Sub theme: Opening up education

A2: Quality in agMOOCs

Alternative learning platforms for agri-students through e-Mediation: An initiative of agMOOCs

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Key words: Alternative learning platform, e-Mediation, agMOOCs, Knowledge, feedback

Abstract

Agricultural education in India is offered through a network of 75 State Agricultural Universities, five Deemed Universities, four Central Universities with faculty of Agriculture, three Central Agricultural Universities and few privately owned colleges of agriculture affiliated to traditional state universities. Each Agricultural University has a number of constituent colleges. However, paucity of quality faculty has remained an emerging issue. Specialization of the faculty also matters while imparting education. Providing quality inputs to the learners spread over large geographical area demands e-Mediation. One such platform was created by Commonwealth of Learning (COL) and Indian Institute of Technology, Kanpur entitled "agMOOCs" in 2015.The courses offered through the platform have attracted participants from every state of India and seven countries. The paper is a partial analysis of the efforts of agMOOCs in penetrating agricultural education system as an alternative platform for students of agriculture and allied sciences. More than two lakh learners have accessed courses so far. The feedback of learners is highly encouraging. So far the authors have offered three courses in agMOOCs platform during 2017 and 2018. The highest number of learners registered in a course was 4884. There is an increasing trend in number of registrations on the platform, which shows effectiveness of the courses and penetration among agricultural fraternity. Age of majority registered learners was up to 24 years (76 per cent). More than 65 per cent offered courses to enhance their knowledge. Home was the most preferred place of access (65 per cent). About 60 percent learners preferred the agMOOCs app to access course contents. Gender and preference of app are not independent of each other, Gender and age of participants are not independent, there was no association between range of learners and relevancy of quiz. There exists association between range of learners and pace of content delivery.

1.0 Introduction

Open learning is an opportunity to empower the population through education. As long as education is free from bindings, learning becomes more effective. For a section of the society it is an opportunity as well. Informal education is a lifelong process; open learning provides an opening for those who need formal type of education. Also, those undergoing formal education, open learning is an alternative platform to acquire knowledge and enhance skills. Learning is a never-ending process and such efforts add quality to the existing systems of education.

Agricultural education in India is offered through a network of 75 State Agricultural Universities, five Deemed Universities, four Central Universities with faculty of Agriculture,

three Central Agricultural Universities and few privately owned colleges of agriculture affiliated to traditional state universities. Each Agricultural University has a number of constituent colleges. However, paucity of faculty is a matter of concern and competent faculty has remained an emerging issue. In addition, specialization of the faculty also matters while imparting education. Providing quality inputs to the learners spread over large geographical area demands e-Mediation.

A number of efforts are being made to provide extension education and services to different target groups through e-Meidation, exploiting such platforms for education is still in experimental stage. Of late Ministry of Human Resource Development (MHRD) through its higher education unit, University Grants Commission launched Study Webs of Active Learning for Young Aspiring Minds (SWAYAM) platform and introduced various courses through MOOC. By the end of December 2018 more than 3.9 million learners were on roll in 1600+ MOOCs courses. As per UGC more than 60,000 learners have successfully completed the courses. UGC has provided the facility of Credit transfer up to 20% to the learners (http://pib.nic.in/newsite/PrintRelease.aspx?relid=186987). On the other hand these 1600+ courses do not include any course on agriculture and allied sciences. Nevertheless the modalities resemble distance mode of education. A study reported by Jirli et al. (2006) reveals that awareness regarding existence of platforms can create significant difference in attitude of learners.

To cater to the needs of students of agriculture and allied sciences, one such platform was created by Commonwealth of Learning (COL) and Indian Institute of Technology, Kanpur entitled "agMOOCs". Till date 14 courses were offered through the platform has attracted participants from every state of India and seven countries. Offering various new courses is still on. More than two lakh learners have accessed courses in the agMOOCs platform so far. The feedback of learners is highly encouraging. So far the authors have offered three courses in agMOOCs platform during 2017 and 2018. The highest number of learners registered in a course was 4884. There is an increasing trend in number of registrations on the platform, which shows effectiveness of the courses and penetration among agricultural fraternity.

The agMOOCs platform has excellent facility to monitor presence of learners on the platform and hence their attendance (presence on the platform) is being monitored as it happens in formal education. The only difference is attendances (activities on the platform) are according to your convenient time and place, which is not possible in formal education. As per monitoring mechanism if a learner is not active on the platform, still performs better in quiz, is not eligible for certificates. The basic idea is to involve the learners in educational activities as much as possible. A study conducted by Gašević, (2014) focused on student engagement and learning success, MOOC design and curriculum, self-regulated learning and social learning, and motivation, attitude and success criteria. What learners perceive about the current efforts become base for future efforts.

The registered learners were monitored through their presence on the platform. Their presence was determined through their login behavior; presence on the forum activities, downloading behavior of PPT, PDFs and Videos, viewing videos was also a criterion of attendance. Once the learners puts the video on has to view the video more than 80 per cent of time duration of video. Means if the video of 20 minutes should be viewed more than 16 minutes, then only learners is marked as 'present' on the platform. These innovative features adopted by agMOOCs motivated learners to stay on the platform, those who could not follow these standards were not awarded certificates (About 70 percent registered learners could not achieve certificates). Analysis

conducted by Veletsianos *et.al.* (2016) shows that there is inadequate investigation reported on instructor-related topics, and that even though researchers have made attempt to recognize and categorize learners into various groupings, very little research examines the experiences of learner subpopulations. The current effort is a step to bridge the gap. Efforts in this direction may in the long run be able to prove effective to develop more and more e-Mediated initiatives in agricultural education.

1.1 Attributes of agMOOCs platform

a. User friendly format
b. Simple registration process
c. Once registered, has access to all the courses offered
d. Registered learner can access contents in Video, Audio and PDF formats of all the courses on the platform
e. agMOOCs app made access more simple
f. Mechanism of monitoring attendance
g. Offline availability of contents
h. Introductory video on the home page of each course
i. Announcement section provides latest information about the course/s
j. Resources provides static as well as dynamic resources available on the course offered
k. Forum provides place to put your views and get answers to your doubts
l. Hangout provides an opportunity to chat with fellow learners

It becomes the responsibility of educational administrators to satisfy the needs and demands of learners. Nevertheless it should not be understood at any point of time that MOOC platforms are going to replace formal education system. These platforms are aimed at adding value to the existing formal mode of delivery. It is to quench the thirst of learners and to touch all possible nuances of spears of educational discipline. The initial response for agMOOCs initiatives is highly encouraging and will continue to provide such service in days to come.

Keeping the above cited issues in view a study was conducted with the objective to assess the learners perception and feedback about the courses offered on agMOOCs platform. The methodology adopted for the study is explained hereunder.

2.0 Methodology:

The platform of agMOOCs is offering courses on agriculture and allied sciences on regular basis since 2015. The authors have offered three courses on the platform. The feedback of learners plays an important role for improvement of academic performance of faculty members as well as for getting quality inputs for the learners. The purpose of study was to understand the perceptions and satisfaction level of learners about the courses. Also an effort was made to comprehend learners' needs and interests so that suitable modifications can be incorporated in due course of time. There was huge amount of heterogeneity among learners. When the learners are heterogeneous, as a teacher it becomes pivotal to figure out the requirements and concerns of learners so that necessary inputs can be incorporated in subsequent deliveries.

Of the 14 courses offered under agMOOCs platform, two courses viz., Fundamentals of Agricultural Extension and Integrated Disease Management were offered from 20 Feb 2018 to 31 May 2018, observed registration of 4884 learners across the country. The attendance of learners was monitored and of the registered learners 1098 completed the course successfully (23 per cent), 486 got "Excellency" and 612 got "Participation" certificates. The study adopted the

whole enumeration method. The survey was done among the registered learners of agMOOCs courses. Wherein every learner was given an opportunity to provide feedback. The inputs are valuable for the educators and policy makers. The data reveals that, of the 1098 active registered learners 952 learners (87 per cent) participated in the survey. The questionnaire was served to the registered learners on the agMOOCs platform only. They were given time of 15 days to record their responses. Every learner accessed the courses/s on the platform, providing response to its evaluation on the platform is most simple as well as responsible act of the learner.

The response received was put to analysis with the help of statistical tools *viz.*, frequency and percentages. To understand the association of selected variables like age, gender with their behavior of use of agMOOCs platform, use of agMOOCs app, perceptions regarding easiness of using app, pace of content delivery, knowledge of course instructor, relevancy of quiz, satisfaction with the content etc was measured with the help of Chi Square test (using SAS). The results are as under.

3.0 Results and Discussion

As the target group was highly focused group, the response of such elite respondents has numerous implications for the policy makers. An effort has been made to analyze the results and presented as under.

3.1 Means of awareness regarding agMOOCs courses

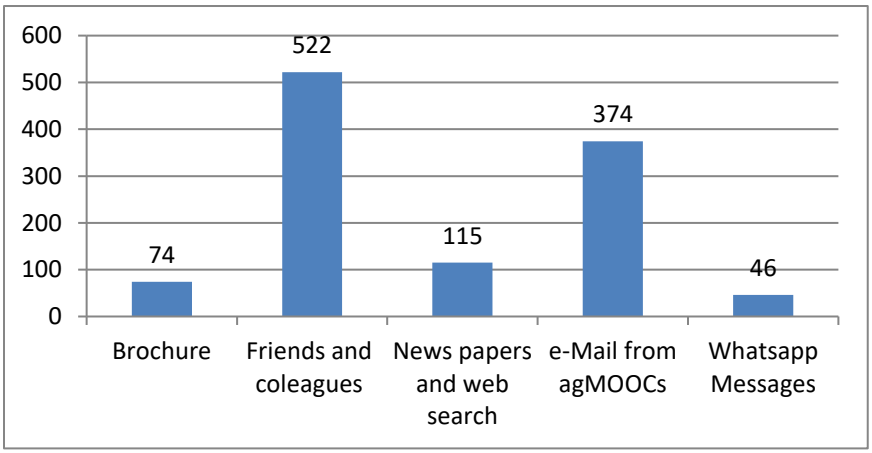

Fig-1. Distribution of learners based on means of awareness regarding agMOOCs courses

The information regarding course was disseminated with all possible means of communication. The results obtained from feedback of registered learners reveal that majority of learners (46%) obtained information from friends and colleagues. A number of extension studies follow the similar trend in dissemination of innovations. The mail from team agMOOCs was another important means which motivated many learners (33%). Students and professionals have the habit of going through e-mail on daily basis and hence there is good response with mail from host institution.

