

Constraints in introduction of audio cassette technology in agricultural higher education

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Received November 7, 2018 and Accepted January 17, 2019

ABSTRACT : The term “agricultural education” has been referred as a collective term for all education in agriculture, encompassing plant and animal sciences, engineering, economics and others. If ACT is fully exploited for educational system in our country, it may fulfill all the challenges and demand of educational needs of ever growing population. It is fact that ACT may not be at par with the printed literature, but it may reduce the consumption of paper and pressure on our forest resources at considerable extent and hand in hand, it may give a new dimension in the educational system of India. To find out the constraints of audio cassettes in agricultural higher education among the postgraduate students, a study was conducted during the year 2008-10. Altogether, 135 numbers of students studying in randomly selected two agricultural colleges in the State of Uttar Pradesh and 30 numbers of teachers imparting higher education became the sample size for present study. Percentage, mean and standard deviation were reckoned with the collected data for drawing the results. It was found that 93.33 per cent teacher respondents reported the major constraint as to use of ACT for practical and field work topics whereas, most of the student respondents (97.04%) reported to “Extra-financial obligation required for ACT” as first ranked constraint. It was also found that 80.00 per cent of the teachers had agreement with constraints “It will be difficult to make such cassettes easily available” and “It will be difficult to get cassettes of our own choice”, where these two constraints got equal rank. Similarly, the state of rank of constraints “we are so much dependent on books and literatures hence, it is very difficult to introduce audio-cassette technology” and “it will be difficult to prepare assignment/notes through audio-cassettes” were equally reported (40%) by teachers. In case of two statements i.e., “it cannot be introduced due to a lot of technical difficulties” and “it will create noise pollution”, 36.67 per cent of teachers reported their agreement.

Key Words : Audio cassette technology (ACT), agricultural higher education.

Education is a lifelong process which helps to cultivate state of relevant knowledge, understanding, application, discovery, creativity, evaluation and judgement of social and personal values, learning to learn further, professional leadership required to operate in given context and other relevant job/work situations and to fashion or choose the qualities of our life along desirable way.

Higher education in India was initiated during British Rule. During 1857, Calcutta University, Bombay University and Madras University were established for undergraduate and post-graduate degree programmes. The Allahabad University was established in 1887. When India became independent, there were only 19 universities and 650 colleges. After independence, Government of India laid great emphasis and efforts for higher education programme in the country. Therefore, University Grants Commission was established in 1953 to give systematic and pragmatic approach to the Higher Education in the country. Presently, there are 400 universities and 20,000 colleges for higher studies.

Agricultural education is the scientific study of the principles and methods of teaching and learning as

they pertain to agriculture. It is increasingly essential that agricultural education be further developed as a profession. We need leaders in our profession who will work together in charting a new course for the future. We need intellectual discussions and debate concerning the nature of our program. This intellectual discussion and debate will be essential to us to become academicians and philosophers (McCracken, 1983).

Historically, the Planned Agricultural Education was initiated in the country with the establishment of Imperial Agricultural Research Institute in 1903 at Pusa in Bihar with an objective to offer diploma courses and training in Agriculture to desirous candidates. The Institute, later on, was shifted to New Delhi in 1937 which is now known as Indian Agricultural Research Institute (IARI) with the status of a Deemed University. Establishment of Imperial Agricultural Research Institute was followed by the establishment of five agricultural colleges in 1907 to offer degree programmes in Agriculture. By the year 1947, there were 17 institutions offering basic first degree programme in Agriculture with an enrollment of 15,000 candidates. The candidates passing out from these institutions with either Diploma or Degree courses were mainly absorbed by the Government

institutions for running various departments.

Regular agricultural education was started in the beginning of the 20th century, yet the importance of agricultural education in India to meet the requirement of the farming community and food security of the country was realized only after the independence of the country in 1947 when there were 14 per cent literacy and seventeen universities. The first agricultural university was established at Pantnagar in 1960, which was a landmark in the history of agricultural education in India. By 1968, there were eight agricultural universities in India. Presently, the country has forty-four state agricultural universities, five deemed universities and a Central Agricultural University at Imphal.

