

STRENGTHS, OPPURTUNITIES, WEAKNESSES AND CHALLENGES OF ONLINE LEARNING IN AGRICULTURE

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ABSTRACT

COVID-19 has jeopardized the academic calendars of majority of the educational institutes across the world. Distance Education and online learning platforms have become a potential solution for education post pandemic situation despite many technical constraints. However, the questions about effectiveness of e-learning, especially for Agricultural courses is not defined. In this study, we focus on studying the SWOC (Strengths, opportunities, weaknesses and challenges) of online learning by students enrolled in Agricultural certificate courses offered by ODLC (Open and Distance Learning centre), ANGRAU (Acharya N.G. Ranga Agricultural University) in the year 2021-22. The present study is conducted through an online survey of 300 randomly selected students of the five online certificate courses - Organic Farming, Bee Keeping, Mushroom Cultivation, Millets Production and Processing and Terrace Gardening in telugu offered by ANGRAU in 2021-22 which would be helpful in designing a more effective online learning environment for Agricultural courses. The results indicated that majority of the participants preferred online classes during the pandemic. The respondents who have completed the courses perceived high level of effectiveness (49.50 percent) about the two distance learning courses while 37.00 percent expressed medium level of effectiveness and a meagre 13.50 percent perceived the courses to be less effective. The SWAC analysis of the responses revealed that the major strength in online learning was the provision of session recordings for retention of learning followed by Location flexibility and Time flexibility. The major weakness perceived were Technical difficulties due to lack of power or poor internet connection followed by other network distractions and Online sessions unsuitable for practical learning. Opportunities felt were Reinforced learning with Recordings/PPTs followed by pursuit of interests outside one's profession and Age is not a barrier for online learning. The major challenge expressed by the students was the Teacher-Student ratio. The findings of this study provide insights to academicians to redesign the courses in a hybrid mode complementing theory and practical sessions without shifting completely to online education as more number are interested to enroll for online classes rather than contact classes.

Keywords: distance learning, online education, certificate courses, effectiveness, hybrid mode

INTRODUCTION

Distance Education is cost effective, learner centric medium of education and provides with the benefits of reaching large-scale economy. Learning through distance mode has widened the scope and reach of education to institutions imparting education in various spheres. Government of India is also promoting distance learning by establishing open universities across the country with the objective to make education open and accessible to all. At present more than 220 universities/institutions, 15 Open Universities and some private institutions recognized by UGC are offering correspondence/open and distance courses in the country (Vinaya *et al.*, 2013; Ashok, 2015).

Acharya N.G. Ranga Agricultural University one

such Universities of the country in imparting Agricultural education is expanding its wings to extend agricultural education beyond class rooms. The Centre of Open and Distance Learning (ODLC) was established in 2018 as a cost effective and learner oriented medium for imparting agricultural education to large number of aspirants throughout the globe. The major aim of ODLC is to hone entrepreneurial skills for self-employment and income generation by extending its technologies to large numbers in the state.

The present study was conducted through an online survey of 400 randomly selected participants of the four online certificate courses - Organic Farming, Bee Keeping, Mushroom Cultivation and Terrace Gardening in telugu offered by ANGRAU in 2021-22 which would be helpful

in designing an effective online learning environment. The study explores the effectiveness of online learning in Agriculture, perception and preferences of participants for various attributes of online classes such as Course content, Course duration, Resource person expertise, Interaction and Discussion, Communication pattern, Exposure visits / Practicals, New learnings gained and Connectivity.

OBJECTIVES

- (1) To study the effectiveness of online agricultural certificate courses
- (2) To study the SWOC (Strengths, opportunities, weaknesses and challenges) of online learning by students of Agricultural certificate courses

METHODOLOGY

The study adopted Ex-post facto research design (as followed by Jagadeeswari *et al.*, 2019). The study was conducted in Andhra Pradesh with a total number of 300 randomly selected respondents who completed the online certificate courses offered in the year 2021-22. A pre-tested Google form was used to collect data from the respondents through existing Whatsapp groups. Eight parameters of online education such as Course content, Resource person expertise, Duration of course, Communication pattern, Exposure visits / Practicals, new learnings gained and Connectivity were studied to measure the Course effectiveness.