Another important issue is the host institution (Indian Institute of Technology-Kanpur, India) is a premier technological giant and people believe the things coming from such institution have quality. The traditional mass media (News paper) is relevant even today in the era of information communication revolution. The number of learners who got information from News Papers

about agMOOCs courses is comparatively less (10%) but seems to be significant. Since the News paper covered only the north Indian belt rest of the parts of the country were not covered through News paper.

An effort was made by team agMOOCs to intimate all State Agricultural Universities and Colleges through brochure, which informed about seven per cent of respondents. Social media played a role to inform about 2.5 per cent of respondents. May be the team had limited numbers of mobile numbers of respondents. Still considerable number of learners responded to the effort. Studies conducted by Mahara *et.al.* (2013), Aditya *et.al.* (2014),Ghatwal *et.al.* (2016), Ghatwal and Jirli (2016) revealed that students are the regular visitors of internet-based information sources, in addition to traditional sources of information.

3.2 Gender and participation in agMOOCs courses

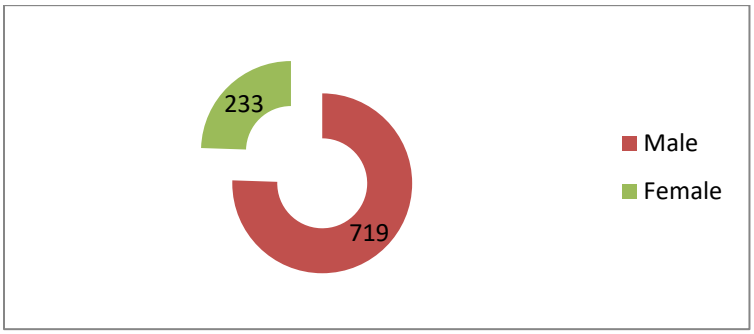

Fig-2 Distribution of learners based on gender

Information communication technologies said to be gender neutral. If we look at the number of female learners on agMOOCs platform, it does not seem to be. Female had an equal opportunity to participate in the event. Although their participation is less (25 per cent), but response from the female respondents was very encouraging. The data of Purdue College of Agriculture - Student Enrollment fall 2015 Semester at all levels reveals that there are about 55 per cent female in agricultural education (https://ag.purdue.edu/agricultures/Pages/Spring2016/02-Female-Students.aspx#.XSnCMj8zbcc) while in India the figure varies from 20-40 per cent compared to male students. In this context, the participation of women in agMOOCs is comparable. The crosstab of age and gender reveals the ground reality.

Table-1. Crosstab of age and gender participation in agMOOCs courses

Age Groups	Gender		Total
	Female	Male	
17 - 24	114	290	404
25 - 34	82	242	324
35 - 44	28	116	144
45 - 54	6	46	52
55 - 64	3	21	24
Above65	0	2	2
Below17	0	2	2
Total	233	719	952

It is evident from Table-1 that younger age female students are more active in agMOOCs platform than older age female. Traditionally agricultural education was dominated by male while in the last couple of decades the female participation is increasing which is evident from Table-1. Also women who were part of agricultural education way back more than three decades ago are less technology savvy and hence less participation is seen.

As on date any individual who is more than 30 years of age is considered as digital immigrant and less than 30 year individuals are digital natives (Prensky 2001). The data reveals that participation of digital natives is more than digital immigrants. Since enrollment of female in agricultural education is comparatively low compared to engineering and medical education, resultant less participation of female (in terms of numbers) is observed. It can be observed from the Table-1 that the in digital natives category about 40 per cent of learners are female and as the categories moves up in terms of age participation of female is reducing. It means shortly we are attaining the era of gender equality in agricultural education with special reference to e-Mediated efforts.

Table-2. Association between age and gender participation in agMOOCs

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.021[a]	6	.043
Likelihood Ratio	15.078	6	.020
N of Valid Cases	952		

a. 4 cells (28.6%) have expected count less than 5. The minimum expected count is .49.

An effort was made to establish association between age and gender participation in agMOOCs courses. It can be viewed fromTable-2 that 'p' value 0.043 reveals the association is significant, that age and gender participation are not independent of each other. Participation of younger was more than old in both male and female. While in case of female younger were more active than old.

3.3 Age group of registered learners of agMOOCs courses

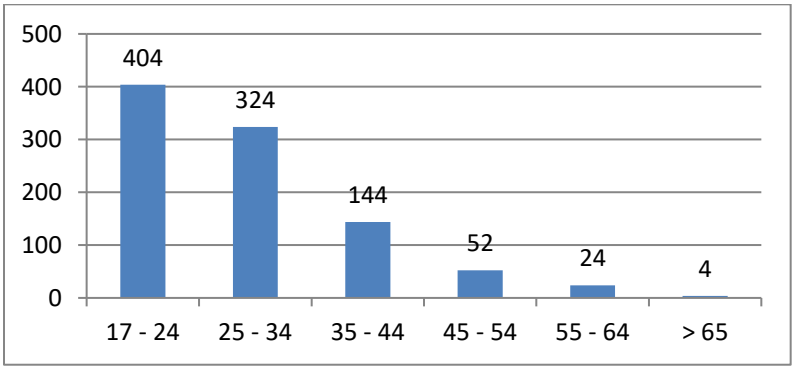

Fig-3 Distribution of learners based on their age group

Basically the course was meant for graduate students of State Agricultural Universities in India. The actual target group was 17-24, wherein 42 per cent learners were from the original target group, the rest categories indicate the quest for knowledge and interest of learners. About 34 per cent of respondents who belonged to 25-34 years of age must be pursuing Doctoral research or just joined for a job as Assistant Professor, Scientist in research institutions, etc. Interest of the second group in undergoing the course is really encouraging for the course administrators.

The course instructors had some pleasant surprises like senior educational administrators (all of them are retired from their active services)greeting as "I am your student". Even though the number is negligible (4), it is still encouraging. It is interesting to note that about 2.5 per cent of respondents (age group of 55-64) who are at the verge of retirement (24) actively participated in the course and obtained certificate. The general perception is that, this is the age to preach, but these respondents put themselves into learning environments and it is an ideal finding for the budding professionals to keep their learning motive evergreen.

The age group of 35-44 indicates that the professionals who are in service but searching for appropriate and timely information for enhancing his professional skills. They used the platform of agMOOCs very efficiently (15 per cent). The quest for learning becomes stagnant at the age of 45-54, while about six per cent of respondents showed their inquisitiveness for learning. Studies reported by Aditya and Jirli (2011), Ghatwal *et.al.* (2016), Singh and Jirli (2018) revealed that ICTs are age neutral and individual of any age can learn and adopt themselves to the learning environment created by e-Mediated platforms.

3.4 agMOCs respondents range

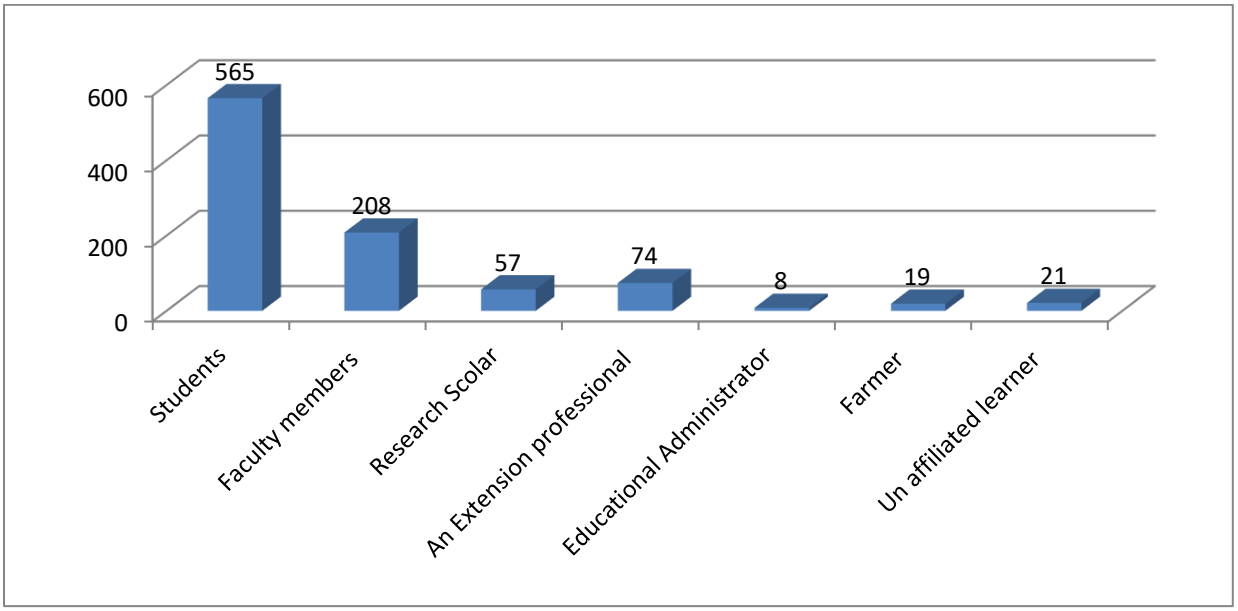

Fig-4 Distribution of learners based on their profession

After having more than 4500 learners registered in the course, of which more than 25 per cent were active learners, the team was curious to know the range of learners' background. It is evident from the graph that about 60 percent of respondents were students. Obviously it is as per expectation. While to our surprise more than 20 per cent of learners were faculty members. It shows the inquisitive behavior of faculty members. After assuming the role of teachers, they became students again and underwent the course. This is the major contribution of e-Mediated

initiatives. Such platforms are really an opportunity for updating our knowledge base. In addition, about eight per cent of learners were extension service providers. For practitioners it's really an opportunity to be appraised with recent developments in the professional activities. About six percent research scholars were also active on the platform. Even though, meager two percent learners were farmers. Extension education course deals with concept and methodological aspect. Still the farmers were active on the platform.

The most interesting part of the analysis is that there were eight active learners who were educational administrators' *viz.*, Dean of faculties, Director of institutes, Head of Departments, etc. the number seems to be negligible but has far reaching implications. Since these administrators are the policy makers at their institutional level also and they have the responsibility of implementation of policies coming from governmental authorities. When they have better exposure, understanding of the concept of e-Mediated learning process such as MOOCs, they can take interest and implement the schemes in more competent ways. Also they can motivate the young faculty to develop such courses in due course of time.

The unaffiliated learners include the learners who are more than 65 years of age, belonging to private/corporate organizations, etc. their interest in such initiatives is highly appreciable. The range of learners reveals and proves once again that there is no age bar for acquiring educational contents. Education is lifelong process, nevertheless availability of appropriate platforms enhance the efficiency of learners as well as motivate the content providers.