In addition, three Central Universities i.e., Banaras Hindu University, Vishva Bharati and Aligarh Muslim University also have strong programmes in agricultural education. There are eighteen other general universities also offering UG and PG degree programmes in Agriculture. These institutions provide for U.G. education in eleven fields of specialization through 194 constituent colleges with an intake capacity of more than 15520 graduate and 5500 post-graduate students annually.

With the rapid transformation of science and technology, mass media has become integral part of educational system and technology. Alarming the population growth, increasing educational needs and making teaching learning more effective, have forced the educationists to include the mass media and teaching aids for sharing the burden of teachers to cope up the situation.

A number of mass media like, radio, television, video, computers, printed literatures etc. are helping learners in self learning process even in absence of a teacher. However, printed media like books are the major instrument in teaching-learning process as a supplementary aid. Growing educational concept, needs and population explosion have increased the demand of paper for books, lectures notes monographs etc. Due to increasing demand of paper in teaching-learning process, the pressure on our forest has increased. Forests are vanishing and cost of paper is escalating day-by-day hence, it has become difficult to provide cheap printed material to masses under present education system. Today, India has only 22.5 per cent forest cover whereas, only 11 per cent is closed forest. However, as per the environmental standards, our 33 per cent geographical area should have forest cover. Alarming situation of environment specially the depletion of forest cover has compelled us to find other supplementary alternatives to cope up the ever-growing demand of paper for our educational system and technology.

New instructional technology and system have in-

duced new communication technologies like television, video, and radio in distance education. In India, these new communication technologies have numerous technical, financial, cultural and physical limitations. Therefore, there is need to study the viability of that instructional aid which is appropriate and sustainable in Indian situation. Audio Cassette Technology (ACT) can overcome all those limitations and barriers which radio has. Moreover, induction of ACT in educational system may bring exciting results and from the pedagogical points of view, in terms of knowledge, cognitive aspects and retention rates. Moreover, there are many other advantages in this medium like, there will be fully control of learner on medium, easy availability of equipment, comparatively cheap, may interact with learners as both mass media and interpersonal. Therefore, if ACT is fully exploited for educational system in our country, it may fulfill all the challenges and demand of educational needs of ever growing population. It is fact that ACT may not be at par with the printed literatures, but ACT may reduce the consumption of paper and pressure on our forest resources (being used as raw material for manufacturing of paper) at considerable extent, hand in hand it may give a new dimension in the educational system of India. In view of the above facts, a study was planned to find out the constraints of ACT introduction in higher agricultural education.

Materials and Methods

The state of Uttar Pradesh has three Central Universities, five Deemed Universities, four State Agricultural Universities (SAUs) and thirty eight other state universities. Excluding the four SAUs, seven other universities offer degree programmes in Agriculture. It was difficult to conduct such type of study in all the colleges of seven state universities where agricultural higher education programmes are being offered. Therefore, in view of objective of the study, only two state universities – (1) Deen Dayal Upadhyay Gorakhpur University, Gorakhpur and (2) VBS Purvanchal University, Jaunpur were selected purposively. The purposive selection of two universities was made because of maintaining accessibility, smooth collection of data and acquaintance as well as contacts with the officials and teachers of the universities. The agricultural higher education programmes are being run by three and eight affiliated colleges of these two universities, respectively. To make the study in-depth, comprehensive and adequate size of sample, two affiliated colleges one each from two selected universities having post-graduate degree programmes in Agriculture were randomly selected. These selected post-graduate agriculture colleges were Baba Raghva Das Post-Graduate College, Deoria of

Table-1 : Different types of constraints as perceived by teachers and students.

