at Uyo

June 4-7, 2007.

Introduction

Among the various competencies required of an effective teacher of any course or subject, at any instructional level, the ability to generate varied instructional materials from diverse sources and the ability to effectively utilize such materials to motivate learners and consequently realize effective instructional goals rank very high. That is to say, resourcefulness leading to improvisation which is a crucial characteristic of every effective teacher, is much desired not only by way of creating new ideas, tools and strategies but also by way of sustainability and cost reduction within the educational sector of the economy. Improvisation, especially of low-cost instructional materials, is crucial for the improvement of learner performance and survival of educational reforms within the existing educational structure in Nigeria, especially now that galloping inflation and unstable exchange rate have conspired to rapidly eat up the budgeted value of educational naira. There is therefore no gain saying that in austere times like now, formal education suffers from neglect, especially as it concerns the provision of the high-tech curriculum resources and their related technologies for different categories of learners. We therefore have to **idealize the reality rather than realizing the ideal**. It is in realization of all these that the Federal Republic of Nigeria (2004) in her **National policy on education** Section 11 (sub-sections 99 and 100) focusing on **Educational Services**, clearly spells out goals and strategies to facilitate the implementation of educational policy, achieve the policy goals and promote effectiveness of educational system. This Section stipulates the need to:

- a) **develop, assess and improve** educational programmes;
- b) **enhance** teaching and improve the competence of teachers;
- c) **make** learning experiences more meaningful for children;
- d) **make** education more cost-effective;
- e) **promote** in-service education; and
- f) **develop and promote** effective use of innovative materials in schools

Section 8 of the **policy** also acknowledges that **no educational system can rise above the quality of its teachers** and therefore is poised to ensure that teacher education is designed to:

- a) **produce** highly motivated, conscientious and efficient classroom teachers for all levels of our educational system;

- b) **encourage** further the spirit of enquiry and creativity in teachers;
- c) **help** teachers to fit into social life of the community and the society at large and enhance their commitment to national goals;
- d) **provide** teachers with the intellectual and professional background adequate for their assignment and make them adaptable to changing situations; and
- e) **enhance** teachers' commitment to the teaching profession.

2. Objectives of paper

In line with the national goals of **Teacher education** and the objectives of **Educational Services** as enunciated by the policy, this presentation, acknowledges the effort of the Teachers Registration Council of Nigeria (TRCN). The presentation therefore seeks to examine the assigned topic in such a way that during and at its end, all participants should be able to:

- a) **explain** the **concept** of improvisation as related to their areas of specialization;
- b) **justify** the **need for improvisation** for instructional purposes, with at least four reasons;
- c) **illustrate** diagrammatically the **circle of improvisation**;
- d) **examine** critically each of **the ten steps required** for effective improvisation;
- e) **justify** at least three **activities required** in each step of improvisation;
- f) **compare** the **factors** necessary for selection and use of instructional materials;
- g) **choose** between the 05PEF and the ASSURE **models of utilization** of instructional materials; and
- h) **improvise**, at least, an institutional package as evidence of commitment to this workshop.

3. The concept of improvisation

Where there is large stock of suitable functional instructional materials there is little problem. But in the absence of the desirable instructional materials, an effective teacher thinks of suitable alternatives to make the undesirable become functionally desirable. Such process then may involve adaptation or modification of the existing ones. It may also involve a complete production process and improvisation.

Improvisation of instructional materials implies the process of selecting, providing and using functional substitutes where the desired ones are not available,

accessible or functionally relevant. It is a systematic process whereby the teacher or learner contrives off-hand or in an emergency situation some functionally relevant instructional materials to facilitate the acquisition and/or evaluation of knowledge, skills and attitudes. That is perhaps one reason why teacher resourcefulness is always emphasized. Improvisation implies using alternative material resources to facilitate instruction and performance.

Most often, teachers and learners need to generate or contrive improvised materials because what is available cannot meet the specified instructional objectives. There could be a shortfall or complete absence of requisite instructional materials hence improvisation. For example, the bamboo could be improvised for the metre rule to measure the dimension of the footpath across a lawn, the width, depth and length of a gully that is trying to open-up. The model of the structure of the soil horizons could be improvised for use in the class. Local production which compares favourably with imported ones (for example locally produced rain gauge) does not necessarily constitute improvisation but a replication.

