A REPORT ON 2nd CYCLE OF THE MOOC

INTRODUCTION TO STATISTICAL ANALYSIS

Commonwealth Educational Media Centre for Asia (CEMCA)
and
Kalinga Institute of Social Science (KISS), Deemed to be University

About the Course

It's an attempt to help learners use the proper methods analysis and interpretation of collected data to present the results. Statistics helps to make decisions in real life situation based on data. With this one can understand a subject clearly and deeply. This course has been designed for professional development and competency enhancement of working professionals associated with field work, research, and impact and feedback studies in various fields of social sciences and also for UG, PG, M.Phil and research scholars to help them to have clarity of the concept of the use of statistics in research study. This course is designed to help participants to understand the fundamental concepts of statistical analysis and statistical inference to enable them to better interpret the results of their research and contribute to the field of research and development effectively, meaningfully, and productively.

Objectives

The important objectives of this course were:

1. To help learners understand the concept of statistical inference and their applications
2. To equip learners with essential skills to enable them to use the concept in their field of study.
3. To build confidence in learners to use the statistics for verification of hypothesis effectively and efficiently.
4. To develop analytical ability of learners in selection of statistics and their use in research study.

5. To help the learners to expose with the field-based problems/issues and come out with possible solutions.

Target Group

This course is designed for

- Teachers, students and research scholars from various disciplines of higher education in discipline of social science in particular.
- Working professionals (early-career and mid-career) of Government and Non-Government organizations working with various projects of social development (education, health & family welfare, rural development, panchyatiraj, agriculture and animal husbandry, urban development etc., would benefit from this Massive Open Online Course.

Duration of the Course

The duration of the course was Four Weeks, starting ***from 23rd November to 27th December 2021.*** However, based on the requests of learners and decision of the course team it was extended till 31st December 2021

Course Contents

Course comprised of four modules such as; i) Week One: Module I- Introduction to Statistical Inference; ii) Week Two: Module II- Significance of Mean; iii) Week Three: Module III- Testing the Hypothesis; and iv) Week Four: Module IV- Difference between two Means

Brief outline of the course

Course comprised of four modules as per the details given below

Week	***Module***	***Sub themes***
1	*Module I: Introduction to Statistical Inference*	*What is statistics, descriptive statistics, inferential statistics, sample, population, statistical inferences, census inquiry, sample inquiry, Statistics, parameters, estimation paramenters, chance of variation, sampling distribution, features of sampling distribution, normal distribution, characteristics of normal distribution, examples & illustrations and reflection questions*
2	*Module II: Significance of Mean*	*Large sample, Assessment of significance of mean of large sample, test of significance of means from standard error of mean, applications of significance of mean of large sample, significance of mean of small sample, t-distribution, degree of freedom, examples & illustrations and reflection questions*
3	*Module III: Testing the Hypothesis*	*Statistical hypothesis and its testing, level of significance, degree of confidence, critical value, Types of error- Type I & Type II errors, Types of test- one tailed & two tailed test, examples & illustrations and reflection questions*
4	*Module IV: Difference between two Means*	*Difference between two Means, steps of calculation, Difference between two means of independent samples, difference between two correlated means, examples & illustrations and reflection questions*

Instructional Design & Implementation

Four quadrant approach of MOOC such as; i) e-text, ii) video, iii) forum, iv) hangout, v) resources, v) quiz and assignment for evaluation were used to make the course interactive and participatory. At the same time, content of each week and guidance for assignment preparation was supported by a live session.

i) e-Text & Video

Module I	*Introduction to Statistical Inferences (e-text)*
	Video *Introduction to Statistical Inferences (7.52 Mins)* *Normal Distribution (12.03 Mins)*
Module II	*Significance of Mean*
	Video *Significance of Mean of Large Sample (10.02 Mins)* *Applications of Significance of Mean of Large Samples (16.24Mins)* *Significance of Means of Small Samples (11.44 Mins)*
Module III	*Testing the Hypothesis*
	Video *Testing a Statistical Hypothesis (12.52 Mins)* *Types of Errors & Types of Tests (19.32 Mins)*
Module IV	*Difference between two Means*
	Video: Difference between Two Statistics (15.05 Mins) *Difference between Two independent Means (20.55 Mins)* *Difference between Two Correlated Means (19.44 Mins)*

ii) Additional Resources

Additional resource materials (video and e-tests) relevant to the theme of the module and themes of each week were provided to learners in the resource page on week-to-week basis. It's an attempt to allow the learners to explore more about the course depending upon their need and expectations.

iii) Reflection questions were given at the end of each module to motivate the learners to focus and concentrate and involve in on practice of practical based questing. It's like brainstorming questions which would help them to explore more.