The effectiveness of the courses was measured using Likert scale of summated rating for 8 selected parameters. A total of 45 statements regarding 8 parameters were selected with the scale of 5: Strongly Agree to 1: Strongly Disagree regarding each of the courses separately. These were presented to the respondents with 5 possible answers for each statement scored on a continuum 5 to 1. Based on the total score obtained by the respondents on the 8 parameters of effectiveness, the effectiveness Index was measured by using the following formula.

$$\text{Effectiveness Index (EI)} = \frac{\text{Total Scores obtained}}{\text{Obtainable scores}} \times 100$$

Based on the Effectiveness index scores of the participants, they were further categorized into Less Effective, Moderately Effective, Highly Effective based on mean and standard deviation.

Further, SWOC analysis of online learning using google forms was conducted to understand the perception of the learners regarding the strengths, weaknesses, opportunities and challenges. The google form contained statements related to SWOC of online learning was administered and

the responses were sought on a 5 point continuum a Strongly agree (SA), Agree (A), Undecided (UN), Disagree (DA) and Strongly Disagree (SDA) with respective scores of 5,4,3,2,1. The data were analysed using statistical tools like frequency, percentage, mean score and ranks.

RESULTS AND DISCUSSION

Perceived effectiveness

The Perceived Effectiveness of the courses was assessed on the basis of 8 parameters such as Course content, Resource person expertise, Duration of course, Communication received, Interaction and Discussion, Exposure visits / Practicals, New learnings gained and Connectivity. The results revealed that out of the 8 parameters listed, the respondents scored well on Effectiveness index for parameters in the order- Resource person expertise (EI=92), Course duration (EI=87), New learnings gained(EI=82), Course content (EI=80),Connectivity (EI=76) and Communication pattern(EI=72) . The EI scores were found comparatively less for the parameters Exposure visits (EI=58), and Interaction and discussion (EI=29). The results are in congruence with Filiz and Musthafa (2012).

The findings thus indicated that the course was developed based on the needs and interests of the aspirants, yet more emphasis on skill-oriented aspects that can provide hands on experience and exposure visits to inculcate skills in the respondents to make learning more effective. Also, as majority expressed the need for more interaction and discussion, due to participation in large numbers in most of the courses, interaction was limited to chats and discussion forums rather than face to face talks.

Effectiveness index of distance learning courses

The effectiveness of the courses on selected parameters was scored and Effectiveness index was tabulated.

Table 1 indicated that the perceived effectiveness was highest in case of Resource faculty expertise (EI = 92) with mean score 4.40 because experts working in the specific in the University, experienced farmers, terrace garden consultants, Organic Certification experts, Organic input dealers, Entrepreneurs have been identified as resource persons. This was followed by Course duration (EI = 87) with mean score 4.10, New learnings gained (EI = 82) with mean score 3.90, Course content (EI = 80) with mean score 3.89, Connectivity (EI = 76) with mean score 3.69 and Communication pattern (EI = 72) with mean score 3.50 (Purnima *et al.*,2020).

Table 1 : Rank order of the parameters of perceived effectiveness of the respondents

(n=300)

Sr. No.	Parameter	Effectiveness index	Mean	Rank order
1	Course content	80	3.89	3
2	Course Duration	87	4.10	2
3	Resource faculty expertise	92	4.40	1
4	Interaction and discussion	29	1.44	8
5	Communication pattern	72	3.50	5
6	Exposure visits / Practicals	58	2.88	7
7	New Learnings gained	82	3.90	4
8	Connectivity	76	3.69	6

The results depict that majority of the respondents were satisfied with all the parameters of the courses. This was because of the planned design and execution of the course covering all fundamentals. The Distance learning centre is in continuous communication with its participants regarding minute details of course till issue of certificates to eligible candidates. Post course follow up is also being taken up.

The Effectiveness score was comparatively less for two parameters i.e., Exposure visits/Practicals (EI = 58) with mean score 2.88 and Interaction and discussion (EI = 29) with mean score 1.44. (Nguyen, 2015). Though exposure visits to model units, established farms, Demonstrations, FPOs, and farmer interactions are organized virtually in the courses,

most of the participants are seeking personal interaction and hands on experience for skill upgradation for establishing small scale units. This could be considered while conducting skill-oriented courses in future with online theory classes and a few practical hands-on sessions at study centres.

