

Different Formats of TMAs: Observation Account, Case-study and Application (Skill)

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Adding to Nicola Durbridge (1975) categories of TMA formats for summative assessment, this article presents three more categories, viz. Observation account, Case-study and Application (Skill). These formats exploit a different activity from a learner to solve an assessment question, not covered by Durbridge's classification. These additional formats can assess, particularly in the disciplines of science and engineering, application, analysis, synthesis and/or evaluation of understanding.

Observation account is a collection and compilation of observations, made by a learner, about an event, an experiment, a natural activity or a creation. Questions formulated under this could assist in assessing the learner's ability for observation and for applying the theoretical knowledge.

Case-study is an application of comprehended knowledge with reference to a particular situation, where a learner is provoked to apply the knowledge.

Application (Skill) is comprehension of knowledge without being provocation or without providing access to the demonstration of the specific use, in a given situation.

INTRODUCTION

In Distance Education, assessment plays an important role in achieving the educational objective of a programme. Unlike a conventional learner, the distance learner lacks face to face didactic conversation with the teacher and hence, requires a means of dialogue to reinforce learning which is partially met through assessment based interaction. Besides, the assessment in distance education increases the motivation of learners and provides information for grading (feedback) and for evaluation of the effectiveness of teaching materials.

Assessment could be formative or summative. Summative assessment could be continuous and/or term-end. In Indira Gandhi National Open University (IGNOU), summative assessment is done continuously by Tutor Marked Assignments (TMAs) and Computer Marked Assignments (CMAs) as well as by term-end examinations.

TMAs, CMAs and term-end examinations can measure and evaluate five major areas of abilities or characteristics.

These are Achievement, Intelligence or general mental ability, Special abilities, Personality or Adjustment, and Interest or Attitudes (Downie, 1958). As TMAs are a two-way communication tool in continuous summative assessment, much attention is required to prepare them to achieve the above characteristics. Though in IGNOU, continuous assessment is given only 25 to 30 percent weight in the overall assessment, pedagogically it serves an important didactic function.

BACKGROUND

Course developers always faced problems in designing an overall strategy of assessment and generating associated assessment devices. The designing is often easier than generating assessment questions. In this context, Faculty of Educational Studies of United Kingdom Open University (UKOU) tested E200 Assessment Strategy and formulated a scheme, as shown in Figure 1 (Lockwood, 1981, 1991).

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Stages

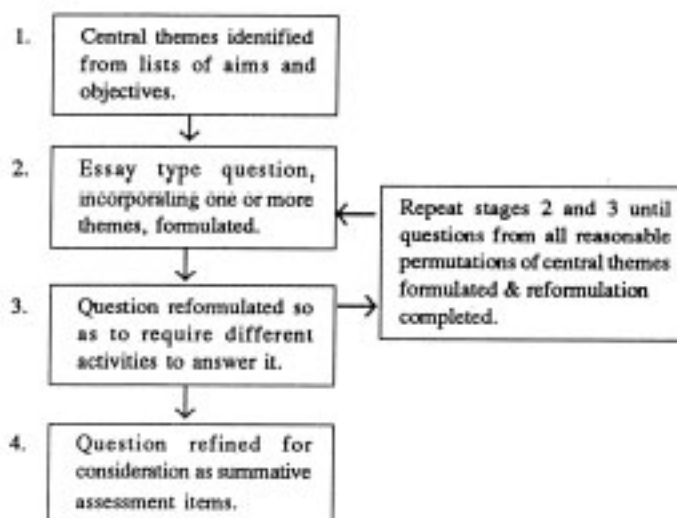


Figure 1 : A sequence for generation of different types of question from a series of themes (Lockwood, 1981)

Using this assessment strategy, a draft essay type question was formulated and reformulated according to the guidelines provided in Nicola Durbridge's Classification of TMA Formats (discussed in the section below).

The strategy group used E200 Course, Block-2 on "The Family as Educator : the childhood years". The following themes were identified by the group in implementing the scheme:

- family as educator,
- role of professionals as educators,
- different research approaches and methods of inquiry,
- underlying factors/features of child rearing,
- distinction between fact and value.

On these themes, the strategy group undertook the exercise of formulating and reformulating questions belonging to different Durbridge's formats of TMAs. This exercise, as one can notice, ensures different types of learning activities from the learners. Appendix 'B' reproduces the different reformulations (Lockwood, 1981).