Constra- int No.	Statements
C ₁	Practical and field works cannot be explained through audio-cassette.
C ₂	Agricultural courses cannot be taught through audio-cassette.
C ₃	We are so much dependent on books and literatures hence, it is very difficult to introduce audio-cassette technology.
C ₄	Preparing relevant and interesting course contents for audio-cassette is a very difficult task.
C ₅	Audio-cassette and its equipments are very costly in comparison to books and printed materials.
C ₆	It cannot be introduced due to a lot of technical difficulties.
C ₇	It will be difficult to make such cassettes easily available.
C ₈	It will be difficult to get cassette of our own choice.
C ₉	Audio-cassette and its equipments require repair and maintenance.
C ₁₀	It will change our teaching systems.
C ₁₁	It will change life style of the students.
C ₁₂	It will create noise pollution.
C ₁₃	Introduction of ACT in higher agricultural education will reduce the students' attendance.
C ₁₄	Checking of contents of audio-cassette will require more time in comparison to books at the time of purchasing.
C ₁₅	It will not stimulate thinking.
C ₁₆	Personal appearance is absent in audio-cassette in comparison to lecture or video.
C ₁₇	It will be difficult to prepare assignment/notes through audio-cassette.
C ₁₈	Availability of audio-cassette will create problem in controlling examination.
C ₁₉	Audio-cassette library is required for its introduction in higher agricultural education.
C ₂₀	It will be a costly affair in view of recurring cost of battery.

Gorakhpur University and Sri Durga Ji Post-Graduate College, Chandesar, Azamgarh of VBS Purvanchal University, Jaunpur.

The affiliated post-graduate colleges of selected universities offer postgraduate degree programmes in eight disciplines viz Agronomy, Horticulture, Soil Science, Botany & Genetics, Entomology, Agricultural Economics, Agricultural Extension and Animal Husbandry & Dairying. Out of eight offered disciplines of postgraduate degree programmes, M.Sc. (Ag.) previous and final year students of five disciplines i.e., Agricultural Extension, Agronomy, Horticulture, Agricultural Economics and Agricultural Zoology & Entomology were selected randomly. Thereafter, lists of students of each selected discipline were prepared separately. Finally, 75 per cent students from each list were selected at random making the total size of student sample 135. Age, income, education, socio-economic status, media exposure, academic contact, library utilization and teaching experience were independent and attitude were dependent variables under the study. ACT Attitude

Scale developed on the basis of (Lickert, 1932) technique was used for collecting the data. For statistical analysis, percentage, standard deviation, correlation coefficient and 't' test were used.

Results and Discussion

Introduction of ACT and their Identification

For identification of the constraints of ACT introduction in higher agricultural education, collected data were analyzed and by using percentage, results were reckoned. As per the objective selected for the study, the extent and type of constraints which may come in the introduction of ACT as perceived by the respondents were enumerated. For this purpose, a questionnaire was prepared consisting of 20 statements related to probable constraints and the respondents were asked to give positive or negative response to each statement. Thereafter, percentage of respondents giving affirmative answers was calculated on the basis of total responses. Then, ranks were assigned to each constraint on the basis of percentage. A list of all the 20 probable constraints has

been given in the Table-1.

Constraints as perceived by respondents:

The Table-2 reveals that constraint No. 1 i.e., "Practical and field work cannot be explained through audio cassettes" was ranked first (93.33%) by the teachers and 97.04 per cent of student respondents ranked first to the constraint (No. 20) i.e., "it will be a costly affair in view of recurring cost of battery." It is fact that the practical where demonstration and practice are needed, ACT will not be appropriate and it is also fact that recurring cost of battery will be extra burden with books also, however, effective and interesting presentation of contents through audio cassettes, this barrier can be overcome. The 15th constraint i.e., "it will not stimulate thinking" ranked last as 30.00 per cent of teachers and 22.96 per cent of students agreed with this constraint. However, any content of teaching material is always released when its presentation is interesting, effective and purposeful. The apprehension of this constraint may out rightly rejected as ACT is being used under distance learning programme already by the number of universities.

The first constraint i.e., "Practical and field works cannot be explained through audio cassette" was agreed by 93.33 per cent teachers and 90.37 per cent students. It is fact that for practical and field oriented aspects, the students are required to have practice and experience, where the steps and explanation of practical and field aspects can be put in audio cassettes which will certainly help to the students to be on the tract for right approach. Moreover, no practical and field work can be done without theoretical concepts, steps, methods etc. which will certainly be a part of classroom teaching for which audio cassettes can be prepared.