iv) Evaluation

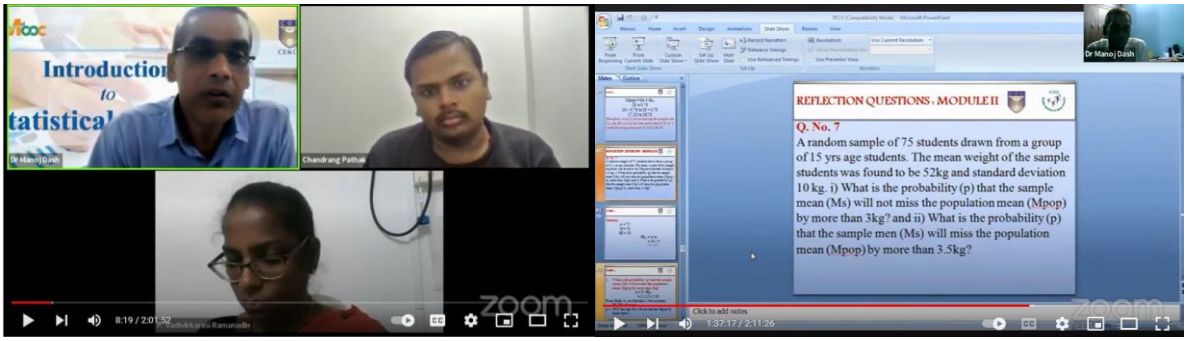
Provision of evaluation was made through Quiz in each week. There were four Quizzes in the whole course with 10 questions in each quiz. Care was taken to have quiz questions on all aspects such as knowledge, understanding, application and skill. Conscious decision was taken to have more application and skill-based questions to make the learners apply and assess their own ability, to make it a point of self evaluation as well. **The average score is found to be 88,** which is found to be very good in such a MOOC involving mathematical ability, analytical ability and research base for strengthen the foundation of learners from multiple fields of study.

v) Live Sessions: For Blending

The following **SIX Live** sessions are planned and scheduled for providing better support services to learners and resolving queries of learner onsite by the lead instructor Dr Manoj Kumar Dash with the support of Dr Manas Ranjan Panigrahi and all mentors.

Sl. No.	*Theme*	*Date*	*YouTube Link*
1	*Check your Progress-I, Reflection Questions of Week 1 and OPEN Q & A*	*8th Dec 2021 05:00 (IST)*	*https://youtu.be/I2qAhG4DwL4*
2	*Check your Progress-II, Reflection Questions of Week 2 and OPEN Q & A*	*12th Dec 2021 05:00 (IST)*	*https://youtu.be/kvW5iOHLwPA*
3	*Assignment Preparation and OPEN Q & A*	*15th Dec 2021 05:00 (IST)*	*https://youtu.be/rhkrvglF6vo*
4	*Check your Progress-III, Reflection Questions of Week 2 and OPEN Q & A*	*19th Dec 2021 05:00 (IST)*	*https://youtu.be/rhkrvglF6vo*
5	*Check your Progress-IV, Reflection Questions of Week 2 and OPEN Q & A*	*22nd Dec 2021 05:00 (IST)*	*https://youtu.be/oBo3_-nXyfY*
6	*PRESENTATION OF DEMO STATISTICAL REPORT and OPEN Q & A*	*26th Dec 2021 05:00 (IST)*	*https://youtu.be/oBo3_-nXyfY*

This was an attempt to implement the programme with blended mode. The sessions were found to be very relevant and helpful for the learners and were highly appreciated by learners, as posted in the forum **(Annexed as Annexure I).**



Learning Outcomes

Learners successfully completed the MOOC can

1. Define the concept of statistical analysis and distinguish between statistical analysis and statistical inferences.
2. Use various statistical measures and their use in analysis and interpretation in their research.
3. Develop essential skills to understand concept of the level of confidence interval and their use in making analysis and interpretation in research.
4. Use the statistics effectively and efficiently for verification of hypothesis of their research study meaningfully.
5. Develop analytical ability and critical thinking in selection of statistics and their use in making interpretation meaningful and productive.

Course Team Meeting

The course team comprised of course design & development team, principal instructor, mentors and members of operation team. Series of meetings (virtual) are held from time to time with all the members of course team at different phases of implementation of this 2nd cycle this MOOC.

Course Design and Development

Dr. Manas Ranjan Panigrahi, Sr. Programme Officer (Education), Commonwealth Educational Media Centre for Asia (CEMCA), New Delhi, India.