TMA FORMATS

In a survey of UKOU summative assessment material, Durbridge classified TMA formats into ten categories. These are:

1. A standard essay
2. A structured essay (prescribed structure)
3. A role-playing account
4. Interpretation of data
5. A design problem
6. A project

7. The description of process
8. Notes on main areas
9. Definitions and illustrations
10. Hypothesis formulation and testing.

(Refer Appendix 'A')

Adding to this categorization, three other TMA formats emerged from the 'Intensive Workshop on Assignments Across Disciplines' held in IGNOU, New Delhi from September 16 to October 4, 1991.

These formats of summative assessment TMAs require different activities of learners in their *solution* not fully covered in Durbridge's classification. Partial coverage of these activities may emerge from other formats. These additional formats are:

- Observation account,
- Case-study, and
- Application (Skill).

Educational programmes concerning science, engineering and technology have specific aims. These aims often stretch beyond the level of knowledge in the cognitive domain of educational objectives. These objectives could be at the level of application, analysis, synthesis and/or evaluation. The suggested formats of TMAs, by and large, deal with the assessment of these higher levels of objectives.

OBSERVATION ACCOUNT

Observation account is an important tool to assess applications within an event, an experiment or a natural happening or even of a creation, like painting, sculpture etc. This becomes more specific in science/engineering based programmes, where a learner is expected to attain skills to observe things or a process, (like rock and mineral land specimens in geology), apply principles or knowledge (like what has to be seen in land specimens), identify the relation between observations and the knowledge, and produce a report on the identification, as done in laboratory exercises of Petrology (geology). This means, observation is mainly based on the knowledge of facts and value, their applications, and experience attained at lower level of understanding. TMAs in this format could provoke these dimensions in a learner.

As shown in Figure 2, all the observations follow, more or less, similar process of interpretation. The only difference is in the opportunity to access an event or a natural process. Past observations and recall of experiences could assist the learner to proceed to complete the assignment. Experiment based observation becomes much easier, as the learner is expected to perform design problem and observation account together and thus, factors remain in his control.

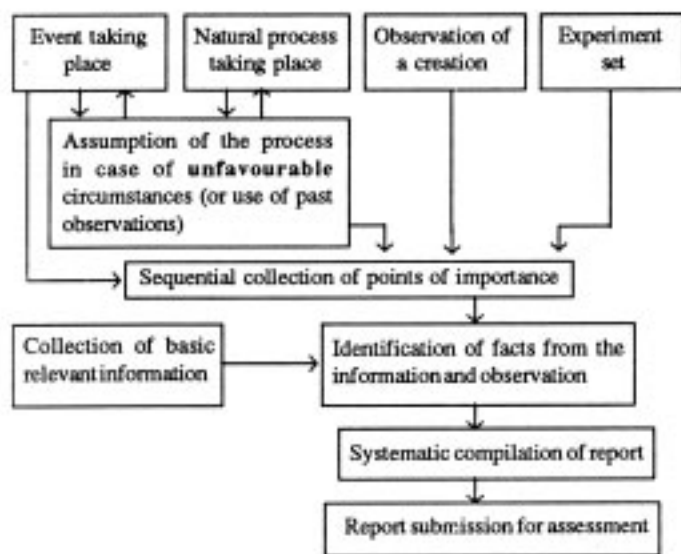


Figure 2 : Flow Chart of the Process of Observation Account Assessment

Illustrative Examples

- Describe what you would observe with regard to construction of a house in your area. You should consider,
 - Architectural aspects,
 - Land pattern and foundation,
 - Materials and
 - Labour and work process.

Compile the report, on the basis of your course material, in 5000 words.

- Visit an orphanage in your adjoining area. Observe a day's routine of young children and compile your report on "maternal deprivation in orphanage children" (word limit 3000 words).

(On the themes selected by E200 assessment strategy group).

- Gather the following items on a table:
 - Glass tumblers — two
 - Table spoons — two
 - Water — One jug
 - Sugar or salt — 8 table spoons
 - Sand dust — 8 table spoons

Now, start the following experiment. In between, make notes on the basis of observations.

- Fill both the glass tumblers half with water.
- To the first tumbler, start adding sugar or salt gradually.
- Stir the water while adding sugar or salt.
- After adding 4 table spoons of salt or sugar, leave aside the tumbler for 5 minutes.
- Take the second tumbler.
- Start adding sand dust gradually.

- Stir in between.
- After adding 4 spoons of sand, put aside the tumbler for 5 minutes.
- After 5 minutes, repeat the experiment from stage 2 to 8.
- Compile your observation notes.