3.5 Institutional affiliation of registered learners

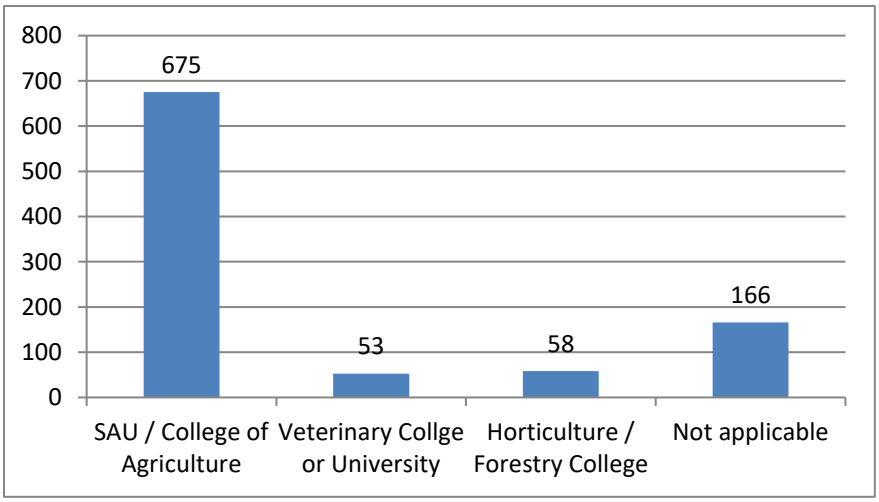

Fig-5 Distribution of learners based on their institutional affiliation

When the institutional affiliations of registered learners were studied it was observed that more than 83 per cent belonged to National Agricultural Research and Education System. Obviously they were the target group also. Interestingly about 17 per cent of respondents were not part of NARS system. They belonged to corporate / private organizations. Still their interest to learn through e-Mediated platforms is appreciable. The flexibilities of e-Mediated learning platforms provide opportunities to all.

3.6 Reasons for participating in the course

When conventional education is in practice, outcomes of e-Learning are yet waiting for recognition by formal authorities of the country. The question arises is why one should

participate in the courses offered through agMOOCs platform? The question was asked to learners to reveal why they were part of this course. The response obtained reveals that more than 66 per cent respondents wanted to enhance their awareness and knowledge. The offered course offered gave them an opportunity to refresh their learning's and add to their knowledge base, the recent advances in process and methods of extension education. Hence highest respondents revealed that they wanted to enhance their knowledge base and become aware of recent developments in the profession of extension.

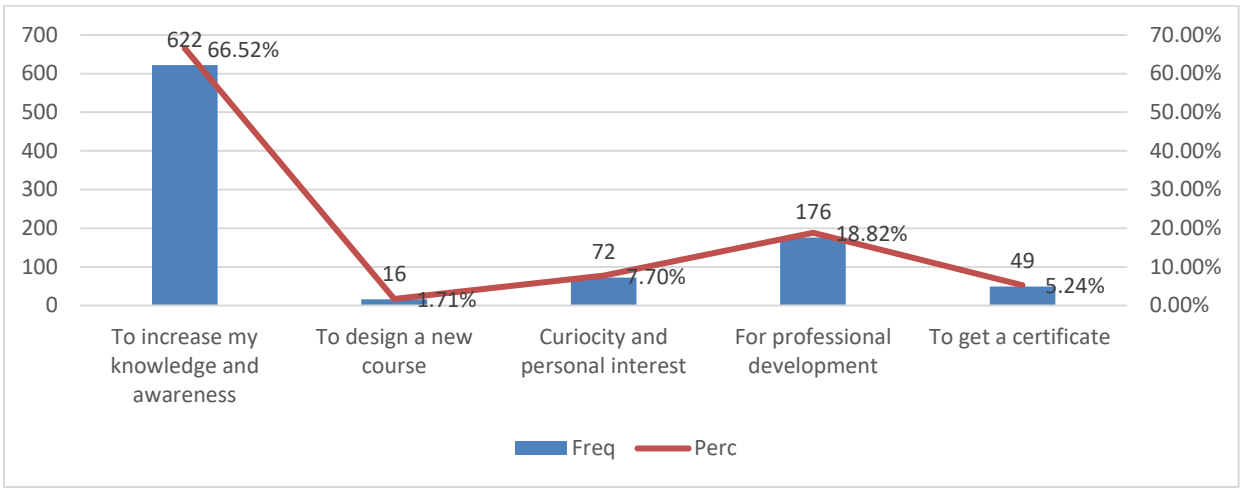

Fig-6 Distribution of learners based on revealed reasons for participating in the course

The respondents who were already practitioners may be as extension educators or extension service providers, engaged in the course for their professional development. Becoming active partner of such events will provide them an opportunity to interact with range of co-professionals and get briefing about the outcomes of extension research. There was a section of respondents (about 8 per cent) became part of the platform because of their curiosity and personal interest. A group of 49 (5 per cent) respondents were honest enough to reveal the reality of participation in the course activities to get a certificate. A small group of respondents can be observed in between (about 2 per cent) who were interested in designing a new course in future. The responses are really encouraging for course instructors. The varied responses give us an insight that the content to be included in the course needs to be carefully selected to cater to the needs to diverse range of clientele.

3.7 Location of accessing agMOOCs courses

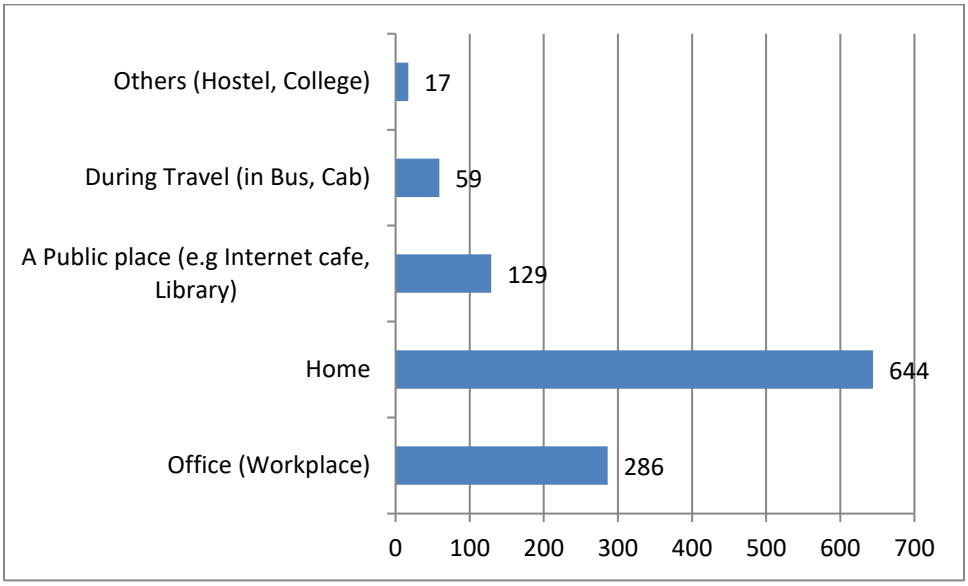

Fig-7 Distribution of learners based on their location of accessing agMOOCs courses

The focus of study was on students, though considerable number of professionals also took active participation in the event, an effort was made to understand the favored location of accessing educational contents of agMOOCs. Home emerged as most convenient place (57 per cent), while about 25 per cent respondents accessed it from office. Since there is considerable number of professionals participated in the course, office (work place) might have been the convenient for them. Public places *viz.*, cyber café, library, etc. were also preferred places of accessing agMOOCs platform (11 per cent).

In Indian conditions the Personal Digital Assistants are not affordable to cent per cent of the population. It is not only having PDAs, there is recurring expenses associated with it. Hence it is evident from the graph that, those who cannot afford such devices are accessing the platform from public places. It reveals the interest of learners and their interest in gaining knowledge. About five percent of respondents accessed the platform while travelling, obviously it must be through agMOOCs app. It shows their curiosity to gain knowledge of domain area.

Basically accessing e-Mediated platforms any time any where is a component of e-Readiness which depends on infrastructure, affordability, accessibility and skill of an individual, hence Rai *et. al.* (2018) revealed that e-Readiness is a state of mind, if you wish, you will be e-Ready.

3.8 Bandwidthused for accessing the agMOOCs courses

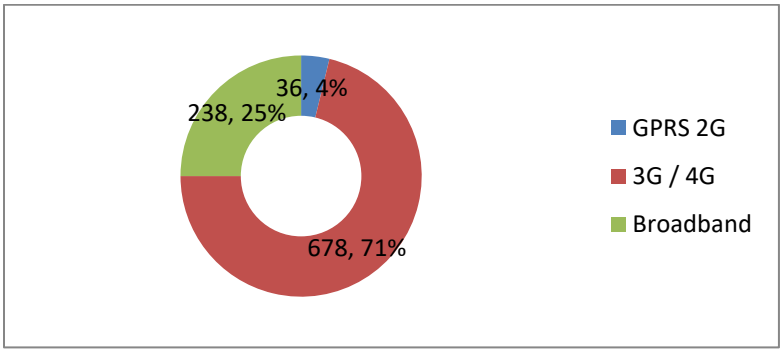

Fig-8 Distribution of learners based on bandwidth used for accessing agMOOCs courses

The bandwidth adopted for accessing the platform also plays a key role. It has direct relationship with satisfaction while accessing contents. More the speed, more easy access, more satisfaction. Hence respondents were asked to spell out the nature of bandwidth they possessed. The results reveal that more than 70 per cent respondents had an access to 3G or 4G means they enjoyed better speed. It was reflected in their satisfaction in accessing he contents. About 25 percent respondents had broadband connections again they had better connectivity. Very few (4 per cent), might be situated in distant places had 2G or GPRS connections. Majority of learners had better connectivity.