Improvisation underlines the level of importance of instructional materials in education and training programmes. With the effective use of improvised materials learners can easily and more convincingly explore, manipulate, discover and interact with their surroundings in an attempt to dissuade them off culturally engrained but retrogressive and hostile behaviours.

4. The need for improvisation

With a relatively renewed emphasis on the affective domain, educational programs have the problems of providing relevant and adequate instructional materials that are capable of touching the mind, not to talk of the teachers who tend to focus more on the cognitive domain. However, it is only the teacher competence and creative ability that can limit the level of improvisation for effective teaching and learning.

Improvisation should be encouraged at all levels of teacher education programmes because it:

- a) provides opportunities for creative thinking and problem solving.;
- b) modifies positively, teacher's attitude towards the provision and use of instructional materials;

- c) improves the availability of instructional materials in schools;
- d) encourages transfer of knowledge across the subject areas and within learning and actual referent situations;
- e) enables both teachers and learners to accept educational problems as real and such that require solutions; and
- f) helps to find simple and practical solutions to complex problems of teaching, learning and environment.

5. The circle of improvisation and their steps

Although ability to improvise can only be limited by an individual's level of creativity, effective improvisation, for purposes of teaching and learning, can nevertheless be analyzed in terms of the procedural steps. The result of such analysis shows that the teacher should do the following as graphically illustrated in Figure 1: The circle of improvisation.

a) **Analyze subject matter, self, the learners and the learning environment**

Such analysis helps to identify areas of weakness and strength. This makes it feasible for weaknesses and problems to be made up. For example a teacher who cannot draw well can think of alternatives such as cutouts and mounting. Learner analysis identifies their characteristics so that they can match the improvised process. Analysis of learning environment also identifies the possible deficiencies that need to be enriched through improvisation.

b) **Specify lesson/unit objectives behaviourally**

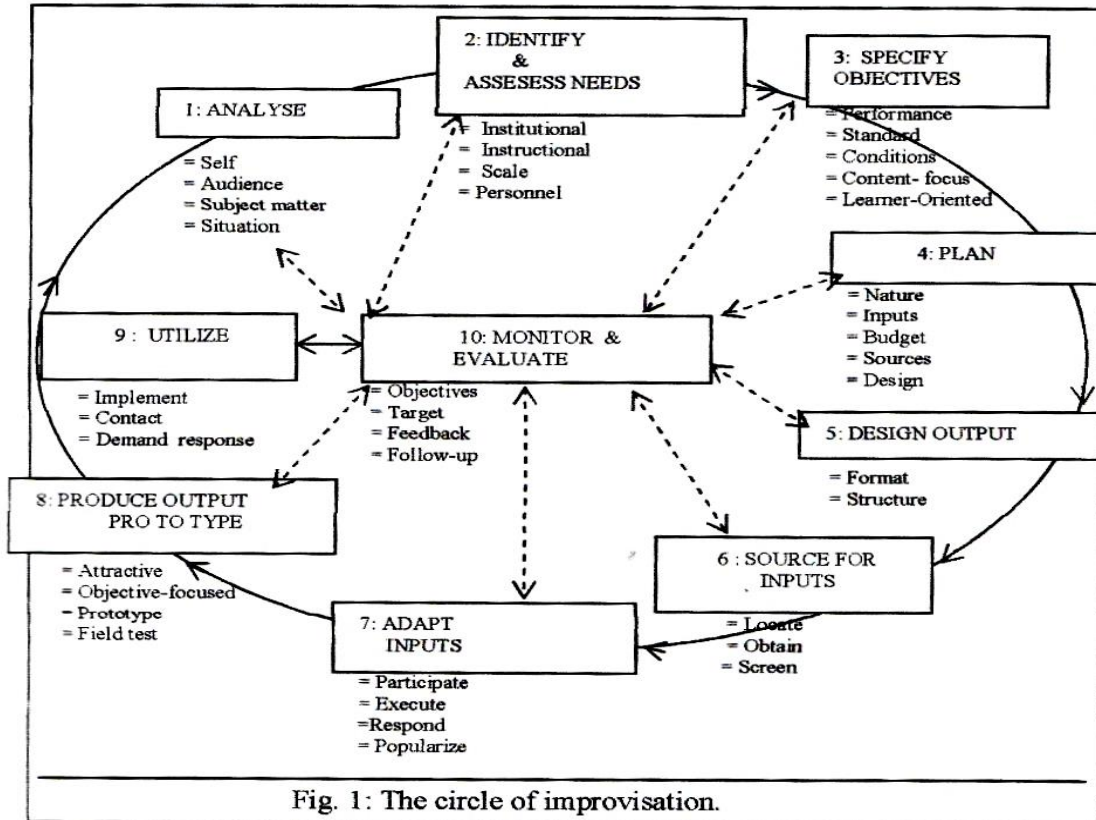
This results from clear analysis of subject matter. Behavioural objectives provide unmistakable guideline for all subsequent activities for both the improvisation process and the actual learning experiences. Behavioural objectives must clearly state the performance, content, conditions and standards. They must also be learner centred.