SWOC of online learning by the students

The Strengths, Weaknesses, Opportunities and Challenges of online learning were studied using indicators rated on a five-point continuum as shown in table 2. Mean value of each indicator was used to rank them wrt to the perceived effectiveness of online classes in comparison with classroom teaching.

Table 2: SWOC of online learning by Students of certificate courses

(n=300)

Item	Indicators	Continuum					Mean	Rank
		SA f (%)	A f (%)	UN f (%)	D f (%)	SD f (%)		
Strengths								
1	Time flexibility	180 (60)	50 (17)	0 (0.00)	60 (20)	10 (3)	3.50	III
2	Location flexibility	250 (83)	30 (10)	0 (0.00)	10 (13)	10 (3)	3.75	II
3	Curriculum flexibility	190 (63)	70 (23)	0 (0.00)	25 (8)	15 (5)	2.10	VI
4	Catering to wider audience	150 (50)	100 (33)	10 (3)	40 (13)	0 (0.00)	2.80	IV
5	Wide availability of courses	170 (57)	30 (10)	5 (2)	60 (20)	35 (12)	1.75	VIII
6	Immediate feedback	150 (50)	50 (17)	0 (0.00)	70 (23)	30 (10)	1.90	VII

Item	Indicators	Continuum					Mean	Rank
		SA f (%)	A f (%)	UN f (%)	D f (%)	SD f (%)		
7	Course material is provided well in advance	150 (50)	70 (23)	0 (0.00)	50 (17)	30 (10)	2.10	VI
8	Retention of learning as recordings are provided	240 (80)	45 (15)	10 (3)	5 (2)	0 (0.00)	4.50	I
9	No distractions among students	150 (50)	80 (27)	20 (7)	30 (10)	20 (7)	2.50	V
10	Cost effective	180 (60)	80 (27)	10 (3)	15 (5)	15 (5)	1.40	IX
Weaknesses								
1	Technical difficulties (Power/internet)	190 (63)	50 (17)	0 (0.00)	35 (12)	25 (8)	4.20	I
2	Reduced learner's confidence level	60 (20)	40 (13)	20 (7)	100 (33)	80 (27)	2.90	VI
3	Time management	180 (60)	90 (30)	0 (0.00)	25 (8)	5 (2)	3.80	III
4	Network distractions	140 (47)	75 (25)	0 (0.00)	45 (15)	40 (13)	4.00	II
5	Anxiety and confusion	90 (30)	120 (37)	5 (2)	70 (23)	15 (5)	2.80	VII
6	Lack of personal and physical attention	240 (80)	30 (10)	0 (0.00)	20 (7)	10 (3)	3.00	V
7	Limited social interaction	190 (63)	60 (20)	0 (0.00)	40 (13)	10 (3)	3.00	V
8	Unsuitable for skill teaching/Practical learning	225 (75)	45 (15)	0 (0.00)	20 (7)	10 (3)	4.00	II
9	Less monitoring by teachers	260 (87)	40 (13)	0 (0.00)	0 (0.00)	0 (0.00)	2.80	VII
10	Chaos with large groups	205 (68)	65 (18)	0 (0.00)	15 (5)	15 (5)	3.55	IV
11	Lack of transparency in evaluation	130 (43)	60 (20)	30 (10)	30 (15)	50 (17)	3.55	IV
12	Limited feed back	150 (50)	80 (27)	20 (7)	30 (10)	20 (7)	1.90	VIII
Oppurtunities								
1	Scope for innovation	90 (30)	80 (27)	35 (12)	45 (15)	50 (17)	2.50	VIII
2	Scope for upgrading digital skills	210 (70)	70 (23)	0 (0.00)	15 (5)	05 (2)	3.20	VI
3	Problem solving and critical thinking	140 (47)	40 (13)	0 (0.00)	70 (23)	50 (17)	3.00	VII
4	Age is not a barrier	250 (83)	30 (10)	0 (0.00)	10 (3)	10 (3)	4.00	III
5	Pursue interests outside profession	130 (43)	100 (33)	0 (0.00)	40 (13)	30 (10)	4.20	II
6	Reinforcing learning through recordings/PPTs	250 (83)	50 (17)	0 (0.00)	0 (0.00)	0 (0.00)	4.40	I

