Constraints Experienced by Teachers in Utilization of Educational Technology:
A Study in State Agricultural University

Shantanu Rakshit[1] and Gyanendra Sharma[2]

ABSTRACT

The study was conducted in Govind Ballabh Pant University of Agriculture and Technology, Pantnagar. A comprehensive and detailed pre-tested questionnaire was used for collecting information. Fifty per cent of teachers from each college were selected randomly in sample. Total 120 completely answered questionnaires were received. The respondents were asked to express the constraints in the utilization of educational technologies. The mean score for a particular constraint was worked out by dividing the weighted score of the constraints by the total number of respondents. The ranking of constraints was done according to the mean score of each statement. Lack of technical support was perceived as most important constraint. Other important constraints were lack of maintenance of existing facilities; lack of funds; lack of supporting hardware and software; and lack of periodic reviews of the digital learning materials. Majority of the important constraints are related with infrastructure and administration.

Keyword: Educational technology, constraints, agricultural university

INTRODUCTION

The Indian System of higher agricultural education is facing today many challenges due to globalization and liberalization. The competition will essentially be for offering quality education recognized at the International level and relevant to the local needs. The major issue is how to raise the quality and standards of Indian agricultural education and make it globally competitive, locally relevant and enable it to offer marketing paradigm appropriate for developing societies. Increase the number of educational institute is not the answer of all challenges. Rather ensuring quality of education by providing necessary facilities and adopting modern educational technologies is more important for Indian higher agricultural education system.

At present India has one of the world's largest agricultural education system with sixty State Agricultural Universities (SAUs), one Central Agricultural University (CAU), five Deemed Universities (DUs) and four general Central Universities with Agriculture faculty. These institutions enroll on annual basis, about 15,000 students at UG level, over 7,000 students at PG and 1700 at PhD level. Now India has more than 30000 scientists in this field. Agricultural education has to keep pace with fast changing national and international scenario. In 2007 fourth Deans Committee revised UG course curricula and syllabi, norms, standards and academic regulation. In 2009 National Core Group revised PG (Master's and PhD) course curricula and syllabi and the common academic regulations.

The present situation demand integration of modern educational technology in higher agricultural education for better learning to facilitate and undertake human capacity building for developing self-motivated professionals and entrepreneurs in view of the changing scenario of globalization of education, emergence of new areas of specialization such as Intellectual Property Rights (IPRs), other International Trade related areas (ICAR Draft document of National Agricultural Education Project (NAEP), 2012). Most of the Indian colleges and universities lack in high-end research facilities. Under-investment in libraries, information technology, laboratories and classrooms makes it very difficult to provide quality instruction. This gap has to be bridged if we want to speed up our path to development (Singh, 2012).

Technology integration refers to possessing technology-skills and effectively using them for teaching. The ultimate aim of technology integration in education is to use the technology to lead to the diversification and achievement of curriculum objectives and engages students in meaningful construction of their knowledge bases (Singh, 2013). Technology integration is not a 'one size fits all' solution. Teachers need to know how and why to use technology in meaningful ways in the learning process for technology integration to work (Wepner *et al.*, 2006). Thus, the constraints experienced by the teachers

[1] Ph.D. Scholar in Division of Agricultural Extension. Indian Agricultural Research Institute.
[2] Professor, Department of Agricultural Communication. G.B. P. U. A. & T.

in utilization of educational technology need to be studied in depth.

METHODOLOGY

Govind Ballabh Pant University of Agriculture and Technology was selected as the locale of study. There are eight constituent colleges of the G B Pant University of Agriculture and Technology. Out of eight Colleges, seven colleges namely College of Agriculture, College of Veterinary and Animal Sciences, College of Home Science, College of Basic Sciences and Humanities, College of Technology, College of Fishery Sciences, College of Agri-Business Management, were selected. The faculty of Post-Graduate Studies consists of all faculties of these seven colleges.

Pre-tested questionnaire was used as a tool for data collection. 50 per cent of teachers from each college were selected randomly in sample by using random number table. Data were collected with the help of pre-tested questionnaire from February 2014 to March 2014. Soft copy of the questionnaire was e-mailed to the teacher respondents. Hard copy of the questionnaire was also provided. Total 120 teachers replied completely answered questionnaire. The respondents were asked to express the constraints in the utilization of educational technologies.