Now, comment on the following with illustrations from your experiment:

- Solution
 - Mixture
 - Saturated solution
 - Unsaturated solution
 - Colloid
- Describe your observations of a rainy or a snow-fall day. Compile information with regard to
 - Intensity variations
 - Surface run-off/compaction of snow
 - Wind effects
 - Temperature effects
 - Compile your own observations of
 - Pollution caused by motor vehicles,
 - Pollution by an industry,
 - Pollution by sound, and
 - Pollution by dust storms.
 Limit your answers to 2000 words.
 - Compile your observational notes on solar or lunar eclipse. Limit your answer to 2000 words.
 - Visit a nearby river or sea shore and collect the following information:
 - Sand deposition on banks/shore,
 - Wave impact on banks/shore, and
 - Sand grain size variations with distance from river/sea bank.
 - The cartoon strip reproduced below portrays an episode in the life of Andy Gump. Write a paragraph in which you tell how you as a psychologist would explain Andy's reaction to the presence of the bear.

From the above examples, it is clear that the activity or use of past observations assist the learner in practicing the theory or real life applications of acquired knowledge. The formulation of assessment questions on this line will certainly help in identifying the capability of an individual in putting theory into practice.

CASE STUDY

Study of a case could be a supportive tool for measuring knowledge of the universals and abstractions in a field. The objective could be to assess analytical or evaluation skills of learners. A case-study involves collection of data on an existing case, analysis of data by utilizing attained

THE GUMPS - BEARING UP



(From Bloom's Taxonomy of Educational objectives, 1957, pp. 116)

knowledge, systematizing the interpretation, critical evaluation of the application of principles and theories and compilation of outputs.

After formulation of a question in this format, an assessor could expect the fulfilment of objectives by the flow of analysis and judgement with reference to specific knowledge (Figure 3). Through a case-study exercise, an assessor can judge a learner's ability in the application of his/her knowledge of theories and principles as evidenced at the successive phases of the case-analysis study (Figure 3) carried out by the learner.

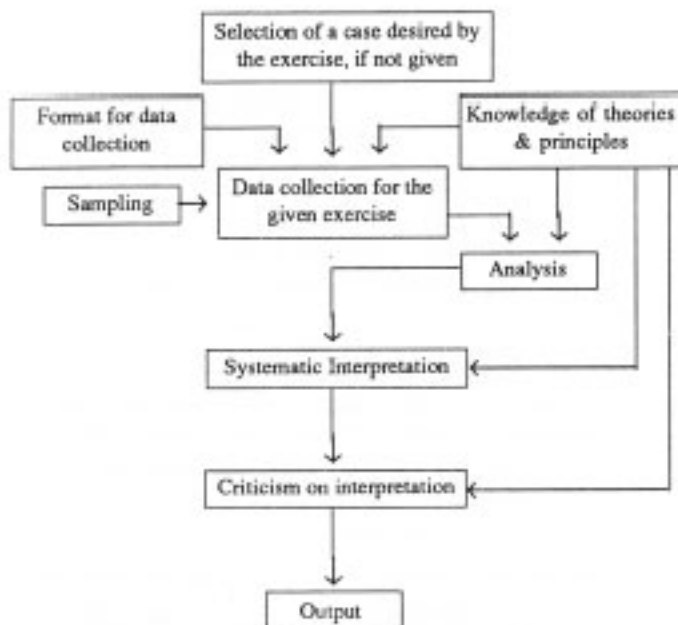


Figure 3 : Schematic flow of a case-study

Illustrative Examples

1. Conduct a case study of a day-creche with reference to
 - Child rearing,
 - Reciprocity,
 - Maternal deprivation, and
 - Sociological and religious influences.
 For the study, you may

- i) Interview professionals and parents
- ii) Observe a day's-work at the creche
- iii) Interview your neighbours not utilizing the creche services
- iv) Compare creche going and non-creche going children

(On the themes of E200 assessment strategy group)

2. Conduct a case-study of Bhakhra Nangal or Hirakund Dam.

Consider

- i) Construction
- ii) Structure
- iii) Reservoir capacity
- iv) Canal Irrigation pattern

3. Conduct an item analysis of Entrance Examination of Diploma in Management Programme of IGNOU for the year 1991 or 1992 (Question papers are enclosed).

Compile your results as suggestions to the School of Management Studies, IGNOU for improvement on distractors in the exam paper.

APPLICATION (SKILL)

Course materials always have some communication for a learner, who is expected to be able to understand what is being communicated and to use it in some way. In a given situation, where all related principles, theories, methods or abstractions are provided, one comprehends the communicated knowledge. If he really understands what is communicated, he should be able to apply that knowledge in other situations, without having to be prompted or without watching a demonstration of use in that particular situation. Assessment of such acquired skills could be useful in real life situations. TMAs can be formulated to measure application capabilities or skills.