Dr. Manoj Kumar Dash, Regional Director, IGNOU, Regional Evaluation Center, Bhubaneswar, India & the lead instructor

Dr Iswar Chandra Naik, Coordinator, KISS

Mentors

Prof. Mostafa Azad Kamal From BOU, Bangladesh

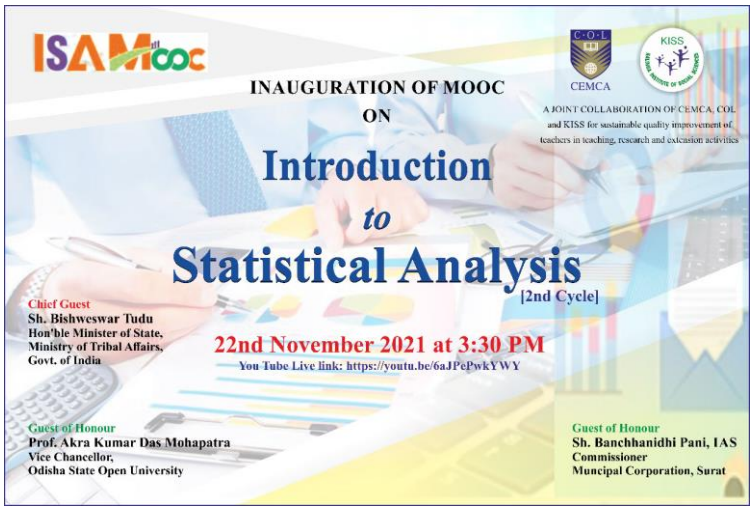
Dr S. K. Panigrahi (Ph.D) From Bhubaneswar, Odisha

Dr Sumeet (M.Tech, Ph.D) From New Delhi

Mr Kuldeep Sharma (B. Tech, MCA), Jaipur, Rajasthan

Ms S. R. Dash (MTech, EIS), Bhubaneswar, Odisha

INAUGURATION OF THE 2ND CYCLE OF THE MOOC ISA



Sh Bishwaswar Tudu, Hon'ble Mnister of State, Ministry of Tribal Affairs and Jal Shakti, **inaugurated the 2nd cycle of the MOOC ISA on 22nd Nov 2021 at 3:30PM through virtual mode in the presence of Prof Akra Das Mohapatra**, Vice Chancellor, Odisha State Open University**, Guest of Honour; Sh Banchhanidhi Pani,** IAS, Commissioner, Municipal Corporation Surat, Gujarat, **Guest of Honour; Prof Deepak Behera**, Vice Chancellor, KISS and **Prof Madhu Parhar** Director CEMCA.

Dr Sumeet initiated the programme welcomed all dignitaries on the dice and participants of the programme followed by a Saraswati Vandana.

Dr Manas Ranjan Panigrahi, Sr Programme Officer, CEMCA explain the outline of the programme and focused on design and development of this course for the benefit of target audience with effective and efficient use of technology enhanced learning strategies. He welcomed all the panelists and recognized the efforts of ISA MOOC Team highlighting the major aspects of the course and results of the first cycle of implementation of this course.

Dr Manoj Kumar Dash, Regional Director IGNOU & Lead Instructor and Course Designer of this MOOC addressed the panelists and all the participants. He gave a brief overview of this course including the content of each week, target audience and outcomes of this short term course. Dr Dash highlighted the success of this MOOC in terms of its implementation in first cycle with more than 5000 learners including 968 learners from 52 different countries. At the same time focused on current registration of more than 1700 learners for the 2nd cycle of the MOOC commencing from 1st Dec 2021. In the 2nd cycle also 768 learners from 48 different counties are registered in this course. There are 1107 learners from all 35 states & UTS of India. This shows reaching the unreached at their

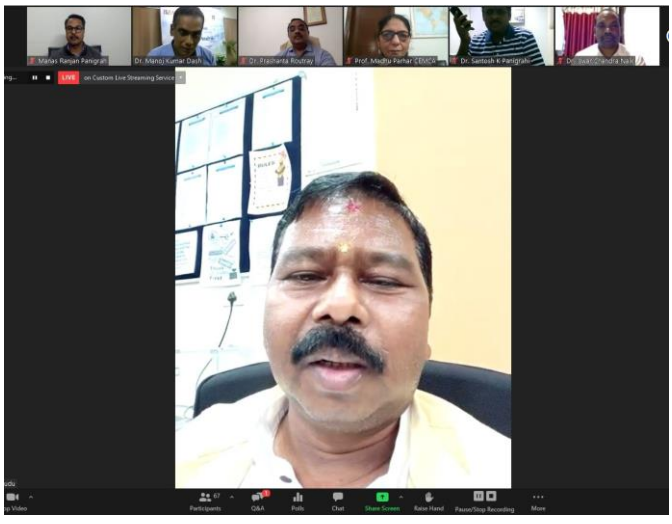
doorsteps with quality courses through technology enhanced learning, blended learning approach and use of OER in the context of technology mediated learning. Dr Dash thanked to Director CEMCA and her team and also management of KISS for making this collaboration for the cause of quality education, training, research, development and extension activities for sustainable development.

Prof Madhu Parhar Director CEMCA appreciated the efforts of the MOOC Team and viewed to make the implementation meticulous for providing better opportunities to all registered learners. She focused on use of statistical analysis for Ph. D scholars in the context of Research Methodology and pointed that all students of higher education intended to peruse Ph. D should have opted such courses to have a conceptual clarity of the basic content and strengthen their research base for doctoral degree.