The scoring pattern followed was, 0 (none), 1 (mild), 2 (moderate), 3 (severe) and 4 (extreme). The total scores for each constraint was calculated with the help of the responses received from all 120 respondents. The mean score for a particular constraint was worked out by dividing the weighted score of the constraints by the total number of respondents. Then, the ranking of constraints was done according to the mean score of each statement.

RESULTS AND DISCUSSION

Constraints in the utilization of educational technology were found to be related to: Infrastructure, teachers, administrative, students and institutional culture.

Infrastructure related constraints:

Good infrastructure is an essential ingredient for technology integration. Directly or indirectly, it helps teachers to integrate educational technology in different activities. Infrastructural constraints in integration of educational technology as perceived by teachers have been presented in the Table 1.

Table 1: Infrastructural constraints in integration of educational technology

n=120

Constraints	Mean. Score	Rank
Lack of technical support and advice	2.78	I
Lack of maintenance for the upkeep of instructional technologies	2.69	II
Lack of supporting hardware and software	2.63	III
Lack of training in handling latest technology	2.38	IV
Lack of accessibility to the internet	1.92	V

'Lack of technical support and advice' (mean score 2.78) was ranked I followed by 'lack of maintenance for the upkeep of instructional technologies' (mean score 2.69) was ranked II, 'lack of supporting hardware and software' (mean score 2.63) was ranked III, 'lack of training in handling latest technology' (mean score 2.38), was ranked IV, and 'lack of accessibility to the internet' (mean score 1.92) was ranked V.

Teacher related constraints:

Teacher is responsible for arranging situation in which the effective learning takes place. Teacher brings attention of the learners, develops their interest and promotes action. Gap in teachers' knowledge, skill, attitude, action and management capacity may hinder integration of educational technology in classroom. The teacher related constraints in integration of educational technology as perceived by teachers have been presented in the Table 2.

Table 2: Teacher related constraints in integration of educational technology

n=120

Constraints	Mean. Score	Rank
Lack of knowledge in instructional technology	2.14	I
Lack of understanding related to technology integration	2.08	II
Inadequate knowledge of technology-supported pedagogy	2.07	III
Lack of strategy on technology use in classroom instruction	2.06	IV
Reluctance to use technology	1.89	V
Lack of time in preparation and use of technology based instruction	1.86	VI
Lack of free time for teachers' to learn the use of modern technologies for instruction	1.81	VI
Lack of initiative for technology use due to cumbersome procedure	1.60	VII
Difficulties in classroom management in technology-supported instruction	1.54	IX
Lack of interest to use technology for instruction purpose	1.4	X
Fear of using new technology	0.90	XI

'Lack of knowledge in instructional technology' (mean score 2.14) was ranked I followed by 'Lack of understanding related to technology integration' (mean score 2.08) was ranked II, 'Inadequate knowledge of technology-supported pedagogy' (mean score 2.07) was ranked III, 'Lack of strategy on

technology use in classroom instruction' (mean score 2.06), was ranked IV, and 'Reluctance to use technology' (mean score 1.89) was ranked V. Other teacher related constraints were 'Lack of time in preparation and use of technology based instruction', 'Lack of free time for teachers' to learn the use of modern technologies for instruction', 'Lack of initiative for technology use due to cumbersome procedure', 'Difficulties in classroom management in technology-supported instruction', 'Lack of interest to use technology for instruction purpose' and 'Fear of using new technology'.

Administrative constraints

Gullick (1935) recognized eight important roles of administrators i.e. planning, organizing, staffing, directing, coordinating, reporting and budgeting. Actions of all stake holders of the university are highly influenced by the outlook of the administration of that university. The administrative constraints in integration of educational technology as perceived by teachers have been presented in the Table 3.