A diagrammatic form of the problem solving process by application is shown in Figure 4 (Bloom, 1957, page 121).

The figure represents complete solution of an application

problem. Steps 1 and 2 would depend upon the student's, familiarity with the problem.

Attainment of such ability marks completion of the learning process. The learner can now proceed for synthesis and can innovate. In specific teaching-learning situations, for an assessor this becomes an important aspect to assess before his student goes to serve in the field.

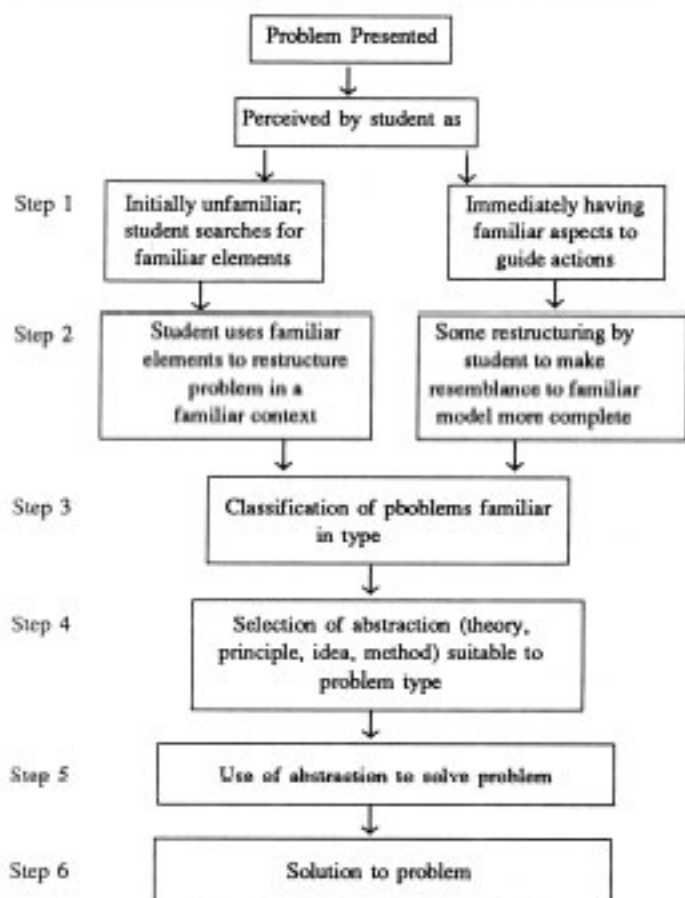


Figure 4 : Diagrammatic representation of application in problem solving (Bloom, 1957)

Illustrative Examples

- John prepared an aquarium as follows: He carefully cleaned a ten-gallon glass tank with salt solution and put in a few inches of fine washed sand. He rooted several stalks of weed (elodea) taken from a pool and then filled the aquarium with tap water. After waiting a week he stocked the aquarium with ten one-inch goldfish and three snails. The aquarium was then left in a corner of the room. After a month the water had not become foul and the plants and animals were in good condition. Without moving the aquarium he sealed a glass top on it.

What prediction, if any, can be made concerning the condition of the aquarium after a period of several months? If you believe a definite prediction can be made, make it and then give your reasons. If you are unable to make a prediction for any reason, indicate why you are unable to make a prediction (give your reasons).

(Adapted from Test 1.2 B, "Application of Principles in Science", Progressive Education Association, Evaluation in the Eight-Year Study, University of Chicago, 1940).

- An electric iron (110 Volts, 1000 watts) has been used for some time and the plug contacts have become burned, thus introducing additional resistance. How will this affect the amount of heat which the iron produces?

Give conclusions for consistency with facts given above and reasons to explain or support your conclusions. (After Bloom, 1957, pp 132).

The skill to use knowledge and apply basic values to attain right judgement in predictions plays quite an important role and sometimes becomes crucial. For example, one may have made observations on flood control systems of a dam or may have complete knowledge of reservoir capacity and its management, but in real circumstances, where he is expected to fill the reservoir in rainy season, his predictions by applying the acquired skills will count much more to prevent floods in down-stream areas. The assessor, thus, has a very important role in developing such a skill in the learner.

SUMMARY

Though the suggested summative assessment formats are yet to be tested for validity, the importance of these formats cannot be overlooked. Observation account, case-study and most importantly, application (skill) are basically field based assessment tools. In engineering and science programmes, the aims/objectives are to develop a learner for the fields of application. As stated, the role of summative assessment for acquired knowledge is much more important in application programmes rather than non-application programmes.