The second constraint i.e., "Agricultural courses cannot be taught through audio-cassette" was agreed by 43.33 per cent of teachers and 50.37 per cent of students. This is true for only a few course contents where real objects or specimens are necessary. As we have observed that audio-cassette can be effectively prepared on 83.92 per cent topics for teaching post-graduate courses hence, teaching through audio-cassettes is not a difficult task. Besides, effective treatment and format of presentation in audio-cassettes can create real field situation.

The constraint No. 3 (We are so much dependent on books and literatures that it is very difficult to introduce audio cassette technology) was ranked 15th by the teachers and 14th by the students, respectively. It can be concluded from such result that it is not a constraint, but a type of habit and hence, after repeated use of audio cassettes in teaching and learning, a habit of utiliz-

ing the course based audio cassette will be common among the students and teachers.

The fourth constraint i.e. "Preparing relevant and interesting course contents for audio-cassette is a very difficult task" ranked 11th and 13th in case of teachers and students, respectively as 60.00 per cent teachers and 62.96 per cent students agreed to this. While analyzing the fifth constraint, it was ranked 10th and 12th in case of teachers and students, respectively as 63.33 per cent of teachers and 68.89 per cent of students agreed. As justification, we can say that the government provides subsidy on educational papers and books, likewise the educational audio-cassettes may be available to the students on subsidized rates. Moreover, bulk production of audio cassettes would be relatively cheaper than books or printed matters.

The sixth constraints i.e., "It cannot be introduced due to a lot of technical difficulties" was agreed by 36.67 per cent teachers and 43.70 per cent students. Thus, it is evident from the result that it is not a major constraint because recording and playing of audio-cassettes and handling of its equipment is very simple. Moreover, the production will certainly be cared by the experts and technical staff.

The seventh constraint i.e., "It will be difficult to make such cassettes easily available" ranked 5th and 8th among the teachers and students respectively and 80.00 per cent teachers and 77.04 per cent students had agreed with this statement. In the beginning, availability of such cassettes might be difficult but after constant use in teaching and learning, the demand will increase and increased demand of such cassettes would insist the producers for supplying the same in due course of time as the books are available in the market.

The eighth constraint was ranked 5th and 9th by the teachers and students respectively. This is true that there is limited choice in case of educational audio cassettes, but when use of audio-cassettes will be common among the students and teachers, the availability of desired cassettes may not be a constraint. Similarly, the ninth constraint was ranked 7th and 2nd by the teachers and students respectively and 73.33 per cent teachers and 91.11 per cent students were agreed with this.

The tenth constraint (It will change our teaching system) was agreed by 70.00 per cent of teachers and 82.22 per cent of students. We can say regarding such result that the change is a gradual phenomenon and desirable change is necessary for the present educational system and needs, therefore, it is not a constraint at all. In the similar fashion, the eleventh constraint i.e., "It will change the life style of students" was agreed by 56.67 per cent teachers and 83.70 per cent students. It

Table-2 : Perceived constraints and their ranking.

Constraint No.	Teachers (n = 30)		Students (n = 135)	
	Frequency	Rank	Frequency	Rank
C-1	28 (93.33)	I	122 (90.37)	III
C-2	13 (43.33)	XIV	68 (50.37)	XV
C-3	12 (40.00)	XV	72 (53.33)	XIV
C-4	18 (60.00)	XI	85 (62.96)	XIII
C-5	19 (63.33)	X	93 (68.89)	XII
C-6	11 (36.67)	XVI	59 (43.70)	XVI
C-7	24 (80.00)	V	104 (77.04)	VIII
C-8	24 (80.00)	V	101 (74.81)	IX
C-9	22 (73.33)	VII	123 (91.11)	II
C-10	21 (70.00)	VIII	111 (82.22)	VI
C-11	17 (56.67)	XII	113 (83.70)	V
C-12	11 (36.67)	XVI	41 (30.37)	XVIII
C-13	23 (76.67)	VI	99 (73.33)	X
C-14	25 (83.33)	IV	118 (87.41)	IV
C-15	09 (30.00)	XVII	31 (22.96)	XIX
C-16	27 (90.00)	II	96 (71.11)	XI
C-17	12 (40.00)	XV	48 (35.56)	XVII
C-18	14 (46.67)	XIII	59 (43.70)	XVI
C-19	20 (66.00)	IX	106 (78.52)	VII
C-20	26 (86.67)	III	131 (97.04)	I

Figures in the parentheses indicate percentage

can be said that ACT is nothing to do with life style of students. It will simply motivate attentive listening habit of students and hence it may not be a constraint at all. Moreover, the use of audio cassettes for entertainment is the part of life of people today.