c) **Plan for the improvisation**

The nature of the improvisation should be clearly determined. For example, whether it is going to be paper or wooden model, the approximate cost, the possible inputs and how to acquire them should be clearly conceptualized. Better if such plan could be made on paper to allow for possible revision as the plan matures.

d) Design or sketch the expected output

Where practicable, the expected improvised materials should be sketched so that a clear mental image can be formed and retained. This also allows for some amendments with time.



e) Source or search for inputs

The relevant inputs for the finished product must be scouted for. They could be derived from the house, the market, dust bins, workshops or the scrap heap. The obtained inputs should be screened for other possible uses.

Adapt the inputs

Some of the inputs may need to be re-designed or adapted for use. This should be done with care. When successfully utilized such inputs should be popularized.

Create the output

Go ahead to attractively improvise whatever you had desired. Ensure that it reflects the objectives earlier specified. This becomes the prototype to be field-tested for adoption and installation.

h) Utilize output

That which has been created must necessarily be utilized for the purpose that it was created. Effective utilization requires that the improvised material must be used in line with the lesson objectives. There must be direct contact with the learners in the referent situation in such a way that they interact with the improvised instructional material. That is when learning takes place. The teacher must therefore demand for both overt and covert responses that are direct consequences of the learner interaction with the improvised instructional materials for well-motivated learning experience.

i) Evaluate the improvised material

On the basis of the objectives, assess the worth and suitability of your improvised materials. Get others to evaluate it too. Feedback the results for improvement. Note that this is a continuous process which needs to be adequately monitored in terms of newer information or need for improvement.

6. Requisite principles**a) Selecting instructional materials**

It is necessary to stress that through effective communication, better teaching and faster learning can be facilitated. This can be guaranteed by careful selection and skilful utilization of appropriate instructional materials by the participants. More often it is intuition and subjectivity that form the basis of decisions about instructional materials selection or production.

However, **availability** and **quality** of the instructional materials, **scale of preference** and **experience of users** along with the **size of instruction** should constitute intrinsic considerations in their selection decision as to what to improvise. In spite of that, the following five principles should guide the selection of instructional materials to be improvised.

L Tasks principle

The behavioural objectives, contents, learner activities, evaluation instruments and techniques as elements of instructional task should be considered in the selection and improvisation of instructional materials. This means that improvisation should be done objectively.

ii. Target audience principle

This consists of level of the literacy of the target audience, their attitude towards self and others, the selected instructional materials and contents, the learner entry and en-route behaviours, experience, socio-cultural background, age and sex, among others. Relevant instructional materials can be improvised based on the above variables.

iii. The environment principle

The environment here is made up of the educational community and the available educational infrastructure. They include people, learning space, furniture and facilities. Equipped library, workshop, laboratories, electricity, water supply and personnel are also important. The quantity, quality and variety of personnel as well as their attitude towards innovation and improvisation, their religious and cultural biases can also influence instructional materials improvisation.

iv. The economy principle

The available resources, finance, technological skills, economic climate of the society, the socio-cultural level of the material users, degree of urbanization, feasibility and acceptability of the improvised instructional materials are some major variables to be considered under this principle.

v. Dynamic factors principle

These include the concentration and size of the target audience, the desired level of learner response and participation, the classroom social climate, sitting, viewing and listening arrangements, available time, space and budget; cost-effectiveness, accessibility of spare parts, teachers competence and capability, among others. All these factors may be situationally determined.

b) Utilizing instructional materials

The following nine principles (**05PEF**) and the **ASSURE** model underscore effective utilization of instructional materials irrespective of how acquired.

