

RESEARCH ARTICLE

Achievement of cognitive educational objectives as perceived by the teachers of Assam Agricultural University

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Abstract

An academic investigation was carried out in Assam Agricultural University, Jorhat, to measure the extent of achievement of cognitive educational objectives at undergraduate level. This study was aimed to identify the cognitive educational objectives relevant to undergraduate programme and educational technology training needs as perceived by the teachers of the university. Besides percentage, mean and standard deviation, the Kendall coefficient of concordance was applied to analyze the collected data. The study revealed that knowledge objectives were being achieved to the extent of 52.91% while objectives relating to intellectual abilities were being achieved less than 50%. Knowledge objectives were found to be relevant and less difficult to achieve while amongst the comprehension objectives, translation objectives were found to be less difficult compared to interpretation and extrapolation. Achievement of application, analysis, synthesis and evaluation objectives were found to be low. In case of educational technology training needs as perceived by the teachers, methods of classroom teaching, techniques of motivation, learning theories and their application to teaching, preparation and use of audio-visual aids, preparation of lesson plans and evaluation methods used in classroom were found to be priority areas.

Keywords: Cognitive domain, educational technology, training needs, teachers, learning theories.

Introduction

Agricultural Universities are established in India to fulfill one of the social responsibilities of providing well-trained manpower for agricultural development. It has generally been the expectation that the teaching programme of Agricultural Universities should emphasize in terms of relevance, quality of the human capital for agricultural development and diversification of teaching programmes consistent with the new employment avenues for agricultural graduates. However, it is not known how effectively the teachers relate these expectations with the educational objectives of a course and the unit of instruction. Human behaviour components are grouped mainly under three domains: cognitive, affective and psychomotor. The cognitive domain includes recall or recognition of knowledge and the development of intellectual abilities and skills. The affective domain is concerned with behavioural components such as interest, attitudes and values. The psychomotor domain is concerned with manipulative skills. This way of looking at educational objectives is taxonomic in character as observed by Bloom and his associates (1972). Although the existence of these domains is well recognised, attempts in developing taxonomy of educational objectives are confined to cognitive and affective domains. Considering undergraduate teaching in agriculture, Education Commission of 1964 observed that undergraduate teaching should strive at deep knowledge of fundamental principles, an ability to solve new problems as they arise and an ability to continue learning without a teacher throughout their career.

Similarly, National Commission on Agriculture (1976) emphasized that undergraduate students should be exposed to fundamental principles in agriculture and the ability to solve problem and application of the principles in the production of agricultural commodities. Against these backdrops, an academic investigation was carried out in Assam Agricultural University, Jorhat, with the following specific objectives:

1. To measure the extent of achievement of cognitive educational objectives at undergraduate level as perceived by the teachers.
2. To identify the cognitive educational objectives relevant to undergraduate programme.
3. To identify the educational technology training needs as perceived by the teachers.

Materials and methods

Sample population: College of Agriculture, Jorhat, under Assam Agricultural University, was purposively selected as the locale of the study. A list of teachers, numbering 118 in all, in ten identified departments of the college was initially obtained. Through a purposive cum random sampling procedure, fifty faculty members of the college belonging to ten departments (five faculty members from each department) were selected as the sample for the study, based on the study criterion of having at least three years of teaching experience.

Study design: A descriptive research design was adopted for this study.

A descriptive study is one in which information is collected without changing the environment (i.e., nothing is manipulated) and those which are not truly experimental. The cross-sectional approach under descriptive research design was followed since the study involved one-time interaction with respondents.

Data collection and statistical methods: Data was collected using a pre-tested, structured research questionnaire following the total design method as suggested by Dillman (1978) using the guided interview method. Besides percentage, mean and standard deviation, the Kendall coefficient of concordance was applied to analyze the collected data.

Results and discussion

Achievement of cognitive educational objectives: The data on the achievement of different levels of cognitive educational objectives are presented in Table 1. It can be inferred from the Table that knowledge objectives were being achieved to the extent of 52.91%. Similarly, the teachers perceived that the objectives relating to intellectual abilities, viz, comprehension, application, analysis, synthesis and evaluation were being achieved less than 50%. There is considerable variation in perception among teachers regarding achievement of cognitive educational objectives as indicated by the standard deviation values on different levels. In a study on the analysis of question papers of the Karnataka secondary education and examination board, Reddy (2005) found that skewed weightages in favour of the lower recall based knowledge objective has led to the creation of imbalanced papers, whereas the assessment of higher order objectives stood neglected.

Table 1. Achievement of educational objectives in cognitive domain.

Educational objectives	Achievement mean scores	Standard deviation
Knowledge	52.91	14.61
Comprehension	48.15	16.88
Application	47.10	19.32
Analysis	45.34	17.60
Synthesis	35.20	17.60
Evaluation	34.35	16.98

In an analytical study of the Question Papers of Class XII Board Examinations in the States of Himachal Pradesh, Maharashtra, Tripura and Tamil Nadu, the NCERT (1999) found that in all the core subjects, it was mainly knowledge based questions testing simple recall of information which were asked. Questions testing the understanding and application objectives were relatively few. It can be thus inferred that the findings of this study fall in line with the outcomes of the studies cited above.