The twelfth constraint i.e. “it will create noise pollution” was agreed by only 36.67 per cent and 30.37 per cent teacher and student respondents, respectively. The constraint was ranked 16th and 18th, respectively. The thirteenth constraint was endorsed by 76.67 per cent of teachers and 73.33 per cent of students. To support the findings, it can be said that in most of the agricultural institutions attendance is compulsory and the purpose of ACT is not to replace the teachers but to supplement agricultural teaching as the books are available, therefore, it may not be a constraint (Hillison, 1987).

The fourteenth constraint was ranked 4th by both groups of respondents which was agreed by 83.33 per cent of teachers and 87.41 per cent of students. It might be because in books, we simply see the written contents

but in audio cassettes, checking the contents would also give the idea about tone, stress and style of presentation of the contents in the audio-cassettes. Moreover, time is not a limiting factor in this case.

In case of fifteenth constraint, it was ranked 17th and 19th by 30.00 per cent teachers and 22.96 per cent student – respondents who had agreed with it. Several studies have proved that retention through listening is more than simply reading, and also listening would quickly stimulate thinking regarding contents of the audio cassette. This finding is partially supported by Kumar *et al.* (2011).

The sixteenth constraint i.e., “personal appearance is absent in audio cassette in comparison to lecture or video” was ranked 2nd and 11th by 90.00 per cent teachers and 71.11 per cent student – respondents, respectively. It is true but ACT will substantiate in learning process like books and liked materials. However ACT never advocates the replacement of teachers. Regarding seventeenth constraint which was ranked 15th and 17th

by the teachers and students, respectively as 40.00 per cent teachers and 35.56 per cent students, it can be said that ACT has switch off and review facilities and hence, this constraint would not arise and its repetition would make retention more perfect (Gove, 1981).

The eighteenth constraint i.e., "Availability of audio-cassette will create problem in controlling examination" was agreed by 46.67 per cent teachers and 43.70 per cent students. But, in case of the nineteenth constraint i.e., "Audio-cassette library is required for its introduction in higher agricultural education" 66.00 per cent teachers and 78.52 per cent student were agreed with it. About this result, we can say that it is true that student cannot purchase cassettes of all courses and hence the procurement of educational audio cassettes in audio cassette library is necessary for its introduction in higher agricultural education. In comparison to books, audio-cassettes require very limited space and is not damaged by the insects. As far as the constraint 20 is concerned, it was perceived affirmative by 86.67 per cent teacher and 97.04 per cent student respondents. Their reported ranks were 3rd and 1st, respectively. Undoubtedly, it is agreed that the ACT will add to expenses of students however, in view of number of advantages, ACT may be accepted (Love, 1978).

The Table-2 also highlights that 80.00 per cent of teachers had agreement with constraints number 7 and 8 where, these two constraints got equal rank. Similarly, the state of rank of constraints number 3 and 17; and 6 and 12 were also equally reported by 40.00 per cent and 36.67 per cent of teachers. In case of constraints experienced by the student respondents, the constraints number 6 and 8 were ranked 16th by 43.70 per cent of respondents. The rank correlation of the constraints was highly significant which refers that the level of perception regarding the constraints of ACT introduction were almost the same among the teachers and students (True, 1929; Stevens, 1967; Moore, 1988).

ACT can overcome all those limitations and barriers which radio has. Moreover, induction of ACT in educational system may bring exciting results from the pedagogical points of view in terms of knowledge, cog-

nitive aspects and retention rates. If, ACT is fully exploited for educational system in our country, it may fulfill all the challenges and demand of educational needs of ever growing population. It is evident from this study that the rank correlation of the constraints was highly significant which refers that the level of perception regarding the constraints of ACT introduction were almost the same among the teachers and students.

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