Prof Deepak Behera, Vice Chancellor, KISS addressed in the occasion and thanked CEMCA, COL for providing this opportunity to collaborate with KISS. Prof Behera also appreciated the efforts of MOOC Team in designing, development and implementation of this course.

Prof Akra Das Mohapatra, Vice Chancellor, Odisha State Open University**, Guest of Honour** addressed the participants and explain the importance of statistics in research and development and the need to train and orient the people about effective and efficient use of statistics. As a researcher he focused more on fundamental clarity of concept and better understanding of students and research scholars about research methodology and role of statistics to make the study more meaningful and productive.

Sh Banchhanidhi Pani, IAS, Commissioner, Municipal Corporation Surat, Gujarat, **Guest of Honour** addressed in this occasion and focused and important is statistics for administrators and policy makers in taking effective and efficient decisions. It is the need of the time to make use of data and its meaningful analysis for better implementations of plans, programmes and taking new initiatives. He rightly focused that its implication is multidisciplinary. So, everybody in every field of life should have basic knowledge of statistics and its use.



Sh Bishwaswar Tudu, Hon'ble Minister of State, Ministry of Tribal Affairs and Jal Shakti, **Chief Guest of the Occasion** addressed I the inaugural session and expressed his desired to train and orient

the students, teachers and field functionaries through such types of short-term courses. He offered his support and cooperation of all kinds for similar initiatives

DR P. K. Routray, Registrar & CEO KISS extended vote of thanks to Chief Guest, Guest of Honours, Director CEMCA, VC KISS, MOOC TEAM and all the registered learners (participants) with a focus to use and implication of statistics for all at all level of activities. The detailed about the proceeding of the launch of the course is made available at **https://youtu.be/6aJPePwkYWY**

PROGRAMME SCHEDULE LAUNCH OF THE MOOC

03:30 PM	*Start of the Programme with welcome to Panelists, MOOC Team & Learners* *Saraswati Vandana* ***Dr Sumeet***
03:35 PM	*Welcome to the Panelists with their brief Introduction* *(Chief Guest, Guest of Honors, Director CEMCA & VC KISS)* ***Dr Sumeet***
03:40 PM	*A brief about the Programme* ***Dr M. R. Panigrahi***
03:45 PM	*A brief about the Course (MOOC ISA)* ***Dr M. K. Dash***
03:50 PM	*Address of Director, CEMCA* ***Prof. Madhu Pahar***
03:55 PM	*Address of Vice Chancellor, KISS* ***Prof. Deepak Behera***
04:00 PM	*Address of the Guest of Honor* ***Prof. Akra Das Mohapatra*** *Vice Chancellor, OSOU*
04:10 PM	*Address of the Guest of Honour* ***Sh. Banchhanidhi Pani, IAS*** *Commissioner Municipal Corporation, Surat, Gujarat*
04:15PM	*Address by the Chief Guest* ***Sh Bishweswar Tudu*** ***Hon'ble Minister of State*** ***Ministry of Tribal Affairs and Jal Shakti, Govt of India***
04:25 PM	*Vote of Thanks* ***Dr P. K. Routray*** *Registrar, KISS*
04:30 PM	*National Anthem* ***Dr Sumeet***
4:35PM - 05:00PM	***Q & A and Interaction with Participants***


Shri Bishweswar Tudu
Prof. Akru Das Mohapatra
Shri Banchhanidhi Pani,IA
Commissioner
Municipal Corporation,Sura


Prof Madhu Parhar
Director
CEMCA, COL
Prof Deepak Behera
Vice Chancellor
KISS, A Deemed to be Uni
Dr Prashant Kumar Routray
Registrar & CEO
KISS, A Deemed to be Uni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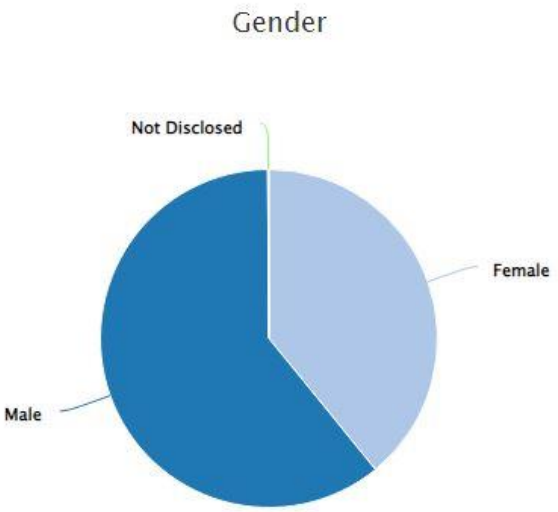
FINDINGS OF THE COURSE