3.9 Device used to access the agMOOCs courses

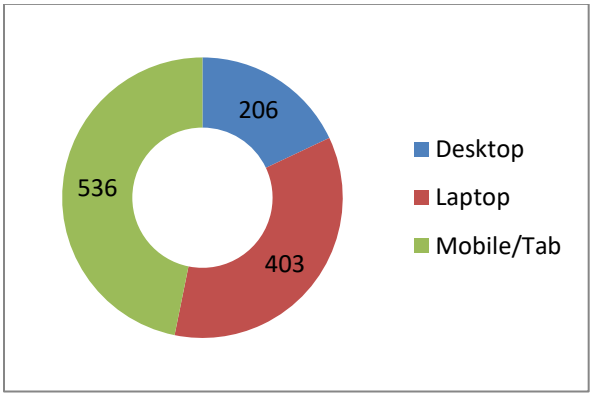

Fig-9 Distribution of learners based on devices used to access the agMOOCs courses

As on 31 March 2019 total number of mobile subscribes in India was 1161.81 Million (source: https://main.trai.gov.in/sites/default/files/PR_No.40of2019.pdf), the data of Telecom Regulatory Authority of India (TRAI) reveals the fact behind the outcomes of the study. Majority of the registered learners (47 per cent) used mobile device to access contents of agMOOCs. The advantage with mobile device over other modes is, it can be accessed any time anywhere. Even then there are limiting factors like screen size, clear visibility of contents specially PPT and PDF files, etc. it is an advantage to access any time as when the need emerges. Considerable number of respondents (36 per cent) used Lap top, while few (17 per cent) used desktop. It solely depends on the affordability factor and convenience of the learners. The graph explains beaviour of the respondents. It gives the educational administrators a hint, how to design and develop contents in future efforts. Also it gives researchers an opportunity to address the issues limiting utilization of such devices for the purpose of education over a period of time.

3.10 Perception of learners regarding quality of agMOOCs course materials

The success or failure of educational efforts depends on the quality of educational contents, mode of delivery, communication competency of course instructor. An effort was made to serve the learners best possible product in the form of course contents. About 91 percent of learners rated the quality of course contents as excellent to very good. About eight percent expressed it was good and less than a percent of respondents rated it as average. Largely the learners are satisfied with course contents. Hence they continued their association with the platform till end and even after. Looking into the response of learners, which is an excellent opportunity for the course instructor to respect the feedback of learners and make improvements in the subsequent efforts.

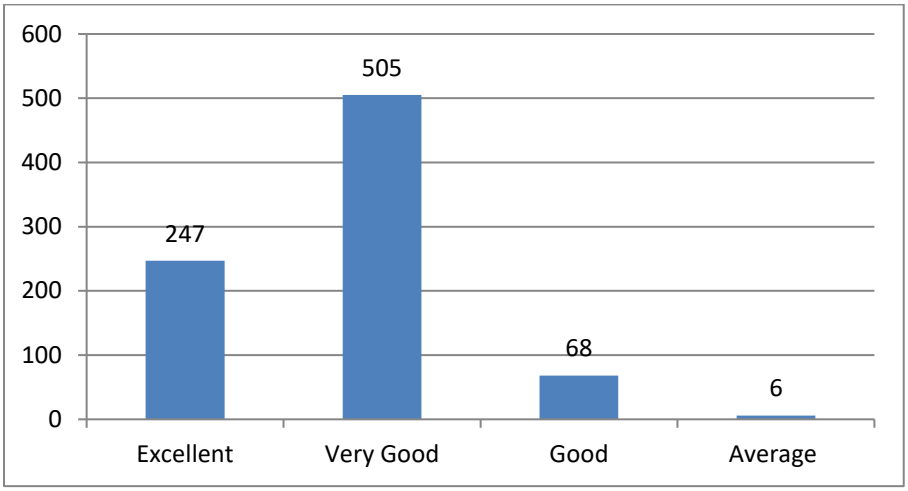

Fig-10 Distribution of learners based on perception regarding agMOOCs course materials

3.11 Most preferred formats of course contents on agMOOCs platform

agMOOCs platform provides content in video, audio and PDF formats. The first choice of learner's was video formats (49 per cent). It gives the feeling that the teacher is addressing you and trying to convince you about the topic under discussion. Next in order was PDF format (36 per cent), easy to read in your own pace and follow it, as and when required. Since only audio format lacks visual effect, was preferred least (about 15 per cent). It's the choice of a learner who may change his preferences according to time and need.

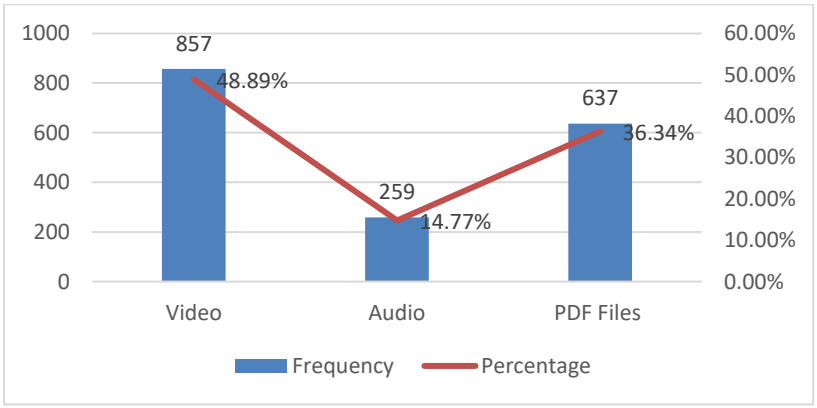

Fig-11 Distribution of learners based on preferred formats of course contents on agMOOCs platform

3.12Number of agMOOCs app users

The agMOOCs app was developed and released on 19 Jan 2016 for learners. There was huge response from the learners. More than 57 per cent learners downloaded the app and were active users. This was an additional facility to learners so that they can access the course any time anywhere. The studies reported by Aditya and Jirli (2010), Aditya *et.al.*(2014) and Meena *et.al.*(2018) unveiled that number of mobile apps developed by governmental as well as private sector organizations are helping various stakeholders and there will be enhanced use of applications in days to come.

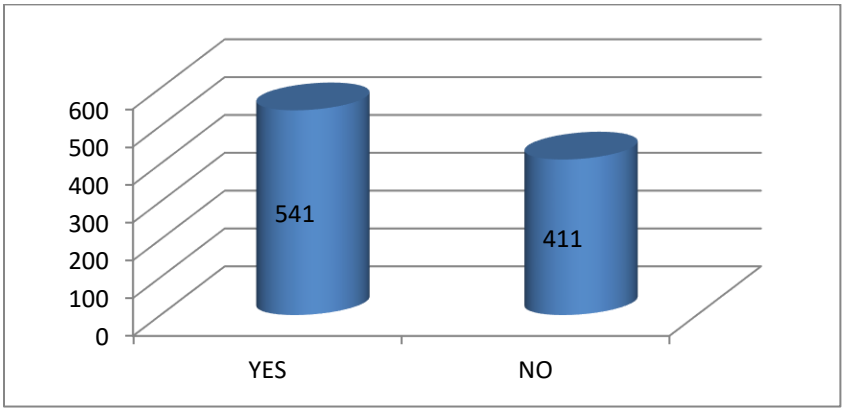

Fig-12 Distribution of learners who used agMOOCs app

Table-3 Association between gender and use of agMOOCs app			
Gender	**agMOOCs App Users**		
	No	**Yes**	**Total**
Female	118	115	233
	12.39	12.08	24.47
	50.64	49.36	
	28.71	21.26	
Male	293	426	719
	30.78	44.75	75.53
	40.75	59.25	
	71.29	78.74	
Total	411	541	952
	43.17	56.83	100.00

(Chi Square value: 7.0196, P value: 0.0081)

The null hypothesis for analyzing association between gender and use of agMOOCs app was "Gender and preference for App by the learners are independent of each other". The Chi square value is 0.008 which is less than 0.05 indicates that is significant at 5% level of significance. This means that the null hypothesis is rejected and the alternative is accepted which is gender and preference for App by the learners are not independents of each other. Which means that male participants preferred the app more than the female participants This can also be ascertained from Table-3.

Table-4 **Association between age of learners and use of agMOOCs app**								
Gender	**Age group**							
	17-24	**25-34**	**35-44**	**45-54**	**55-64**	**Above65**	**Below17**	**Total**

Table-4 **Association between age of learners and use of agMOOCs app**								
Gender	**Age group**							
	17-24	**25-34**	**35-44**	**45-54**	**55-64**	**Above65**	**Below17**	**Total**
Female	114	82	28	6	3	0	0	233
	11.97	8.61	2.94	0.63	0.32	0.00	0.00	24.47
	48.93	35.19	12.02	2.58	1.29	0.00	0.00	
	28.22	25.31	19.44	11.54	12.50	0.00	0.00	
Male	290	242	116	46	21	2	2	719
	30.46	25.42	12.18	4.83	2.21	0.21	0.21	75.53
	40.33	33.66	16.13	6.40	2.92	0.28	0.28	
	71.78	74.69	80.56	88.46	87.50	100.00	100.00	
Total	404	324	144	52	24	2	2	952
	42.44	34.03	15.13	5.46	2.52	0.21	0.21	100.00

(Chi Square value: 13.0211, P value: 0.0427)

An effort was made to analyze association between age of learners and use of agMOOCs app. For which null hypothesis was Gender and age of the participants are independent of each other in using agMOOC app. The 'p' value is 0.04 which is less than 0.05 that is significant at 5% level of significance hence the null hypothesis is rejected and the alternative is accepted, that is Gender and age of the participants are not independent in use of agMOOCs app. Also the data reveals that among the females the young ones participated more than the older ones while in male participants the number of learners were more uniformly distributed over the age groups. This can also be ascertained from Table 4.

3.13Perception of registered learners on easiness of agMOOCs app

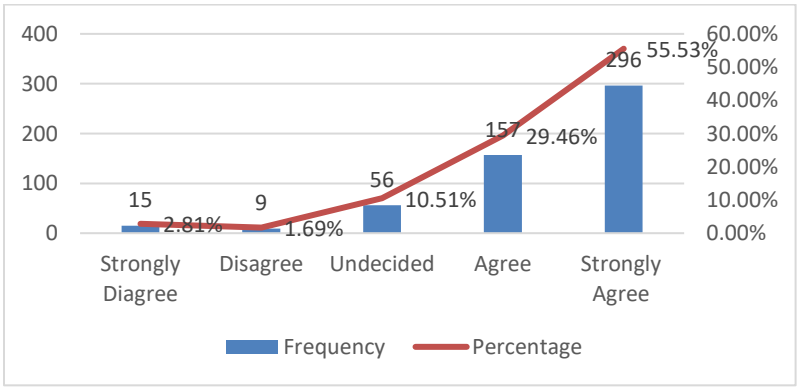

Fig-13 Distribution of learners based on Perception on easiness of agMOOCs app

Perceptions of learners regarding ease of using agMOOCs app was recorded, which revealed that more than 85 per cent respondents said it's easy to use. Digital literacy plays a key role in such situations. When we compared the age group of learners and their responses, only few digital immigrants (about 4 per cent) had difficulty in using the agMOOCs app. While about 10 per cent learners remained neutral. It's your passion to know things that make you innovative and

creative. It is not that those who found use of app as easy did not learn about it before. It is their involvement in the event and learn by doing approach which made them compatible with the app.

