

Modular Approach in Teaching

By

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Introduction

Module is a form of self-instructional package and thus regarded as relatively recent phenomena. It enables the learner to have a control over his learning and accepts greater responsibility for learning. Since strategy demands greater maturity on the part of the learner, the modules are more appropriate for more mature students. In recent years, the consent of modular curriculum has been under discussion in secondary schools. In Modular approach, all the capabilities required to perform are closely inter-related: sets of task are grouped together e.g. capabilities required to manage institutional finances include generation of finances, allocation, accounting and monitoring. All these can be grouped together and is called financial management. Modules can be developed separately for each of inter-related tasks.

Characteristics and Advantages of a Module

A module is a set of learning opportunities, organized around well-defined topic which contains the elements of instructions, specific objectives, teaching/learning activities and evaluation using criteria-referenced measurement. Thus, a module should have following characteristics:

It should be independent, self-contained instruction, and contain well-defined systematically organized learning opportunities with clearly defined objectives alongwith means of evaluating the work.

Credit Accumulation

In conventional time tables, students follow course for a long period and the possibility of changes is minimum. Credit accumulation through modular schemes works very differently. Students choose units in a way: those allow them

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to limit to logo-like, an individually designed course. The designer of the scheme will make choices of studying structure II before structure I is clear.

Any how, the curricular planner will make some decisions about essentials, core modules to be taken by all, and areas where student choices can be expressed across the full range of offer. Information about progress is made normally at the end of module and is recorded within an overall assessment framework. The certification of modular programmes leads to many schemes of credit banking.

Credit Transfer and Dual Certification

Students can transfer credits forward from one institution to another in building an individual curriculum programme. A number of schemes have been established in higher education.

Short-Term Goals

A key organizing principle of modular scheme is the explicit statement-for the teacher, student and parents. This reflects short term goals established for that unit of study. These goals are achieved for the long terms aims of the programme of study. Many teachers report about evidence of improvements in grades for students on modular approach as compared to traditional courses. (Morn, 1988; P.9)

Curriculum Over Crowding

There is over increasing competition among the subjects to be included in secondary schools. There are lobbies of technical, vocational, creative personal, political and social groups. If the curriculum is structured for two-years subject courses, then increasing number of subjects will have very limited time for each subject. Broadly-based modular courses provide a frame work in which new skills and contexts can be introduced in a current way.

Gender Stereo Typing

Girls and boys view it easier to take short units in those subject areas which are traditionally avoided. Girls may take 30 hours module than 2-year traditional course just they may like to take 20-hours module on metallurgy than the one year course.

Linking Academic Vocational Activities

A trend is to introduce more practical and applied vocational element in to curriculum. Many schemes have chosen modular approaches to achieve this goal. Schools may develop modules by using the facilities of credit bank. A student may select a module which can be recorded on achievement record and/or certified through a vocational dating body.

Mixed-Age Grouping

A curriculum which is divided into free-standing modules with well specified objectives, increases the possibility for mixed age-group. But in secondary classes, this is not practiced, but existing classification and division of students on age is being criticized. Another base of criticism is that assessment is being shifted from “norm referenced” to “criterion referenced” and criterion is clearly defined in module.

Safe-Guarding the Teacher’s Specialist Identity

Modular schemes have advantage of safeguarding the teacher’s specialist identity with modular science or humanities e.g. a doctor can make purely specialist contribution. Modular structure allows teachers who wish to experience teaching in other related areas on short term rather long term. So modular approach provides such experience to the teachers.

Schemes Help to Build Confidence in Modular Teacher Organization on Teaching

Modular schemes allow to have flexibility in planning teaching teams. Teachers can experience over a limited period of time with new activities or new subjects. Specialist can borrow from other areas for contribution to a specific programme. Curriculum can be adjusted step by step. Teachers can work collaboratively over the span of one module unit and independently for subsequent units.

Keeping in view the above points, following may be described as the fundamental characteristics of the modules.

1. Essentially self-contained, self instructional
2. Concern for individual differences

3. Statement of objectives
4. Association, structure sequence of knowledge
5. Utilization of a variety of media
6. Active participation by learner
7. Immediate reinforcement of responses
8. Mastery of evaluation strategy (Chanrill, 1982, P.5)

Rationale

The major cause of module's use is that it cares for well established conditions of learning alongwith flexibility in implementation.