Table 3: Administrative constraints in integration of educational technology

n=120

Constraints	Mean. Score	Rank
Lack of funds to procure modern computer technology	2.67	I
Lack of a policy framework to enhance instructional skills of teachers	2.45	II
Lack of incentives to the teachers to improve their technology related skills	2.23	III
Lack of support from higher authorities with regard to technology use in classrooms	1.85	IV

'Lack of funds to procure modern computer technology' (mean score 2.67) was ranked I followed by 'Lack of a policy framework to enhance instructional skills of teachers' (mean score 2.45) was ranked II, 'Lack of incentives to the teachers to improve their technology related skills' (mean score) was ranked III, and 'Lack of support from higher authorities with regard to technology use in classrooms' (mean score1.85), was ranked IV.

Student related constraints

Student is an important constituent of an effective learning situation. The student related constraints in integration of educational technology as perceived by teachers have been presented in Table 4.

Table 4: Student related constraints in integration of educational technology

n=120

Constraints	Mean. Score	Rank
Inaccessibility of media to students	2.12	I
Economic burden to the students to acquire proper supporting technologies	1.98	II
Limited familiarity with technology among students	1.66	III
Inability to acquire technical skills in technology integration	1.65	IV
Lack of interest to learn technology assisted learning skills	1.48	V

'Inaccessibility of media to students' (mean score 2.12) was ranked I followed by 'Economic burden to the students to acquire proper supporting technologies' (mean score 1.98) was ranked II, 'Limited familiarity with technology among students' (mean score 1.66) was ranked III, 'Inability to acquire technical skills in technology integration' (mean score1.65), was ranked IV, and 'Lack of interest to learn technology assisted learning skills' (mean score 1.48) was ranked V.

Institutional culture related constraints: Institutional culture is the general pattern of behaviour, shared beliefs, and values that institution's member have in common. The institutional culture related constraints in integration of educational technology as perceived by teachers have been presented in the Table 5.

Table 5: Institutional culture related constraints in integration of educational technology

n=120

Constraints	Mean. Score	Rank
No periodic reviews of the digital learning materials	2.62	I
Little teacher involvement in the decision about procurement of technology	2.22	II
Inflexible learning scheduling	1.93	III
Negative views towards digitized era	1.78	IV
Educational goal do not match with technology integration	1.34	V
Experiments with new instructional technologies are discouraged	1.26	VI

'No periodic reviews of the digital learning materials' (mean score 2.62) was ranked I followed by 'Little teacher involvement in the decision about procurement of technology' (mean score 2.22) was ranked II, 'Inflexible learning scheduling' (mean score 1.93) was ranked III, 'Negative views towards digitized era' (mean score 1.78), was ranked IV, 'Educational goal do not match with technology integration' (mean score 1.34) was ranked V, and 'Experiments with new instructional technologies are discouraged' (mean score 1.26) was ranked VI.

Other perceived constraints in integration of educational technology in classroom instructions are lack

of awareness about different software being used for instructional purpose, over burdened in UG, PG classes due to shortage of teachers, and traditional mindset within the administrator as well as faculty members.

CONCLUSION

By analyzing the above stated constraints in using educational technology it can be concluded that lack of technical support was perceived as most important constraint. Other important constraints were lack of maintenance of existing facilities; Lack of funds; lack of supporting hardware and software; and lack of periodic reviews of the digital learning materials. Majority of the important constraints are related with infrastructure and administration. An efficient technical support system, sufficient amount of funds allocation, collection of digital learning material, regular training, and more teacher involvement in the decision making can help to overcome the constraints.

REFERENCES

Gulick, S. 1915. The fight for peace. New York: Fleming H. Revell Company.

Indian Council of Agricultural Research (ICAR). 2006. Report of Fourth Deans Committee on Agricultural Education in India. New Delhi. p103.

Indian Council of Agricultural Research (ICAR). 2012. Detailed Project Report of the National Agricultural Education Project (NAEP) Indian Council of Agricultural Research. Department of Agricultural Research & Education. New Delhi. p2-7.

Singh, J.D. 2012. Higher Education in India Issues, Challenges and Suggestions. Cited in http://www.gvctesangaria.org/websiteimg/publications/jdarticle.pdf on 24th April, 2014.

Singh, U. 2013. Factors relating to technology integration in education by the pre-service and the in-service teachers. IOSR Journal of Humanities and Social Science, 11(3), 3-12.

Wepner, S., Tao, L. and Ziomek, N. 2006. Broadening our view about technology integration: Three literacy educators' perspectives. Reading Horizons. 46(3), 215-237.