Table-5 Association between Gender and Perception of learners regarding easiness of agMOOCs platform

Gender	Easiness of using agMOOCs app					
	SDA	DA	Neutral	Agree	SA	Total
Female	5	3	18	60	147	233
	0.53	0.32	1.89	6.30	15.44	24.47
	2.15	1.29	7.73	25.75	63.09	
	22.73	18.75	25.71	22.90	25.26	
Male	17	13	52	202	435	719
	1.79	1.37	5.46	21.22	45.69	75.53
	2.36	1.81	7.23	28.09	60.50	
	77.27	81.25	74.29	77.10	74.74	
Total	22	16	70	262	582	952
	2.31	1.68	7.35	27.52	61.13	100.00

(Chi Square value: 0.9244, P value: 0.9213)

Analysis of association between gender and perception of learners regarding easiness of agMOOCs platform was done with the help of Chi Square test. The *'p' value=0.923* make public that the null hypothesis "There is no Association between Gender and Perception of learners regarding easiness of agMOOCs platform" should be accepted. The Table-5 reveals that both male and female learners felt the platform was very easy to use. Rather female seemed more comfortable than male learners.

3.14 Perception regarding usefulness of offline mode of agMOOCs app

A feature of offline mode was added to agMOOCs app so that you can access contents of the course without internet connection. Basically the technique that is inbuilt in the operating system of the device which stores the content (Video and PDF, PPT files) in the local storage of the device and allows the learner to access the contents. The benefit for the learner is that he/she can access the cloud based course contents when they are not having internet connection. Offline mode consumes less power. The limitations include the amount of storage space as the devices we use viz., smart phone or tab have limited storage and expected to serve many other functions in addition to accessing agMOOCs educational contents. As it is evident from the Fig-14 that more than 66 per cent learners are in agreement with benefits of offline mode. On the contrary about 16 per cent were against the offline mode of content access. Around the same percentage of learners remained neutral on the issue.

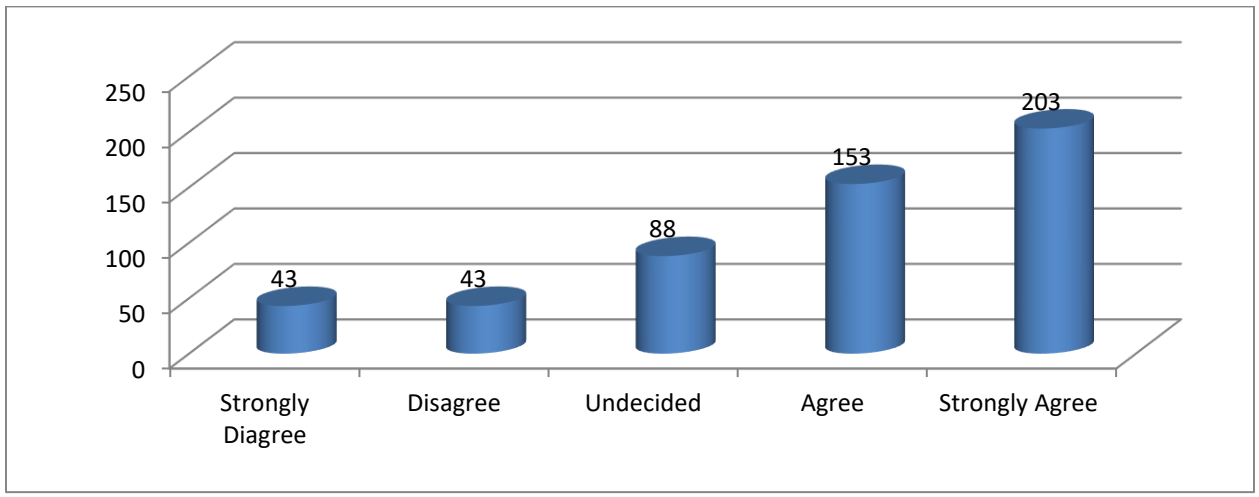

Fig-14 Distribution of learners based on Perception on usefulness of offline mode of agMOOCs app

3.15 Perception regarding usefulness of agMOOCs app in increasing involvement of registered learners

agMOOC app was an additional facility for the learners to access the contents as and when required and be part of the process of learning all the time. With this intervention more than 83 per cent learner's felt that because of the app, involvement in the process of learning has increased. On the contrary about 10 per cent remained neutral for the issue and about seven percent disagreed with the increasing involvement because of app. The response indicates there is difference between digital natives and digital immigrants. There might be some exceptions in the findings also.

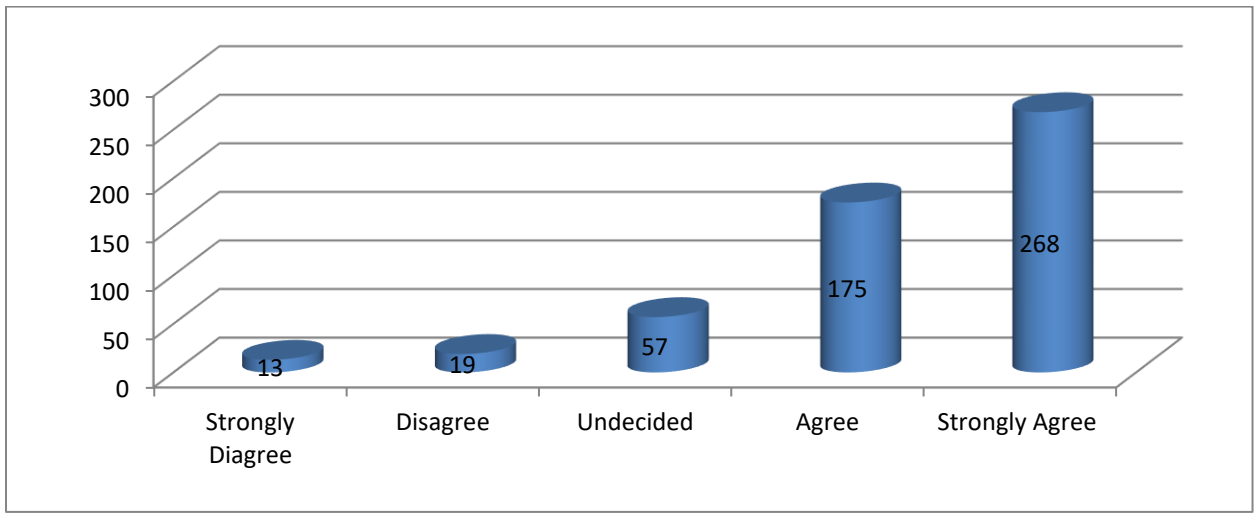

Fig-15 Distribution of learners based on Perception regarding usefulness of agMOOCs app in increasing involvement of registered learners

The e-Readiness of stakeholders motivates take active role in e-Mediated initiatives Rai and Jirli (2013). The range of stakeholders of ICT is not having any limitations; age and gender are not at all barriers for exploiting benefits of e-Mediation Ghatwal and Jirli (2018).

Table-6. Association between Age group and Perception of learners regarding easiness of agMOOCs platform						
Age	**Easiness of using agMOOCs app**					
	SDA	**DA**	**Neutral**	**Agree**	**SA**	**Total**
17-24	12	6	37	121	228	404
	1.26	0.63	3.89	12.71	23.95	42.44
	2.97	1.49	9.16	29.95	56.44	
	54.55	37.50	52.86	46.18	39.18	
25-34	5	7	24	84	204	324
	0.53	0.74	2.52	8.82	21.43	34.03
	1.54	2.16	7.41	25.93	62.96	
	22.73	43.75	34.29	32.06	35.05	
35-44	5	2	6	37	94	144
	0.53	0.21	0.63	3.89	9.87	15.13
	3.47	1.39	4.17	25.69	65.28	
	22.73	12.50	8.57	14.12	16.15	
45-54	0	0	3	15	34	52
	0.00	0.00	0.32	1.58	3.57	5.46
	0.00	0.00	5.77	28.85	65.38	
	0.00	0.00	4.29	5.73	5.84	
55-64	0	1	0	3	20	24
	0.00	0.11	0.00	0.32	2.10	2.52
	0.00	4.17	0.00	12.50	83.33	
	0.00	6.25	0.00	1.15	3.44	
Above65	0	0	0	1	1	2
	0.00	0.00	0.00	0.11	0.11	0.21
	0.00	0.00	0.00	50.00	50.00	
	0.00	0.00	0.00	0.38	0.17	
Below17	0	0	0	1	1	2
	0.00	0.00	0.00	0.11	0.11	0.21
	0.00	0.00	0.00	50.00	50.00	
	0.00	0.00	0.00	0.38	0.17	
Total	22	16	70	262	582	952
	2.31	1.68	7.35	27.52	61.13	100.00

(Chi Square value: 0.9244, P value: 0.9213)

The team agMOOCs made all possible efforts to simplify the platform and in addition the agMOOCs app was launched for the learners. The response of app users was recorded and put to

analysis across the different age group of learners. The null hypothesis was "There is no association between age of learners and ease of using agMOOCs app"; the 'p' value 0.9213 suggests accepting the null hypothesis. The results also establish the same across the age groups learners said that agMOOCs app is not having any complexities in its use. Less or no complexity is one of the attribute of innovation also. As there are less complexities its acceptance is more in the society which is visible though data also.