Advantages

Following are its advantages:

1. Users study the modules in their own working environment.
2. Users can study without disturbing the normal duties and responsibilities.
3. Modules can be administered to single use, small group or large group.
4. Modules are flexible so that implementation can be made by a variety of patterns.
5. Modules are economical in their use.

Components of Modules

There are many different styles for designing instructional modules, but agreed components are:

1. Rationale: An overview of the content of module and explanation of why the learner should study it.
2. Objectives: What is expected outcome of module. This is stated in behavioral/performance terms.

3. Entry Test: To determine if the learner has prerequisite skills needed to enter the module and to check.
4. Multi Media Materials: A wide variety of media is used so learners can involve actively and utilize their senses.
5. Learning Activities: Presentation, demonstration, drill simulation, discovery problem solving etc. may be useful. A wide variety of learning activities increase student interest and cater student needs.
6. Self-Test: This provides a chance to review and check ones own progress.
7. Post Test: To check whether the objectives have been achieved or not?

Designing Modules

A module should have an introduction to topic and instructions or suggestions for use. If module is to be used under the supervision of Instructor, then oral instruction may be sufficient. But in most cases, printed study guide is a part of the module. The guide should provide introduction of the topic and related activities and media with objectives. It would give instruction for learning activities, space for questions and responses may be provided. Study guide should be as simple as possible. It should contain essential directions. It is important to monitor each student's progress in order to reward success and eliminate frustration. At the end, teacher should discuss activities individually or in a small group. The teacher and student (s) can go over the nature of the problem presented in the module, compare answers if appropriate and discuss concepts learned from module. Follow up discussion may be used as evaluative devise in addition to or instead of written quiz. (Based on Robert Heinich et-al work "Instructional Media", 1990)

The Planning Stage

First to identify target population, its nature and scope. For example, whether module is to be used for national, provincial level, pre-service, in-service training, formal or non-formal system. After this, needs are to be determined. Module developer will provide inventory for topics. Next step is to survey existing modules, if any. If any module exists, then to evaluate its significance, relevance with objectives at hand. Then, developer collects the possible information. If ma-

material is available, the usefulness of the material should be assessed. Parkee and Rao (1981) pin points these questions in this concern:

- a) Is the selected topic worthwhile?
- b) How will the target group benefit from this programme?

After this exercise, developer will proceed to formulate a specific plan of module development. This will move through these questions:

- Who is going to develop the module?
- How it will be developed?
- When it should be completed?
- How much it will cost?
- What kind of resources will be mobilized?

While formulating plan, it is advisable to keep it flexible and practicable.

The Drafting Stage

The first and foremost thing is to formulate objectives of the module. These are based on need assessment which was determined at planning stage. It is better to have performance objectives as these serve guide lines for developing module. For writing performance objectives, Gagne and Briggs (1973) have identified five elements as:

1. Situation
2. Learned Capacity
3. Object
4. Action
5. Tools or other constraints (P.26)

Special attention should be paid in choosing action words. The major verb of the objective statement has the purpose of communicating the kind of human capability one expects to be learned.

After statement of objectives, the next step is to select learning experiences which might lead to the achievement of objectives, local available low cost resources may be useful. But modular developer should be careful in hierarchical arrangement.

Now developer is ready to select a module and its components. First of all, he sketches mental picture, then also decides whether the module is individualized self-contained or otherwise.

Then actual write up starts. This requires skill and talent. Direct plan and simple language is necessary. After first draft writing, it should be edited: both format, components and language wise.

The Revision Stage

The manuscript should be reviewed with special attention to the format, the components and editing. Now copies are ready for individual try out. Try out is made of readability, difficulty level, content organization and adequacy. Testing module should be administered over carefully selected sample. For more reliability, administration selected sample. For more reliability, administration should be made over a large sample. For small try out a sample of 30 is adequate. After try out, and necessary modification, module is ready for printing. Pareek and Rao (1981) briefed the module development process as:

- a) Identify the needs of the target population and choose the topic.
- b) Collect relevant information on the topic and verify the necessity for developing a new programme or module.
- c) Make plans for developing module.
- d) Formulate objectives of the module based on results of assessment of needs.
- e) Select the learning experiences. These can best achieve the objectives and arrange them in logical order.
- f) Decide the format and components of the module.
- g) Write a draft module.
- h) Review the draft module and make revisions.