Enrolment in the Course

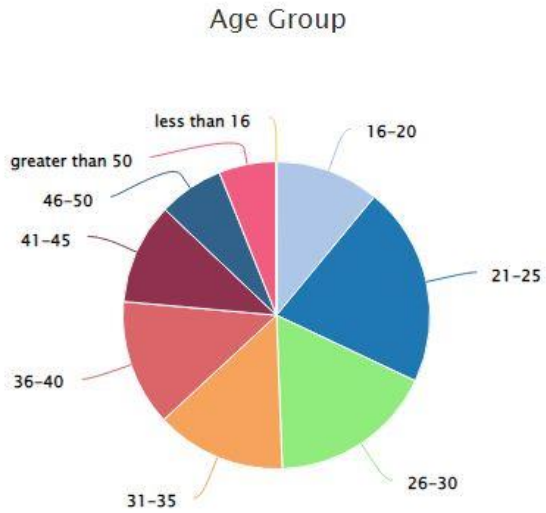
Total Registered learners: 1926 (1210 from India & 716 from other countries) from **42 different countries.** Out of 1210 registration from India, highest number of registrations i.e, 229 are from one state Odisha AND 217 from Tamil Nadu.

Learners from 27 states/UTs of India participated in this MOOC. The state wise distribution of learners is as follows:

Odisha: 229; Tamil Nadu: 217; Maharastra: 121; West Bengal: 103; Uttarpradesh: 73; Karnataka: 43; Rajasthan: 39; Bihar: 36; Kerla: 32; Andhra Pradesh; 31; Madhya Pradish: 24; Jharkhand: 26; Harnana: 16; Punjab: 13; Gujarat: 12; Himachal Pradesh: 11; J & K; 20; Sikim: 09; Assam: 26; Meghalaya: 12; Triura: 02; Mizoram: 05; Manipur: 03; Nagaland: 07; and Arunachal Pradesh: 12. About 50 learners are registered from seven N-E states of India. 60.48% of total registered learners are male and 38.94% are female.

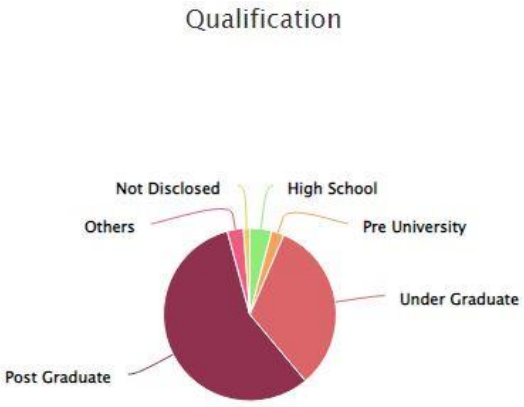


It reflects the quantum of registration all around the globe, shows the interest and motivation of learners towards this MOOC ISA.



In terms of age wise registration of learners highest number of registered learners, i,e 20.9% are in the age group 21-25 yrs, 17.2% in 26-30 yrs, 13.6% in 31-35yrs, 13.2% in 36-40 yrs, 10.6% in 41-45yrs, 6.8% in 46-50yrs and 5.9% are above 50 yrs. It's interesting to note that about 10.9% of registered learners are from the age group of 16-20 years age.

This shows the increasing trend among the youth towards use of technology and learning through technology in the present age of digitization.



Out of all registered learners 45.5% (n= 877) are post graduates, 26% (n= 501) are under graduates, 1.8% (n= 36) are from pre university level, 3.3% (n= 63) are with high school qualification and 2.4% (n= 47) are with other qualifications. This reflects the length and breadth of the level of knowledge and understanding of the registered learners of this course.

With respect to the affiliation of registered learners, it is also pertinent to mention that 44.5% (n= 858) are academia, 17.4% (n= 335) from government sectors, 32.9% (n= 634) are with individual recognition, 2.34% (n= 45) are from non-profit organization, 1.4% (n= 27) is from profit organization and 0.8 % (n= 15) is from community organization. We can say that the registered learners are from all fields and discipline not just limited to any particular field/discipline.

Discussion and Interaction

Out of **1926 registered learners,** 53.4**% (n= 1029) are active learners**. It is encouraging to note that 889 **forum posts** in the curse as on 31st Dec 2021. Where, 2703 **comments are posted** by the learners from time to time during the implementation period. There are communication and interaction made in hangout to provide instant solution to their queries.