3.16 Learners perception regarding Pace of content delivery on agMOOCs platform

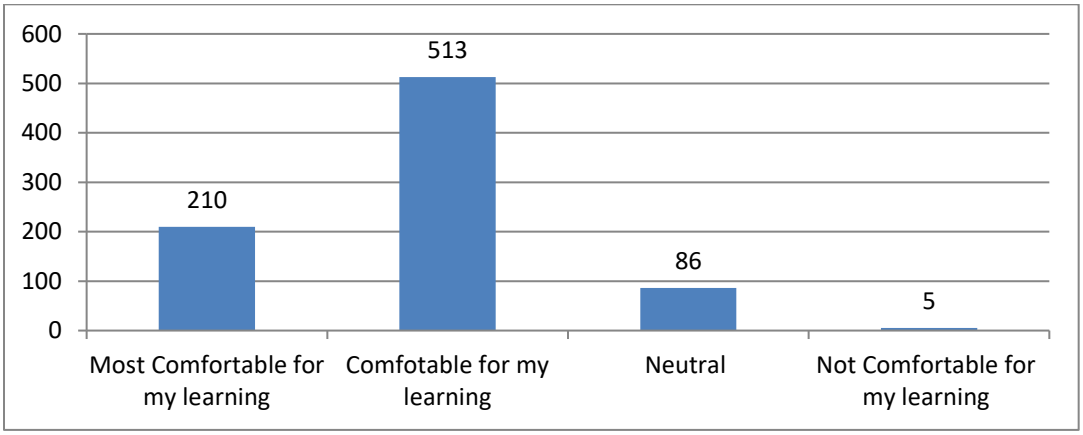

Fig-16 Distribution of learners based on Perception regarding pace of content delivery on agMOOCs platform

It is evident from the Figure-16 that about 89 percent learners were satisfied with the pace of content delivery. Learner satisfaction is most critical in educational efforts, which is evident through data. About 10 percent remained neutral in giving response while less than a per cent were not comfortable with pace of content delivery. Such aberrations are expected when we have huge number of learners across geo-spatial spread. Similar response was also observed in case of the feedback regarding meeting out learning objective by the course management team.

Table-7. Association between range of learners and perception regarding Pace of content delivery

Profession	Pace of content delivery					
	Agree	SA	Neutral	DA	SDA	Total
Edu Administrators	3	3	2	0	0	8
	0.31	0.31	0.21	0.00	0.00	0.84
	37.50	37.50	25.00	0.00	0.00	
	0.58	1.43	1.44	0.00	0.00	
Ext Professional	43	19	8	3	1	74
	4.51	1.99	0.84	0.31	0.10	7.76
	58.11	25.68	10.81	4.05	1.35	
	8.38	9.05	5.76	3.49	20.00	

Table-7. Association between range of learners and perception regarding Pace of content delivery						
Profession	**Pace of content delivery**					
	Agree	**SA**	**Neutral**	**DA**	**SDA**	**Total**
Faculty Member	98	70	29	10	1	208
	10.28	7.35	3.04	1.05	0.10	21.83
	47.12	33.65	13.94	4.81	0.48	
	19.10	33.33	20.86	11.63	20.00	
NR	0	0	1	0	0	1
	0.00	0.00	0.10	0.00	0.00	0.10
	0.00	0.00	100.00	0.00	0.00	
	0.00	0.00	0.72	0.00	0.00	
Research Scholar	26	12	12	7	0	57
	2.73	1.26	1.26	0.73	0.00	5.98
	45.61	21.05	21.05	12.28	0.00	
	5.07	5.71	8.63	8.14	0.00	
Unaffiliated Learner	12	5	4	0	0	21
	1.26	0.52	0.42	0.00	0.00	2.20
	57.14	23.81	19.05	0.00	0.00	
	2.34	2.38	2.88	0.00	0.00	
Farmer	14	0	3	2	0	19
	1.47	0.00	0.31	0.21	0.00	1.99
	73.68	0.00	15.79	10.53	0.00	
	2.73	0.00	2.16	2.33	0.00	
Student	317	101	80	64	3	565
	33.26	10.60	8.39	6.72	0.31	59.29
	56.11	17.88	14.16	11.33	0.53	
	61.79	48.10	57.55	74.42	60.00	
Total	513	210	139	86	5	953
	53.83	22.04	14.59	9.02	0.52	100.00

(Chi Square value: 51.0368, P value: 0.0045)

The association between range of learners and perception regarding the pace of content delivery is presented in Table-7. The pace of content delivery influences learner to continue on the platform, to be part of every activity and acquire knowledge and skills. The Chi Square value *'p'=0.0045* point towards rejecting null hypothesis "there is no association between range of learners and pace of content delivery". Except few respondents, rest across the categories of learners were satisfied with the pace of content delivery. Pace should not be too fast and too slow. It should match with learning ability of the learners. Keeping in view of profile of learners the course instructor sets his pace and delivers the content. The results disclose that if the pace of course instructor would not have matched with pace of learners, there was an option to discontinue from the learning process on agMOOCs platform.

3.17 Learners Satisfaction with the content provided on agMOOCs platform

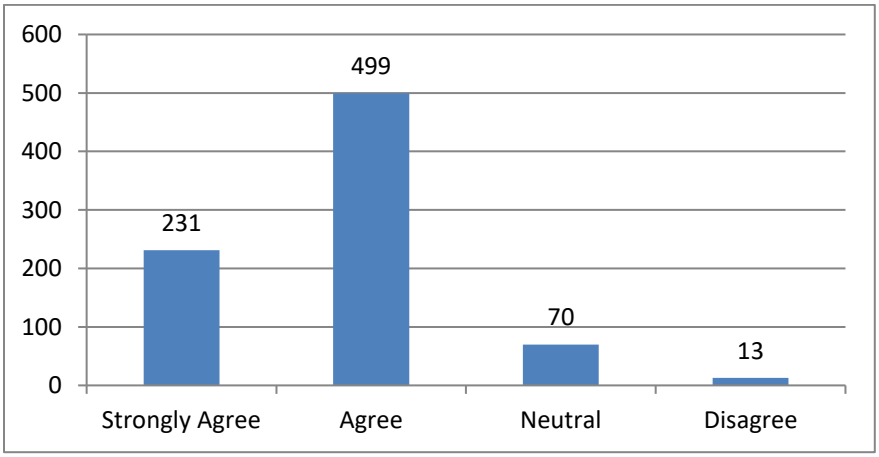

Fig-17 Distribution of learners based on Satisfaction with the content provided on agMOOCs platform

Every programme must end with satisfaction. If the learners are satisfied it means the effort is successful. More than 90 per cent of learners expressed their satisfaction with the content while nine per cent remained neutral and one per cent expressed their dissatisfaction. The response of about ten per cent of learners needs to be pondered and should be taken into account in future endeavors.

Table-8. Association between range of learners and perception regarding Satisfaction with content

Profession		Learners satisfaction with Content					
	SA	Agree	Disagree	NR	Neutral		Total
Edu Administrators	4	3	0	1	0		8
	0.42	0.31	0.00	0.10	0.00		0.84
	50.00	37.50	0.00	12.50	0.00		
	1.73	0.60	0.00	0.71	0.00		
Ext. Professional	21	42	1	8	2		74
	2.20	4.41	0.10	0.84	0.21		7.76
	28.38	56.76	1.35	10.81	2.70		
	9.09	8.42	7.69	5.71	2.86		
Faculty Member	73	94	1	29	11		208
	7.66	9.86	0.10	3.04	1.15		21.83
	35.10	45.19	0.48	13.94	5.29		
	31.60	18.84	7.69	20.71	15.71		
NR	0	0	0	1	0		1
	0.00	0.00	0.00	0.10	0.00		0.10
	0.00	0.00	0.00	100.00	0.00		
	0.00	0.00	0.00	0.71	0.00		
Research Scholar	14	25	1	11	6		57

Table-8. Association between range of learners and perception regarding Satisfaction with content							
Profession		**Learners satisfaction with Content**					
	SA	**Agree**	**Disagree**	**NR**	**Neutral**		**Total**
	1.47	2.62	0.10	1.15	0.63		5.98
	24.56	43.86	1.75	19.30	10.53		
	6.06	5.01	7.69	7.86	8.57		
Unaffiliated Member	6	9	0	4	2		21
	0.63	0.94	0.00	0.42	0.21		2.20
	28.57	42.86	0.00	19.05	9.52		
	2.60	1.80	0.00	2.86	2.86		
Farmer	2	10	0	4	3		19
	0.21	1.05	0.00	0.42	0.31		1.99
	10.53	52.63	0.00	21.05	15.79		
	0.87	2.00	0.00	2.86	4.29		
Student	111	316	10	82	46		565
	11.65	33.16	1.05	8.60	4.83		59.29
	19.65	55.93	1.77	14.51	8.14		
	48.05	63.33	76.92	58.57	65.71		
Total	231	499	13	140	70		953
	24.24	52.36	1.36	14.69	7.35		100.00

(Chi Square value: 42.6619, P value: 0.0375)

The *'p' value* of chi square is less than 0.05, which proves that learners are satisfied with contents provided. The Table-8 reveals the satisfaction of learners was found across the range of respondents. Learners' satisfaction has far reaching implication for the concept of MOOCs itself. The learning management team should assure quality inputs and regular monitoring.

3.18 Learners perception about knowledge of course instructor

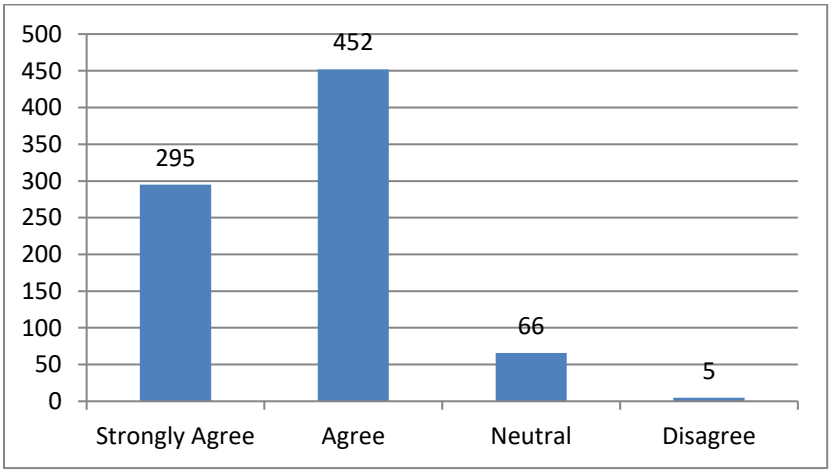

Fig-18 Distribution of learners based on Perception regarding knowledge of course instructor

Course instructor plays pivotal role in maintaining and sustaining interest of learners throughout the course period. Any deviations from the needs of learners are going to affect the entire educational effort. In case of e-Mediated learning's it becomes more delicate to maintain the interest of learners. It is evident from the Figure-18 that more than 91 percent of learners agreed that instructor has good knowledge about the subject. This is a sensitive feedback for course instructor also, because the learners are evaluating their teachers in every class. There are possibilities of variation in every class. Hence a teacher should be alert in their delivery and try to address the requirements of learners. It is important to notice that about eight per cent learners remained neutral in giving response while about 0.5 per cent learners disagreed with the statement that course instructor has good knowledge about subject. Course instructors should note such feedback, even though frequency is very low it is still there. There is scope for improvement and address the issues associated with learners.