- i) Select at least three students, each representing fast, slow and average learners from the target population and test the module on them and revise the module according to the results obtained from test.
- j) Conduct further small scale or large scale try out and make suitable revisions. If and when necessary.
- k) Print the manuscript (pp.68-69)

Writing a Module

Components of module are:

1. The title
2. The Introduction
3. The overview
4. The instruction to the users
5. The pre-test evaluation and feedback
6. The objectives
7. The learning activities
8. The formative tests, evaluation and feedback
9. The summative test evaluation and feedback.

Learning activities occupy a very significant place in writing module. Only some principles underlying the design of learning are discussed here.

The Learning Activity

Learning brings change in the behavior of the learner. The difference between entry behavior and terminal behavior is learning. It is actually result of learning experiences. Selection of learning experiences always remain a problem in curriculum development. Students have to learn more than they have time in school. At classroom level, pull and pressure groups have become more critical (Wiles and Bondi, 1989, P.169). Module planners must realize that classroom teacher is to carry out the instructional programme so module should provide flexibility in selecting learning experiences. Learning experiences fall into two general categories; informal and formal. In informal category, teachers are conscious of the fact that some learners need more time and attention to master a particular skill, concept or body of knowledge while in formal category a unique programme of experiences if provided; for every child may meet the requirement.

This is conceived in a different way by National workshop on the use of Modular approach in Teaching of Science For Rural Transformation (1977) These are under the title of elements of Module.

- a) Introduction
- b) Activities
- c) Evaluation
- d) Basic elements of programmed instruction such as gradation of subject matter and drill in skills are also considered as the element of modules. But learning activities may follow multimedia approach with multi sensory experiences. Secondly activities may be multi-mode in their nature e.g. lectures, discussions, workshops, symposia, panel discussions etc. Thirdly activities may be multi content in nature i.e. different levels of difficulty. Fourth activities may have difficulty. Fourth activities may have different approaches, these may be through writing, speaking, viewing, listening, reading, manipulation, project work, field work. Fifth activities those follow different models.

Principles Underlying the Planning of Learning Activities

There are seven principles to be kept in view while planning learning activities:

1. Plan learning activities on the basis of entry behavior of the learners.
2. Base learning activities on the terminal behavior.
3. Base learning activities on the needs of learner.
4. Make careful gradation.
5. Provide adequate for individual differences.
6. Provide adequate with his progress.
7. Provide learner with his progress.

Time Tabling and the Modular Approach to Curriculum

Development

Time table should work in educational as well as structural terms. It must make sure that “properly grouped pupils are undertaking relevant learning with an appropriate member of staff in an appropriate space for an appropriate length of time with appropriate frequency” (Taylor, 1988, p.165). Unfortunately, traditional time table does not fulfill this criteria. Word “Subject” is left out of criteria as it restricts the efficiency of many time tables. The basic unit of standard time table is made of four elements 1) group of peoples 2) a subject 3) a room 4) one teacher. Unit once established should remain undisturbed through out the year. The basic principles of the time table is that pupil must receive certain amount of particular subject, the amount being defined by quantity of subject matter and or time. Time table should be flexible rather than rigid.

Modular Arrangements

The parameters of modular systems include:

- Length of each module.
- The number of staff in teaching team.
- The range of specialism that can be offered by the teacher teams and are considered relevant.
- The nature of special needs support.
- Teaching space availability: and
- The number and length of block (periods) allotted to the curriculum area. (Taylor, 1988, p.200). Some modules are offered more than once in each cycle so to make it more flexible for individual course planning.

Option systems can be modified to operate on a modular basis but it is difficult to have a system that offer full benefits of a modular approach without at least having some elements of a curriculum area framework.

Evaluation of Module

Evaluation is the first step in improving module writing. Evaluation is made against characteristics and advantages of module discussed in earlier pages.