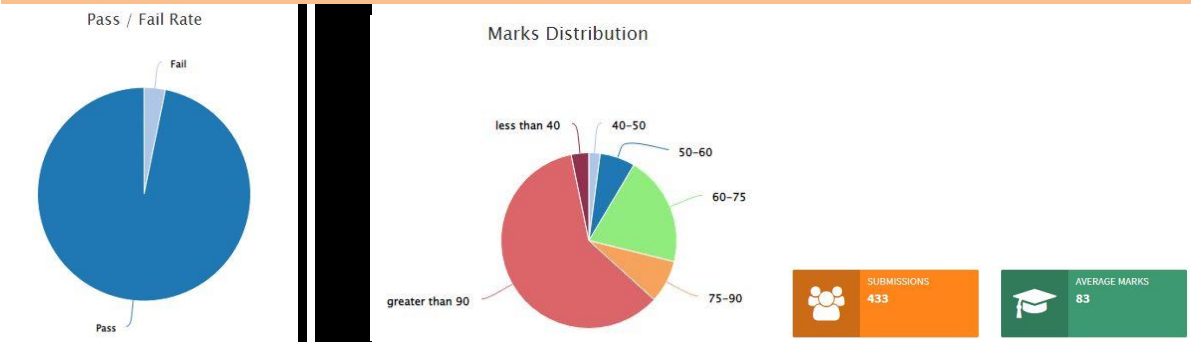
It was a great learning experience, interacting with such a large number of learners from around the globe. The comments made by the learners are quite encouraging and motivating to have similar experiences for the cause of learning of learners at a distance through online MOOC. These are the real means of discussion and interaction in the process of technology enhanced learning among the learners, among the mentors and between the learners and mentors as well.

Certification

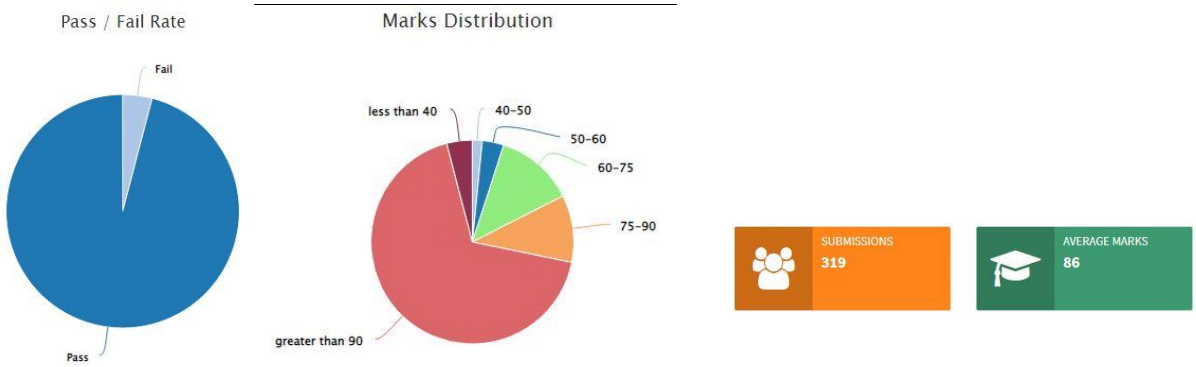
On the basis of the evaluation criteria finalized by the course team, 235 Certificates are issued to eligible learners who successfully participated and completed the course.