Continuous summative assessment for different levels of knowledge is a must and more weight should be given to it. Questions formulated in observation account, case-study and application formats will certainly assist in assessing higher levels of objectives.

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APPENDIX 'A'

Ten of the categories into which tutor-marked assignments (TMAs) were placed, together with an illustration of each category (From "TMAs and their preliminary groupings", Nicola Durbridge, 1975).

1. Standard Essay

'Land values are both the product and the determinant of the pattern of urban development' Discuss.

2. Structured Essay

Identify and discuss some of the determinants of urban land values and their impact on urban development. In your answer you should:

(a) define the following terms:

- i) Property rights in land
- ii) zoning
- iii) site value-rating

(b) explain the influence of these terms on determining land values.

(c) select (i) one activity of public authorities, and (ii) one market factor, which affect land values and how they might influence urban development.

3. Role-playing Essay

You have inherited your late uncle's urban estate under his will and are considering whether it would be more profitable to sell the property quickly or 'sit and speculate'. Describe some of the factors (as discussed in Unit 14) you would consider in making your decision.

4. Interpretation of Data

You own a house in a developing suburban area but are considering selling your property and moving closer to the city centre. Given the following demographic data what are some of the economic and social factors which you'd consider in coming to a decision?

5. Design

As a town planner you are involved with the design and siting of a new small shopping precinct. You favour a site which involves the demolition of an old street in the city centre. Consider the possible effects on land value and accessibility of such redevelopment and present an argument for such a siting.

6. Project

Assemble a file of items, e.g., newspaper cuttings, results of an interview with local planners and businessmen which you might conduct yourself, relating to a piece of proposed or completed redevelopment and its possible effects on property and land values. Include your assessment of the problems as you learn more about them.

7. Description of Processes

Define the term 'externalities' as used by an economist. Select a land use with both positive and negative externalities and describe the influence of these activities upon each other and upon urban land values.

8. Notes

List some of the public services which are determinants of the value of an individual site or property; in note form then discuss some of the other kinds of public services which may influence land values generally.

9. Definitions

Define the following terms

- property rights in land
- zoning
- imputed rent
- externalities

- betterment
- access
- accessibility

10. Hypotheses

Suggest the relationships between nearby house prices and:

- a) the development of new shopping precinct in a suburban area.
- b) a road-widening scheme in the area.

APPENDIX 'B'

From 'Different formats for Summative Assessment Material — variations on a theme' by F. Lockwood, 1981)

1. Structured Essay

Identify and describe those underlying factors or features of child-rearing that contribute to its education. In your answer you should :

- a) Contrast different methods of child-rearing and their possible effect.
- b) Distinguish between facts and values in child-rearing.
- c) Describe the research investigations that have contributed to the discussion and include their main findings.
- d) Illustrate the roles that both parents and professionals play in child-rearing.

2. Role-playing Account

'Imagine that you and your spouse have recently learned that a baby is expected. After a discussion of the immediate changes in your lives you begin to consider how you intend and hope the child will be reared and educated in its first few years of life. In light of the information present in the course to date, together with your own beliefs and knowledge, record those factors that would influence your decisions on child-rearing and the part played by professionals'.

3. Interpretation of Data

'The following extracts from research reports are all concerned with the rearing of children in the home and in institutions. Which of these findings would you accept or support, which would you reject or challenge and why?'

4. Design

'You have been asked to offer advice on the establishment of a creche to care for young children whilst their parents are working. Given the following projections about likely numbers of children and their ages, what would be your suggestion with regard to the policy of such a creche (if established) and its general organization?'

5. Project

'Assemble a file of items

- newspaper cuttings
- extracts from articles and reports
- interpretation of interviews with play-group organizers or parents

with regard to the role played by parents and professionals in the rearing of children. Identify those areas in which you would concentrate subsequent attention and explain why'.

6. Description of Process

'Describe the effect of maternal deprivation and illustrate how research studies have shown that children within the family home and those raised in institutions can suffer from, and be protected from, its incidence'.

7. Notes

'List those factors and features associated with child-rearing that influence a child's education. In note form describe the characteristics of such factors and features and the possible relationship between them.'

8. Definitions

Define, in the context of child-rearing and education, the following terms:

- maternal deprivation
- attachment
- reciprocity
- deprivation lacking

9. Hypothesis

What indications are there for a relationship between maternal deprivation and

- a) social class,
- b) different cultures,
- c) the presence or absence of a child's mother, and
- d) a child's age?