- Does it contain elements of instruction.

a) Specific objectives: The prime criterion of a module, whether these are stated in behavioral functional terms or not?

b) Teaching-learning activities: Does the module provide teaching/learning activities which cater the demands of the objectives and also situation where they are to take place.

- Independent nature: A module is well organized independent unit/version of content. It can be taken independently or not?

- Systematic organization: Whether the organization is systematic both psychological and logical, though it is possible to have a organization which may be logical not psychological but a module might observe both characteristics.

- Evaluation style: Module define the mode of evaluation for which students are to be evaluated. This is advantage over traditional text.

- Credit accommodation: Is module provide a chance for student to build logo like, an individually designed course. Is it consists of series of core module to specialized modules.

- Credibility: A valid and sound module is that whose credit is accepted by other institutions and so this credit can be transferred to other areas, institutions.

- Level of Linkage between academic and vocational activities: This is of especial value for modules at secondary or terminal stage. Does it provide provision for application of academic content included in the module.

- Age-Grouping: Its module is only useful for a specific age level. A better module would be that which might be used by different age groups.
- Variety of Media: A module is said to be a “good” if it uses a variety of media according to the demand of the content.
- Accommodation of Individual differences: Psychologists emphasize on individual differences, accommodation of individual differences leads to better learning. A module is better if it accommodates individual differences also.

Assessment in Modular Schemes

In modular schemes, aim is to make learning more effective in the interest of all students. This can be only achieved if learning is measured effectively, realistically and constantly. Criterion-Referenced: there is trend towards criteria referenced from norm referenced. This shift is due to increased pressure to raise standard of education. But, assessment of individual as individual will also remain. In this, individuals are compared against their potential (path referenced assessment) or prior achievement, so it helps to establish a system of assessments other than marks or grades.

Fairness

In past every effort has been made to tackle the problem of biases: both cultural and sexist.

In module assessment, teachers and pupils are involved extensively throughout the course for catering problem of bias positively.

Whole-Course Planning

Assessment should be made in integral part of whole course planning not as end product assessment activity (Macintosh, 1988, P.158). For this assessment module may or may not be the same.

The degree to which match will depend upon the objectives of the course and the points at which it seems most useful to appraise and discuss student performance collectively and individually. This may be in mid or over several units. For whole-course planning, key questions are:

1. What are the intended outcomes of the course?
2. What evidence is required to ensure that learning relevant to these outcomes has taken place?
3. What teaching/learning activities need to be provided in order to produce that evidence? (Macintosh, 1988, P.158)

Positivity in Assessment

Positivity in assessment means that “any question must enable all those for whom it is intended to show, through their answers in their own terms, what they can “do” and can be rewarded for doing it”. It includes setting and marking. Positive assessment can be made by asking everyone same questions or by asking different people different questions. This may be formal or informal. Informal and intermittent assessment approaches may be more appropriate for modular programme. The aim of which is to provide different routes for students of different abilities and interest. These differentiations impose challenge to those who design and assess.

The Cockroft committee (1982) identified the difference in module assessment with reference to public examinations when it is stated that no award should be made to a student until he performs 50 percent mastery of the examination. Modular approach to curriculum development has following advantages over traditional one:

1. They can readily be made cross-curricular in scope.
2. They can make very specific and very practical demands and can in consequences give rise to post realistic and manageable tasks.
3. Development of assessment practices those encourage cross-curricular initiatives.
4. Methods of recording and quality control.

These are of vital importance as curriculum is based on themes and activities while cross curricular approaches require tighter management than subject-based vertical approach. Such a curriculum should need to be reflect:

1. To the student that clear programmes exist with clear connections among past and future.
2. Continuous relationship between process and content within any course of study.

3. Consistent relationship between learning programmes and assessment criteria.
4. Both the necessity and the opportunities for co-operation and interaction between individuals and where relevant, between institutions.

So, thrust of modular approach of curriculum development is on whole-curriculum planning.

Certification

Certification is resultant of assessment. Clearly there is problem of mismatch between contents of record and requirements of a certificate. The difficulty is particular with horizontal modules which emphasize cross-curricular flexibility. But this will disappear or become less significant when teachers become more confident in modular approach.

So modular approach provides more flexibility to distance teaching mode as well to learners.

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