i) **107** Certificate of Completion
ii) **128** Certificate of Participation

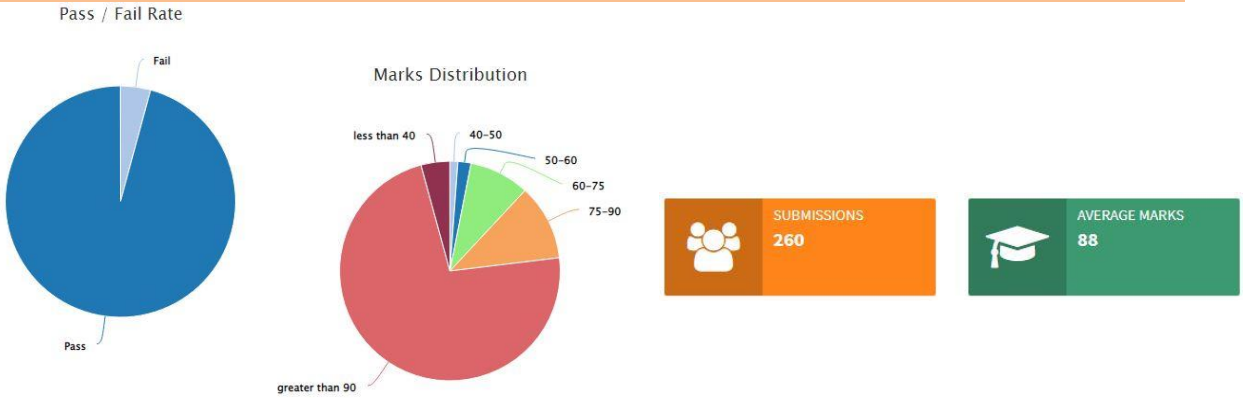
Results of Quizzes 1



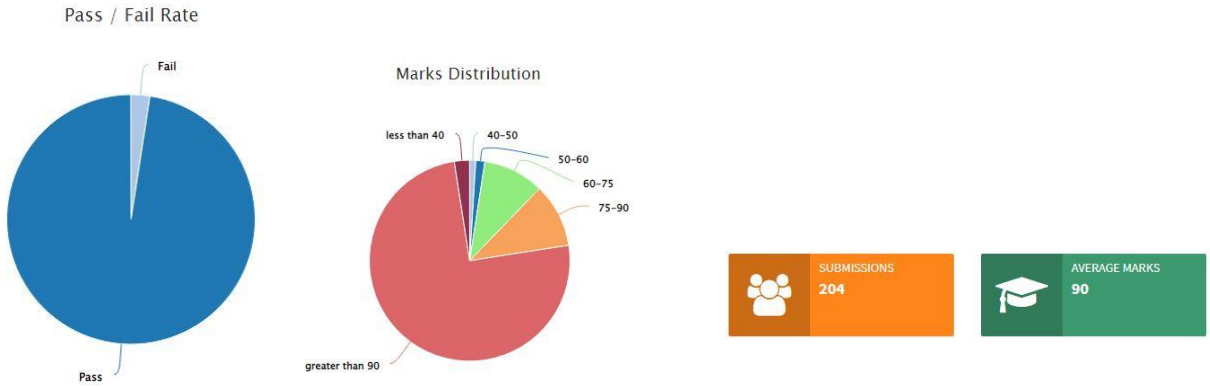
Results of Quizzes 2



Results of Quizzes 3



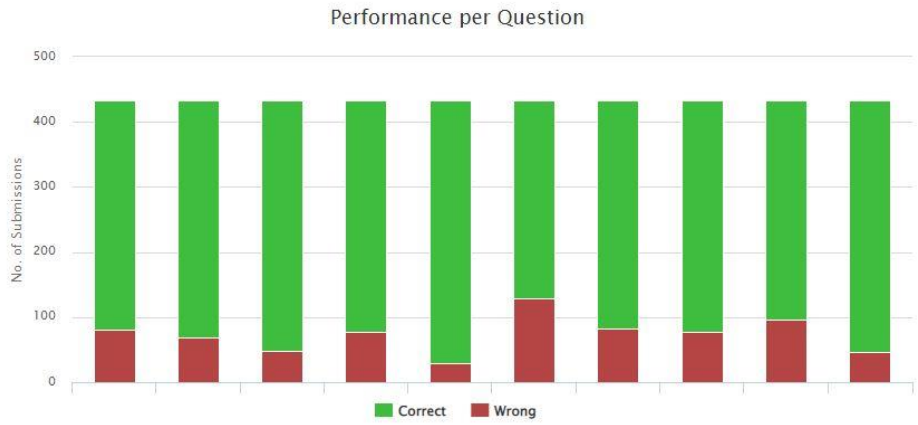
RESULTS OF QUIZZES 4



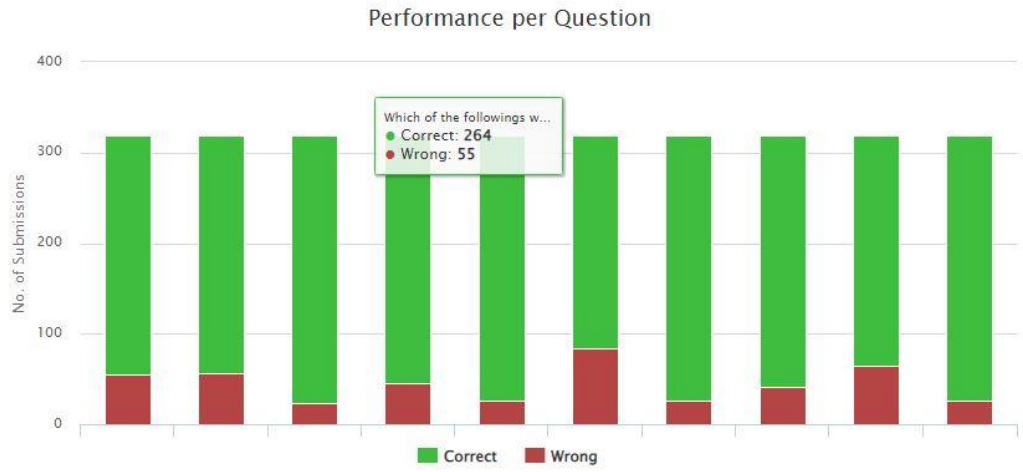
Question Wise analysis of Performance

In each quiz there were 10 questions. Question wise performance of the learners is summarised for better understanding and clarity about the nature of questions.