Table-9. Association between range of learners and perception regarding knowledge of instructor about the subject

Profession		Instructor has good knowledge about the subject					
	SA	Agree	Disagree	NR	Neutral		Total
Edu Administrators	5	2	0	1	0		8
	0.52	0.21	0.00	0.10	0.00		0.84
	62.50	25.00	0.00	12.50	0.00		
	1.69	0.44	0.00	0.74	0.00		
Ext Professional	23	40	1	8	2		74
	2.41	4.20	0.10	0.84	0.21		7.76
	31.08	54.05	1.35	10.81	2.70		
	7.80	8.85	20.00	5.93	3.03		
Faculty Member	88	80	1	28	11		208
	9.23	8.39	0.10	2.94	1.15		21.83
	42.31	38.46	0.48	13.46	5.29		
	29.83	17.70	20.00	20.74	16.67		
NR	0	0	0	1	0		1
	0.00	0.00	0.00	0.10	0.00		0.10
	0.00	0.00	0.00	100.00	0.00		
	0.00	0.00	0.00	0.74	0.00		
Research Scholar	21	21	0	11	4		57
	2.20	2.20	0.00	1.15	0.42		5.98
	36.84	36.84	0.00	19.30	7.02		
	7.12	4.65	0.00	8.15	6.06		
Unaffiliated Member	10	6	0	4	1		21
	1.05	0.63	0.00	0.42	0.10		2.20
	47.62	28.57	0.00	19.05	4.76		
	3.39	1.33	0.00	2.96	1.52		
Farmer	4	8	0	3	4		19

Table-9. Association between range of learners and perception regarding knowledge of instructor about the subject							
Profession		**Instructor has good knowledge about the subject**					
	SA	**Agree**	**Disagree**	**NR**	**Neutral**		**Total**
	0.42	0.84	0.00	0.31	0.42		1.99
	21.05	42.11	0.00	15.79	21.05		
	1.36	1.77	0.00	2.22	6.06		
Student	144	295	3	79	44		565
	15.11	30.95	0.31	8.29	4.62		59.29
	25.49	52.21	0.53	13.98	7.79		
	48.81	65.27	60.00	58.52	66.67		
Total	295	452	5	135	66		953
	30.95	47.43	0.52	14.17	6.93		100.00

(Chi Square value:49.8441, P value: 0.0067)

An effort was made to assess the goodness of fit between range of learners and perception regarding knowledge of instructor about the subject. The Chi Square *'p' value* 0.0067 suggests rejecting null hypothesis "course instructor is not having good knowledge about the subject". The findings revealed that learners' across the categories expressed their views as instructor has good knowledge about the subject. It is the responsibility of platform management team to select course and course instructor. Right selection of course instructor leads to better implications in the learning environment.

3.19 Learners' perception regarding relevancy of quiz conducted on agMOOCs platform

Evaluation of a student / learner is the most critical aspect for a teacher and on the other side learner is also anxious of evaluation. One may take lot of interest in learning a particular course but when it comes to appearing for an examination somewhere one may not feel comfortable. Under such

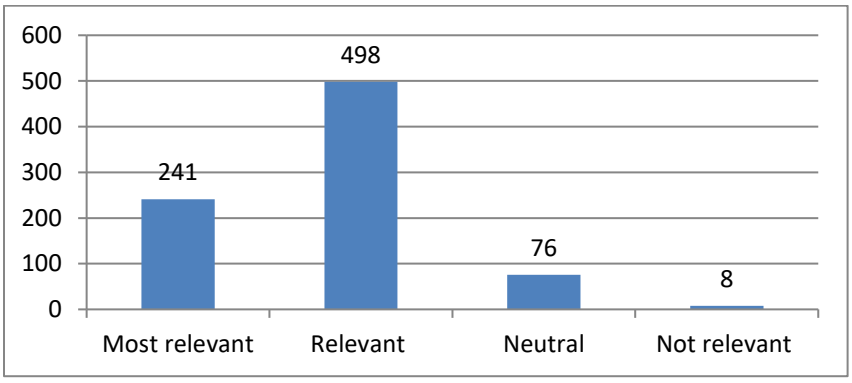

Fig-19 Distribution of learners based on perception regarding Relevancy of Quiz conducted on agMOOCs platform

circumstances about 30 percent of learners expressed that concurrent evaluation is most relevant. Next in the order were about 61 per cent learners said it's relevant. Means more than 90 per cent learners were having favourable opinion about the quizzes. Less than a per cent of learners were

not in favour of concurrent evaluation and about eight percent remained neutral in providing response.

Table-10 Association between range of learners and perception regarding Relevancy of quiz

Profession		Relevancy of Quiz					
	SA	Agree	Disagree	NR	Neutral		Total
Edu Administrators	4	3	0	1	0		8
	0.42	0.31	0.00	0.10	0.00		0.84
	50.00	37.50	0.00	12.50	0.00		
	1.66	0.60	0.00	0.77	0.00		
Ext Professional	19	41	1	8	5		74
	1.99	4.30	0.10	0.84	0.52		7.76
	25.68	55.41	1.35	10.81	6.76		
	7.88	8.23	12.50	6.15	6.58		
Faculty Member	81	88	0	28	11		208
	8.50	9.23	0.00	2.94	1.15		21.83
	38.94	42.31	0.00	13.46	5.29		
	33.61	17.67	0.00	21.54	14.47		
NR	0	0	0	1	0		1
	0.00	0.00	0.00	0.10	0.00		0.10
	0.00	0.00	0.00	100.00	0.00		
	0.00	0.00	0.00	0.77	0.00		
Research Scholar	15	24	0	11	7		57
	1.57	2.52	0.00	1.15	0.73		5.98
	26.32	42.11	0.00	19.30	12.28		
	6.22	4.82	0.00	8.46	9.21		
Unaffiliated Member	6	11	0	4	0		21
	0.63	1.15	0.00	0.42	0.00		2.20
	28.57	52.38	0.00	19.05	0.00		
	2.49	2.21	0.00	3.08	0.00		
Farmer	1	9	0	3	6		19
	0.10	0.94	0.00	0.31	0.63		1.99
	5.26	47.37	0.00	15.79	31.58		
	0.41	1.81	0.00	2.31	7.89		
Student	115	322	7	74	47		565
	12.07	33.79	0.73	7.76	4.93		59.29
	20.35	56.99	1.24	13.10	8.32		
	47.72	64.66	87.50	56.92	61.84		
Total	241	498	8	130	76		953

Table-10 Association between range of learners and perception regarding Relevancy of quiz							
Profession		Relevancy of Quiz					
	SA	Agree	Disagree	NR	Neutral		Total
	25.29	52.26	0.84	13.64	7.97		100.00

(Chi Square value: 65.5848, 'p' value: 0.0001)

The Chi Square *('p' value: 0.0001)* on association between learners profession and frequency of quiz indicates there is no association. Learners from every category (profession) preferred more quizzes and felt quizzes are relevant. Even farmers were of the opinion that there should be quizzes, means a measure of assessment of progress of learners which motivates and provides an opportunity for the learners for improvement.

3.20 Learners' perception regarding frequency of quiz

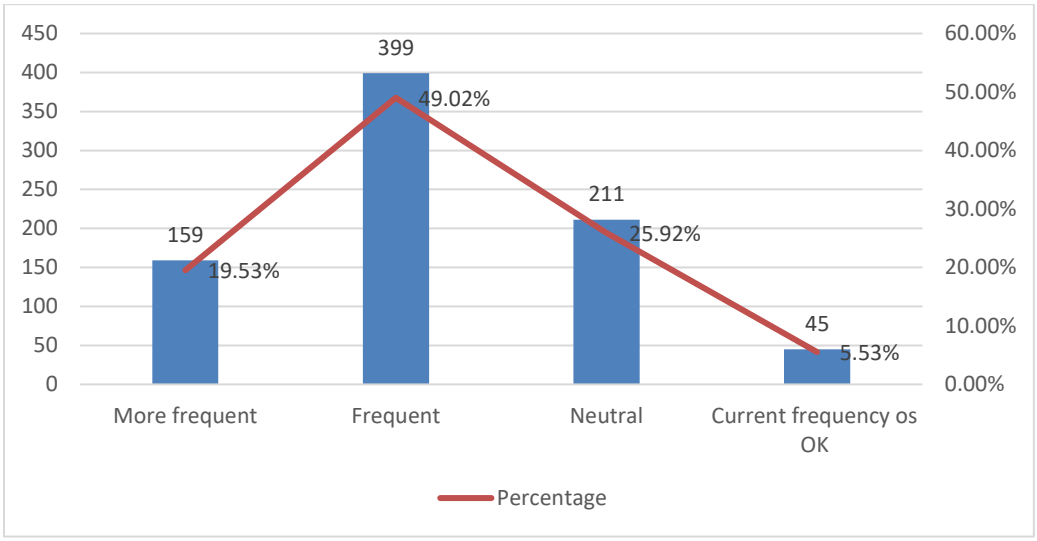

Fig-20 Distribution of learners based on perception regarding frequency of Quiz

In continuation of discussion about 70 per cent learners were enthusiastic about having more number of quizzes, while 25 per cent remained neutral and five per cent said that current frequency is OK. The enthusiast learners were in favour of weekly quizzes than existing system of after completion of two weeks.

3.21 Learners' opinion regarding use of the gained knowledge on agMOOCs platform

A teacher has a natural question, after offering a course that how the learners are going to use the gained knowledge and skills. Every course instructor expects the best possible utilization of course contents, which leads to satisfaction of a teacher. Hence the response was obtained from the respondents, that how are they going to utilize the gained contents. The informal communication network, which can be termed as grapevine communication dominated the response, wherein learners said (53 percent) that they will share the learning's with their friends and colleagues. If such process happens without any distortion, the purpose of MOOC mode of education is achieved. Since the learners are highly educated and matured enough to interpret the consequences of the process of communication, it is the best possible response from learners.

As it is evident that majority of them were faculty members and extension service providers who were keen to share the learning's with their students (27 per cent) in formal education settings. It is very important to note that about eight per cent respondents revealed that they will share it with their administrators. It means the process will open the ways to promote e-Mediated educational efforts. About 5 per cent of learners said that they will use the learning's in development and designing the new course. It is welcome response as the learner prepares himself for designing a course on MOOC platform.