Item	Indicators	Continuum					Mean	Rank
		SA f (%)	A f (%)	UN f (%)	D f (%)	SD f (%)		
7	Suitable during unforeseen situations like pandemics	260 (87)	40 (13)	0 (0.00)	0 (0.00)	0 (0.00)	3.80	IV
8	Immediate analysis and database management	220 (73)	80 (27)	0 (0.00)	0 (0.00)	0 (0.00)	3.50	V
Challenges								
1	Poor ICT Infrastructure	170 (57)	120 (40)	10 (3)	0 (0.00)	0 (0.00)	3.80	II
2	Quality of education reduced	70 (23)	60 (20)	30 (10)	90 (30)	50 (17)	3.20	V
3	Digital illiteracy in India	200 (67)	80 (27)	10 (3)	10 (3)	0 (0.00)	3.50	III
4	Consumes more resources	85 (28.5)	70 (24)	0 (0.00)	120 (40.00)	25 (8.5)	2.60	VII
5	Technology cost	150 (50)	120 (40)	10 (3)	15 (5)	5 (2)	3.00	VI
6	Teacher-student ratio	120 (40)	80 (27)	20 (7)	60 (20)	20 (7)	4.00	I
7	Extra- curricular activities hindered	180 (60)	50 (17)	10 (3)	50 (17)	10 (3)	3.80	II
8	Risk of cyber crime	160 (53)	80 (27)	10 (3)	30 (10)	20 (7)	3.40	IV
9	May effect health and social life	120 (40)	70 (23)	20 (7)	50 (17)	40 (13)	3.50	III

Results in Table 2 depict the strengths of online learning as perceived by the students after attending online classes. Most of the students ranked the major strength of online learning as Recordings/PPTs/Study material provided after sessions with a mean score of 4.50 followed by Location flexibility (Mean=3.75 ;Rank 2) and Time flexibility (Mean=3..50 ;Rank 3) . Majority of them being employed, self employed or Home makers expressed that due to the above reasons, online learning in Agriculture has become an attraction for them. Other strengths perceived were Catering to wider audience(Mean=3.50 ;Rank 3), No distractions among students(Mean=3..50 ;Rank 3), Curriculum flexibility(Mean=3..50 ;Rank 3), Study material provided in advance(Mean=3..50 ;Rank 3),Immediate feed back(Mean=3..50 ;Rank 3),wide availability of courses(Mean=3..50 ;Rank 3) and Cost effective(Mean=3..50 ;Rank 3).(Muthuprasad *et al*,2019).

Table 2 throws light on the weaknesses of online learning as perceived by the students. Most of the students felt that the major draw back was Technical difficulties due to lack of power or poor internet connection (Mean=4.20, Rank 1) followed by other network distractions (Mean=4.0 Rank 2) and unsuitable for practical learning (Mean= 4.0 Rank 2). As most of the students are located in remote locations of the state, power and network distractions were common. Most of the courses involved skill and hands on learning by the

students, most of them felt that this could not be achieved through online medium. Other weaknesses expressed were Time management (Mean=3.8 Rank 3) especially by students and working lot who could not attend live sessions; Chaos with large groups(Mean= 3.55,Rank 4), Lack of transparency in evaluation(Mean= 3.55,Rank 4),Lack of personal attention(Mean=3.0,Rank 5),Limited social interaction(Mean=3.0,Rank 5),Reduced learners confidence level(Mean= 2.90 Rank 6),Anxiety and confusion(Mean= 2.80 Rank 7,Less monitoring by teachers(Mean= 2.80 Rank 7) and Limited scope for feedback(Mean=1.90, Rank 8) (Neha and Chauhan,2020)

1-online is less effective; 2-online is somewhat less effective; 3-online is equally effective; 4-online is somewhat more effective; 5-online is much more effective

Regarding the opportunities in online learning, Reinforced learning with Recordings/PPTs(Mean= Rank 1) was perceived as the best opportunity for continuous learning followed by pursuit of interests outside one’s profession (Mean=4.20,Rank 2) and Age is not a barrier(Mean=4.00, Rank 3).Online learning medium caters to the needs and interests of wide range of audiences in varying age groups who are willing to take up the opportunities provided through the courses besides being in their own profession. As perceived by the students Online learning also provides

opportunities such as Suitable for unforeseen situations and pandemics (Mean=3.80, Rank 4), Immediate analysis and database management (Mean= 3.50 Rank 5), scope for upgrading digital skills (Mean= 3.20 , Rank 6) , Problem solving and critical thinking skills scope for upgrading digital skills (Mean= 3.00 , Rank 7) and Scope for Innovation scope (Mean= 2.50 , Rank 8). (Ritu *et al.*, 2020)