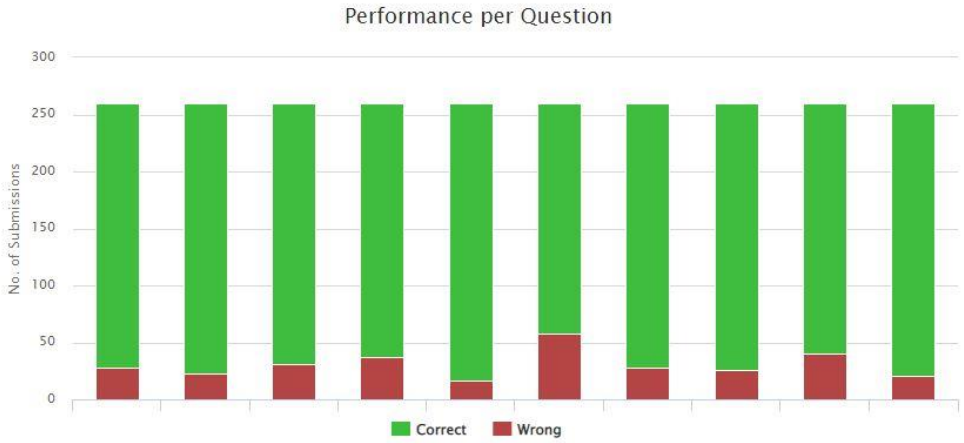
Question wise analysis: Quiz I



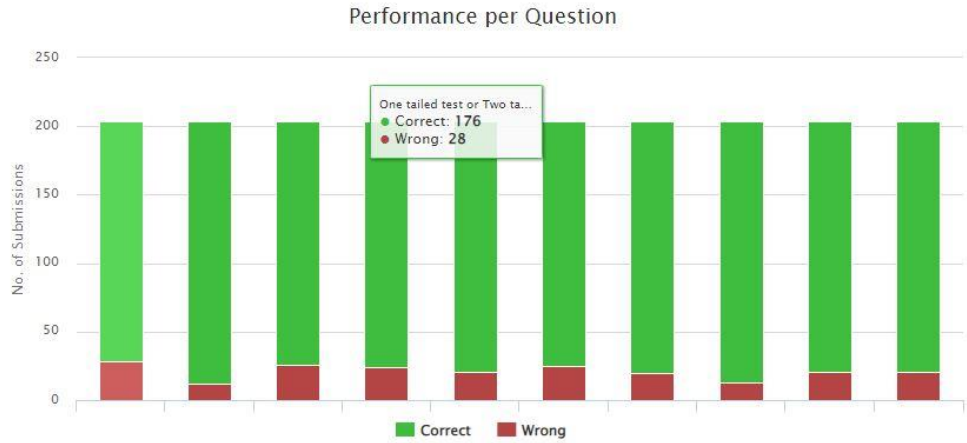
Question wise analysis: Quiz 2



Question wise analysis: Quiz 3



Question wise analysis: Quiz 4



Recommendations

The following points are submitted for kind consideration of CEMCA and the implementing partner KISS

1. Focussed should be laid on design, development of MOOCs based on course content of learners at different levels to provide add-on support to students in one hand and capacity building of teachers on the other hand.

2. There should be check and balance in the creation of posts in the forum, so that, learner's can be made to involve, participate and response to the instructors/mentors posts during the course implementation. It's essential to incorporate a component of seriousness among the learners in creation of post, responding to the posts of other learners/ moderators.

3. There should be a provision of deletion of unwanted, irrelevant posts in the platform of MOOKIT, it would encourage them to post only relevant and significant content in the forum and understand the importance of posts in teaching learning process as a means of instructional design.

4. Zero weeks should be made more systematic and structured like the other weeks to make the learners completely orient about the use of the platform and understanding of various mandatory requirements of the course.

5. There should be a provision of sending sms in the platform/ or through other means to learners for each announcement. As it is generally perceived that reminder through sms is more active and vibrant than through E. Mail.

6. More intensive efforts be made for promotion, publicity through the MOOC brouchers and other promotional materials with use of website of partner institution and through various social medial networks with a focus to reach the target group optimally.

7. Press releases be made for wider dissemination through electronic and print media

8. A provision may be made to invite faculties of all divisions, centres and departments of the partner institution in each cycle of the implementation of the MOOC.

9. May plan to have orientation /capacity building workshop for faculties & PG, M.Phil Ph.D students in and faculties as well on various aspects of MOOC (design, development & Implementation), and TEL, Blended Learning Process etc. To create a workforce for the institution in the direction of technology enhanced learning.

There are learners just enrolled to get certificate only. Hardly have they had interest and motivation towards use of various components in the MOOC and understand their importance and implications. They take it very lightly and casually as a general webinar and think just to complete the quizzes and feedback, would be enough for certification. Assignment is one of the most relevant and important aspect of evaluation and a means of skill development and competency enhancement of learners (as an aspect of application of what is learnt) in the MOOC. More focus is laid on assignments and assignment questions are made more practical based and realistic to evaluate individual competency and their performance. Reflection questions given at the end of each module was found to be instrumental as a means of brainstorming for learners. It provides them a clue to further discuss and demonstrate their abilities in the forum in the form of discussion and interactions.

COURSE TEAM

Report Prepared By:

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