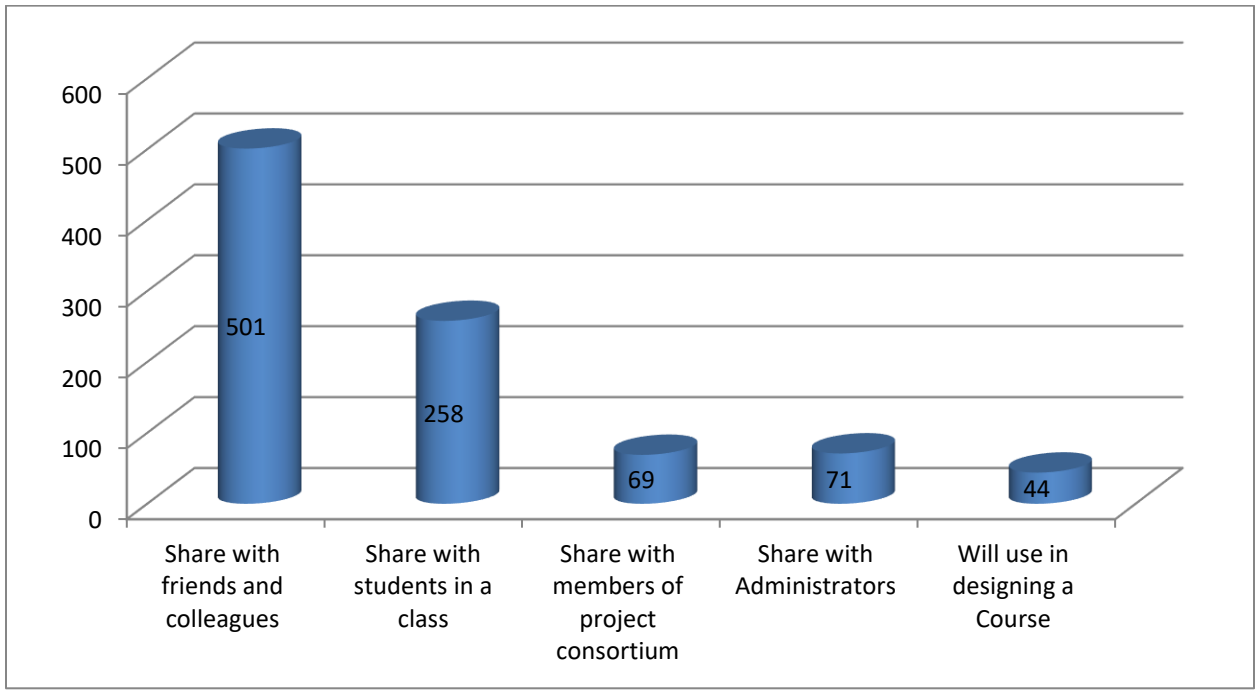

Fig-21 Distribution of learners based on reaction regarding use of the gained knowledge on agMOOCs platform

3.22 Learners' opinion regarding offering the course if the certificates are not offered

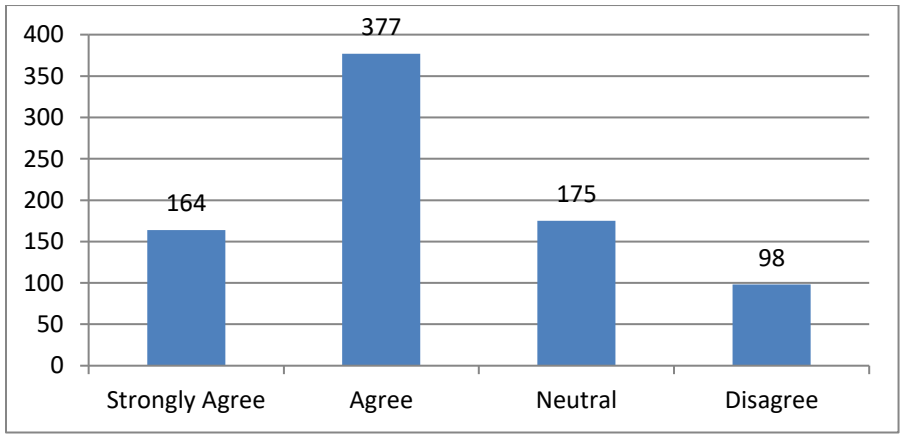

Fig-22 Distribution of learners based on reaction regarding offering the course if the certificates are not offered

There is a motivation behind involving in any activity. When students engage themselves in additional educational efforts expect a formal recognition for successful completion of event.

Nevertheless there is a large group (66 per cent) revealed that they would have been part of the agMOOCs even if certificates are not offered. The knowledge hungry learners never expect such things, but they are interested in gaining knowledge. On the contrary about 21 per cent remained neutral for the question, they are fence sitters, they are not able to decide while about 13 per cent learners honestly revealed that, they registered for the course for the purpose of Certificate.

3.23 Learners opinion regarding meeting of learning objective by course management team

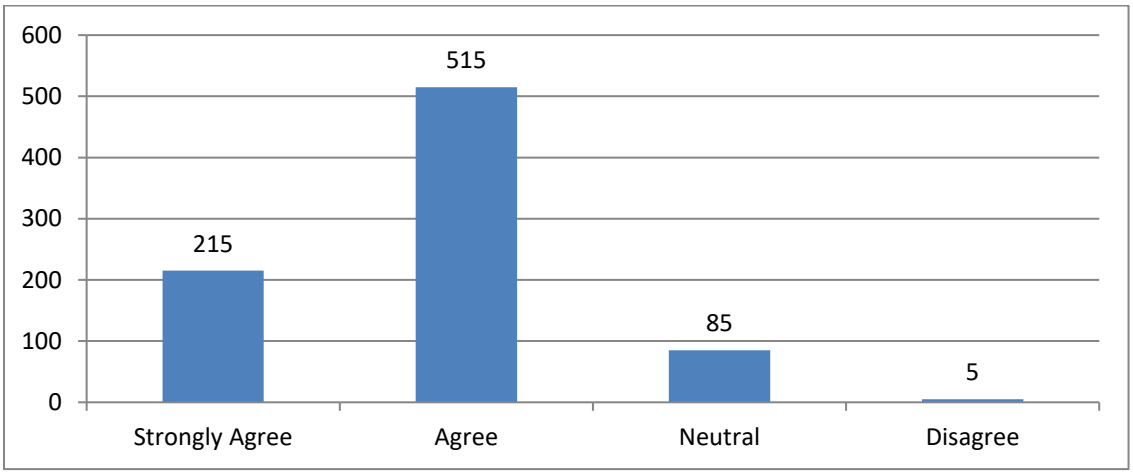

Fig-22 Distribution of learners based on reaction regarding meeting of learning objective by Course management team

The team agMOOCs evaluation by learners reveals that more than 90 per cent agreed with the fact that course management met the learning objectives. In the management processes the back end is equally important rather more important than the front end. Any issues with back end processes, has direct impact on learners and his/her continuation on the platform. About ten per cent learners remained neutral and less than one percent disagreed with the statement. As, such platforms have huge potential in education sector, other sectors viz., development, to be specific rural development sector has great opportunity to harness the benefits of e-Mediation Mandal *et al.*(2016).The administrators are deriving inspiration from such successful experiments.

3.23 Learners opinion regarding recommendation of the course to fellow learners

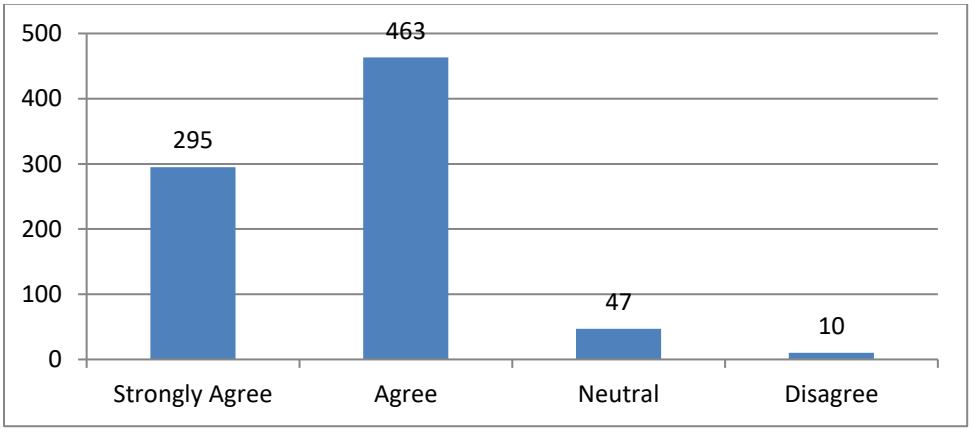

Fig-23 Distribution of learners based on reaction regarding recommendation of the course to fellow learners

Satisfaction of learners has direct relationship with variable of recommending the course to others. As we have already seen more than 90 per cent were satisfied with the courses hence more than 93 per cent learners said that they will recommend the course to other learners. The results are evident in the subsequent courses offered on the platform through an increasing trend of registrations. About six percent remained neutral and one per cent said that they will not recommend the course to others.

3.24 Suggestions for future research

1. A cross sectional study on wider geographical area pertaining to learners preferences and feedback on MOOCs needs to be undertaken especially in developing and under developed nations.

2. As MOOCs can be a better solution for overcoming paucity of quality faculty members in an educational institution, e-Readiness of the faculty who is competent in teaching a course needs to be assed and measures should be initiated in the direction.

3. Studies on issues related to intellectual property rights while preparing and sharing educational contents for the benefit of learners on MOOCs platforms should be initiated.

4. Research efforts of Bozkurt *et. al.* (2017) indicated need for content analysis and discourse analysis, they employed content analysis techniques to analyze the articles and revealed the trend line showing the number of articles on MOOCs is likely to increase in the coming years. Educational researchers should concentrate on content analysis of existing MOOCs and suggest modifications and establish protocols for development of MOOCs.

3.25 Conclusion

e-Mediation in education has far reaching implications with special reference to developed nations. Under developed and developing nations follow the suit. The glimpse can be visualized through the results of the study. The gender and age neutral technology with more ease of use has higher penetration rate in the society. Generally innovations are perceived as complex to understand and use. While agMOOCs has broken the perception and made entry into the user community. Though majority findings are encouraging, while few findings viz., knowledge of course instructor regarding the subject, satisfaction with the content, pace of content delivery, etc.are showing less than a percent disagreement. The instructors should work on these issues so that learners concerns are addressed. There are some neutral responses of learners, which gives an alarm to course instructors and platform managers. The systems should get the signals and take care of learners concerns in future endeavours.

MOOCs are excellent opportunities to reach the unreached in education sector. The gain from the effort is increasing number of learners that are ready to embrace the model and think of many creative options. The educational administrators should provide such platforms and motivate the population to harness the benefits of the concept.

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