Perceived cognitive educational objectives relevant to undergraduate programme: A detailed analysis of the perceived cognitive educational objectives relevant to undergraduate programmes including the level of difficulty in achieving the cognitive educational objectives is presented in Table 2. The Table reveals that within the knowledge objectives, knowledge of theories and principles got higher mean scores (55.42), followed by knowledge of specifics (54.45) and knowledge of dealing with specifics (48.85). These objectives were perceived to be relevant and relatively less difficult to achieve as indicated by the difficulty mean scores.

Table 2. Extent of achievement, relevance and difficulty of educational objectives as perceived by teachers.

Educational objectives	Achievement mean	Relevance mean	Difficulty mean
Knowledge			
K-specific	54.45	64.79	44.70
K-dealing with specific	48.85	60.87	46.90
K-theories and principles	55.42	65.42	47.79
Comprehension			
Translation	50.47	64.00	44.49
Interpretation	46.00	67.00	50.33
Extrapolation	44.97	58.74	53.43
Application	47.10	62.55	52.70
Analysis			
A-elements	45.25	55.92	54.45
A-relationships	44.71	58.42	50.20
A-principles	43.06	53.54	52.70
Synthesis			
Production of communication	41.48	57.94	53.70
Production of plan	33.97	53.22	56.82
Abstract relation	30.17	50.50	54.65
Evaluation			
E-internal criteria	36.00	53.70	58.65
E-external criteria	32.69	55.29	53.64

Table 3. Educational technology – training need hierarchy.

Educational technology training areas	Rj scores	Rank
Methods of classroom teaching	448	1
Techniques of motivation	468	2
Learning theories and their application to teaching	533	3
Preparation and use of audio-visual aids	621	4
Handling audio-visual aids	626	5
Preparation of lesson plans	682	6
Evaluation methods used in classroom teaching and construction of test items	698	7
Methods of teaching farmers	712	8
Student counselling	882	9

$$W = 136 \quad X^2 = 132.21^{**}$$

Among the comprehension objectives, translation got higher mean scores (50.27), followed by interpretation (46) and extrapolation (44.97). These objectives were perceived to be relevant. Furthermore, translation objectives were found to be less difficult compared to interpretation and extrapolation, as indicated by the difficulty mean scores. Achievement of application objective was found to be low as indicated by the mean score (47.10). This objective was found to be relevant but difficult to achieve as perceived by the teachers.

Similarly, achievement of educational objectives under analysis, synthesis and evaluation were found to be low. These objectives are relevant to undergraduate programme but the teachers perceived that it was difficult to achieve the objectives, as indicated by the relevance and difficulty mean scores against them.

Educational technology training needs as perceived by the teachers: A total of 9 areas of educational technology were included in this study. The respondents were asked to rank the areas considering the importance in training teachers at the College of Agriculture, Assam Agricultural University, Jorhat. The analysis of the rank data is presented in Table 3. As indicated by the Rj scores: lower the Rj scores, higher the training needs—methods of classroom teaching, techniques of motivation, learning theories and their application to teaching, preparation and use of audio-visual aids, preparation of lesson plans and evaluation methods used in classroom were found to be priority areas. The Kendall coefficient of concordance (W) test applied to this set of data was highly significant, indicating that the respondents were essentially applying the same standard in ranking the training areas under study. In a study on the educational technology training needs of university teachers, Somasekharappa *et al.* (1991) reported that there was felt need among teachers to undergo training in the areas of instruction methods, learning theories and lesson plan preparation.

Conclusion

For effective and efficient teaching-learning, it is important that the undergraduate teachers should define the educational objectives clearly and make them domain-specific. Educational objectives are not a description of the subject matter but statements of desired performance of the students after a class is over.

Most of the college teaching involves educational objectives related to cognitive domain which includes development of knowledge and intellectual abilities. The achievement of educational objectives in the area of cognitive domain, in general, was low. Furthermore, least achieved were the intellectual abilities compared to knowledge aspects. However, the teachers themselves felt that the entire hierarchy of cognitive educational objectives is relevant to undergraduate programme.

Majority of the teachers were not aware of hierarchy of cognitive educational objectives and their classification. These findings clearly indicate that there is a need for orienting the teachers on cognitive educational objectives. They should be made to realize that equal importance should be given not only to knowledge aspects but also to intellectual abilities. As indicated by the analysis of educational technology training needs, there is a felt need among the teachers to undergo training in the area of classroom instruction methods, techniques of motivation, learning theories, preparation of audio-visual aids, preparation of lesson plans and evaluation methods. It implies that there is an urgent need for organizing training for college teachers on educational technology by the concerned university. For organizing effective teaching, the teachers require communication support services.

Therefore, it is recommended that the university should provide communication support services to the teachers. Wherever possible, communication/training centres of the university should organize training programmes to enhance the communication competency of the teachers.

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