Objective principle

Clear objectives which are behaviourally stated are unerring guides in instructional materials utilization process. They direct the content, sequence, method and techniques of instruction. They help to create proper learning environment by

giving the participants clear definite direction. They provide scientific basis of valid evaluation instrument construction and administration.

Optimum fit principle

Instructional materials must be appropriate to instructional task, format, and learner characteristics. There is however no one instructional material that is best for all purposes, at all times and to all learners. Most people can benefit from a wide variety of instructional materials except for physical deformity and habit formation. Also a single instructional material can fulfil a variety of instructional functions if properly used.

Plan principle

This emphasizes having a clear design for intended action. Such a plan could be conceptually perceived or scientifically structured. A planless presentation fails before it starts. The plan must be well thought out before hand.

Preparation principle

This involves structural arrangement of the sequence of materials for presentation and the presentation environment such as seating arrangement and all logistics so associated.

Previewing principle

This demands mandatory viewing and close study of the instructional material by the presenter before presentation. This can facilitate error control and perfection in presentation. Failure to preview the material can lead to ridicule arising from shoddy presentation because avoidable errors could arise when they should not.

Presentation principle

This involves getting the instructional materials in direct contact with the audience in such a way that it had never been done before, possibly with an **enthusiastic infective showmanship**. This is when the contents of the instructional materials which, invariably, are the instructional matter, can grip the attention and the mind of the participants. If their attention was well focused, properly routed and directed then they can be led to the expected delivery point.

Participation principle

It demands winning the focused attention of the target audience so much that they fully take active part in all learning experiences. The teacher should watch out for signs of wandering thoughts and absent mindedness. The target audience should be more involved in overt rather than covert learning responses.

Evaluation principle

The continuous process of assessing, monitoring and valuing the on-going learning experiences as related to the pre-specified instructional objectives and the improvised instructional materials in order to derive maximum feedback should then be re-integrated into the learning situation for maximum improvement. It involves evaluating the relevance, content and motivational effects of the entire instructional process including the direct and side effects of the improvised instructional material.

Feed-back principle

This emphasizes effective utilization of the return message in order to:

- intimate the teacher that the message in the instructional material has been received;
- furnish the teacher of the level of impact the instructional message has created in the target audience;
- enhance the regulation and control of the instructional communication process;
- deal with noise and evaluate the success level of the instructional communication; and
- intimate the target audience of the level of accuracy with which the teacher's intents enshrined in the instructional materials have been received, decoded, understood and utilized.

The ASSURE Model

The ASSURE model can assure effective utilization' of instructional materials. If carefully adapted and used creatively, this model can equally apply to instructional materials improvisation, production and provision requirements. This comprehensive model has six components.

Analysis

Analysis functions should begin with self. The teacher or the presenter who analyzes self can identify the strengths that can be reinforced. The identified weaknesses and deficiencies should be augmented to raise the quality and

capacity of the teacher. Through pre-planning, most deficiencies can be identified and remedied. The target audience, needs and tasks are identified and analyzed too. Audience analysis, for example, examines their specific and general characteristics using both the scientific and the traditional methods including data collection, analysis and interpretation to reflect the context of media use.

The specific audience characteristics include the age, sex, special needs and aspirations. General characteristics and prerequisite behaviours, target skills, literacy level, among others, also need to be analysed. Contextual analysis can be unscientific if it is based on intuition, casual observation and casual discussion.

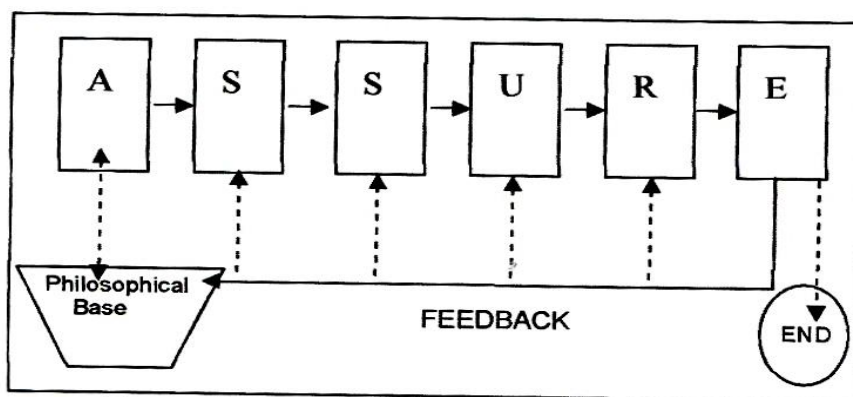


Figure 2: Flow chart of the ASSURE Model.