The major challenge expressed by the students was the Teacher-Student ratio (Mean= 4.00, Rank 1). In classroom teaching this challenge could be met as the Teacher caters to the requirement of limited number of each and every student. But in online teaching, this gap is felt. This was followed by Poor ICT infrastructure (Mean= 3.80, Rank 2), Extra-curricular activities hindered (Mean= 3.80, Rank 2) and Digital illiteracy in India (Mean= 3.50, Rank 3). In the remote areas especially, access to strong connectivity and continuous power supply is a challenge. Also, many felt that unlike in schools and colleges social life and Extra-curricular activities are hindered, Other challenges perceived were online learning may effect health and social life (Mean= 3.50, Rank 3), Risk of Cyber crime (Mean= 3.40, Rank 4), Quality of education (Mean= 3.20, Rank 5), Technology cost (Mean= 3.00, Rank 6) and Consumes more resources (Mean= 2.60, Rank 7)

The results imply that online learning especially post pandemic has both pros and cons. It is a new way of learning but not without limitations and challenges too. The need of the hour is to understand this new way of learning and teaching and to create maximum impact on the student capabilities.

CONCLUSION

The present study was an attempt to understand the perception of students about strengths, weaknesses, opportunities and threats of online teaching and learning. The results of this study are important for Agricultural educational institutions. Firstly, the shift to online mode was sudden due to the unprecedented lockdown imposed to manage Covid-19 and the preparedness of the institutions was less for online mode of education. In this context, the teaching learning experiences can be incorporated to make online education productive and effective. Secondly, educational institutions should be well prepared for future threats of such pandemics and adopt e-learning platforms in a hybrid mode of teaching and learning by modifying the course structure and content suitably.

The study revealed that majority of the respondents have a positive attitude towards online learning in the wake of Covid-19. The flexibility of online classes, Well-structured content with videos uploaded on different platforms made learning convenient and interesting. However, the technological constraints of online education such as power failure, internet connectivity and speed and delayed feedback are some of the factors that could not be ignored.

Therefore, all these factors considered while developing an online course while developing an online course to make it more convenient to the learner. In future, we may see a considerable jump in the usage of online platforms in a hybrid mode in combination with contact classes.

CONFLICT OF INTEREST

No conflict of interest among researchers.

REFERENCES

- Ashok.K.Gaba.,(2015) Growth and Development of Distance education in India and China: a study on policy perspectives. *Open Praxis. Vol 7 issue 4, October-December.*
- Filiz Angay Kutluk and Mustafa Gulmez (2012) A research about distance education students satisfaction with educational quality about accounting programme. *Procedia - Social and Behavioral Sciences 46 (2012) 2733 – 2737.*
- Jagadeeswari, B., Vinaya Kumar H. M., & Patel, J. B. (2019). Attitude of postgraduate students towards research, *Guj. J. Ext. Edu., 30(1), 87-89.*
- Muthuprasad.T.,Aiswarya.,S; Aditya K.S., Girish K. Jha (2020) Students' perception and preference for online education in India during Covid-19 pandemic. *Social Sciences & Humanities Open (2021)100101.*
- Nguyen, T. (2015). The effectiveness of online learning: Beyond no significant differences and future horizons. *MERLOT. Journal of online learning and teaching, 11(2);309-319*
- Neha Parikh and Chauhan, N. M. (2020) Constraints faced by Agricultural personnel in using e-Agricultural portal. *Guj. J. of Ext. Edu. 31(1):71-74.*
- Purnima, K.S.; Srinivas, T. and Lalitha, A. (2020). Perceived effectiveness of agricultural certificate courses through distance learning medium. *Indian Res.J.Ext. Edu., 20 (2&3) : 27-28. April and July,2020.*
- Ritu Mital Gupta and Preeti Sharma (2020). SWOT Analysis of Online Teaching during lock down: Blended Teaching the way forward. *Indian Journal of Extension Education., Vol.56, No.4 (October-December) 19-25*
- Vinaya Kumar H.M, Mahatab Ali, K.M and Sujay Kumar, S. (2013). Learning models for human resource development in Higher education institution. *International Journal of Advanced Biological Research. 3(1): 123-127.*