Source: Adapted from Heinich, Molenda & Russell (1982: 34-57)

- Where:
- A = Analyse
 - S = State specific objectives
 - S = Select, modify or design materials
 - U = Utilize materials
 - R = Require learner response
 - E = Evaluate.

Unscientific analysis can yield data and information that scientific analysis may inadvertently ignore or omit. On the other hand, scientific analysis requires systematization and record keeping. It includes pre-testing, critical examination of former records, opinion sampling through questionnaire and interviews.

State specific objectives

Behavioural objectives must be varied enough to reflect the improvised instructional materials, individual learning rate and needs as much as possible. The

various domains (cognitive, affective and psychomotor) must be represented at the different taxonomic levels. The higher order levels must be emphasized.

Select, modify or design materials

The basis for this activity should include the characteristics of the learners, the domains and levels of the objectives, the desired instructional approach and the likely constraints of the instruction. Re-recording, for example, can modify audio instructional materials. By using local examples and the more familiar local accent some irrelevant content materials can therefore be eliminated. This can reduce the presentation time to suit the class timetable. It can also improve learning that can be acquired from such materials.

By introducing the local examples instead of the exotic ones textual materials can be modified. Reducing or enlarging the size or lettering can bring added values too, so also can modifying the graphic materials. In designing new materials, the objectives must be clearly specified, audience and contents critically analysed. Cost, available technical expertise, equipment, facilities and time must be considered against the cost-effectiveness of the available materials.

Utilize materials

See utilization principles above. It may be necessary to emphasize here that preparation of one's self, the environment and the audience and previewing the materials must precede presentation. Remember also that ***perspiration in preparation portends perfection in presentation.***

Require learner response

The audience active participation must always be sought. This can be overt responses, for example by reciting, producing, reading, writing, discussing, manipulating or other responding behaviours. It can also be covert ones by thinking or imagining. Since faking cannot be ruled out in covert behaviours, the overt responses are encouraged.

Evaluate

The whole instructional process, the components, teacher effectiveness, the relevance of the improvised materials and ability to diagnose learner problems must be evaluated. The learner achievement must also be examined critically vis-à-vis the improvised instructional materials. This is done through the specified criteria earlier

entrenched in the objectives. The media, methods and matter must be evaluated too in relation to their ability to satisfy their intended purposes.

Conclusion

One of the best ways to build up the professional competence of the teacher is through skills training, particularly as related to the improvisation and utilization of instructional materials. The process of designing, improvising and utilizing instructional materials amalgamates lesson planning, teaching techniques, class management and evaluation while accentuating classroom communication skills. This presentation has briefly examined basic principles involved in these processes for teachers' application hereafter.

Assignment

- a)
 - i) Select a topic for a specific class in a given subject.
 - ii) Propose lesson preambles, 5 behavioural objectives and three comprehensive improvable instructional materials suitable for achieving those objectives.
 - iii) Using available materials design and improvise any two of the three instructional materials.
 - iv) Submit your instructional package with your name, school, address and phone number on Thursday at 11.00.am as evidence of commitment to this workshop.
- b) Find time to look around and learn from some of the displayed improvised low-cost instructional materials.

Bibliography

- Esu, A. E. O & Inyang-Abia, M. E. (2004). *Social studies: Technologies, methods and media*. Port-Harcourt; Double Diamond Publications.
- Federal Republic of Nigeria (2004). *National policy on education*. Abuja: NERDC, Federal Ministry of Education.
- Heinich, R. Molenda, M & Russell, J. D. (1982). *Instructional media and the new technologies of instruction*. New York: John Wiley and Sons.
- Inyang-Abia, M. E. (2001). *Curriculum technologies for basic education: Methods* Inyang-Abia, M. E. (2001)., *media and their utilization*. Calabar: MIFAM Services Nig. Ltd.
- Inyang-Abia, M. E. (2004). *Essentials of educational technology: A handbook for educators and media practitioners*. Calabar: MIFAM Services Nig. Ltd.
- Inyang-Abia, M. E. (2005). *Curriculum dynamics and professionalism in teaching*. Port-Harcourt; Double Diamond Publications.