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Student and Teacher perceptions and experiences:
How do they align?

ARTICLES

The attitude of students and teachers towards MOOC usage for their academic and professional development: A comparative study of two case study sites

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The attitude of students and teachers towards MOOC usage for their academic and professional development: A comparative study of two case study sites

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Abstract: The massive open online course (MOOC) and online learning concepts have received a lot of attention from educational stakeholders all around the world as a result of COVID-19. Initial studies demonstrated that people may use MOOCs as a tool for academic and professional advancement. This micro-study was conducted at two adjacent national higher educational institutions (HEIs) in India as case study sites (CSS) to learn more about the attitude of the students and faculties there. The research strategy used for the study was a mixed-method approach. To collect data, a tool that was created by the researchers was used. There was a type of atypical relationship between the institutions and the professionals. Comparing CSS2 students and CSS1 teachers to their peers from other institutions, it was discovered that they both displayed more optimistic attitude. The attitude of all four groups were discovered to be favorable. The study served as an example of some educational ramifications in the neighborhoods.

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I. Introduction

Massive open online courses (MOOCs) began their voyage in 2008, and shortly after they were introduced, the phenomenon gained popularity all over the world. As a result, 2012 was designated as the Year of MOOC.[1] Through increasingly critical studies, the phenomenon eventually reaches a plateau. It was believed that MOOCs will completely overhaul the current system of instruction and training. The US and European nations have a higher prevalence of MOOC research and development. These two categories account for the majority of platforms that offer MOOCs. According to research, there was a sizable presence of Indian students in those MOOCs where the accent used to give the lessons was frequently one of the troublesome elements. Research was conducted on primary school students and caregivers during the COVID-19 pandemic, when all schools were closed due to the situation, in order to create and validate the online learning attitude questionnaire.[2] Additionally, a study on the perceptions of arts educators about online education was examined to look at their group characteristics.[3] The government of India (GoI) occasionally made efforts to launch some MOOC initiatives to support the area of academic and professional development (APD) of its citizens at a global climax. Such programmes may have also been motivated by the desire to help people transition from being merely consumers to prosumers. India currently has its own MOOC platform called "Study Webs of Active-Learning for Young Aspiring Minds" (SWAYAM), and nine national coordinators have been appointed to ensure effective oversight of the academic and research interests of its stakeholders at various levels. In a nutshell, the aforementioned image depicted national and international MOOC learning/development policies, practices, and research.

[1] Laura Pappano, "The Year of the MOOC," *New York Times*, November 2, (2012): https://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html.

[2] Joseph Hin Yan Lam, and Shelley Xiuli Tong, "Development and Validation of the Online Learning Attitude Questionnaire (OLAQ) among Primary School Children and Caregivers," *Interactive Learning Environments*, (2022): 1-15, https://www.tandfonline.com/doi/full/10.1080/10494820.2022.2043911.

[3] Mo Wang et al., "Art Teachers' Attitudes toward Online Learning: An Empirical Study Using Self Determination Theory," *Frontiers in Psychology* 12, (2021): 627095, https://doi.org/10.3389/fpsyg.2021.627095.

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II. Literature review

The MOOC and APD are connected to this article. The researchers held the opinion that professional development (PD) and academic advancement cannot be isolated from one another because they frequently coexist. Some comparable works from the extant literatures have been put here in various categories for a systematic presentation.

II.1. Review of research related to MOOC and academic development

The use of ICT in education transactional processes was continuously noted by its stakeholders in the twenty-first century. In addition to the traditional delivery techniques for lessons, a number of innovative strategies were entering the picture. Flexible learning routes in higher education (HE) were promoted by the sustainable development goals (SDG4).[4] Research demonstrated that the practical application of ICT in teaching-learning processes improved the learning of rookie teachers of a hybrid institution, foreshadowing the blendedness in HE.[5] A significant change was about to occur in India's future university education system thanks to the engagement of MOOCs.[6] According to a comparative study of the users of two separate MOOC sites, Indian students were using MOOCs to advance their academic careers.[7] A team of researchers suggested that students might consider using virtual simulations for laboratory work in light of the development of augmented reality.[8] Researchers were present

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[4] Michaela Martin, and Ana Godonoga, "SDG 4 - Policies for Flexible Learning Pathways in Higher Education," *IIEP-UNESCO Working Papers* (2020): 1-52, https://unesdoc.unesco.org/ark:/48223/pf0000372817?locale=en.

[5] Magda Pischetola, "Teaching Novice Teachers to Enhance Learning in the Hybrid University," *Postdigital Science and Education* 4, (2022): 70–92, https://link.springer.com/article/10.1007/s42438-021-00257-1.

[6] Pankaj Mittal, "Creating Future Ready Universities the Indian Context," in *Reimagining Indian Universities,* eds. Pankaj Mittal and Sistla Rama Devi Pani, (New Delhi: Association of Indian Universities, 2020): 1-19, https://www.aiu.ac.in/documents/AIU_Publications/Reimagining%20Indian%20Universities/8.%20Creating%20Future%20Ready%20Universities%20The%20Indian%20Context%20By%20Pankaj%20Mittal%20Secretary%20General,%20Association%20Of%20Indian%20Universities,%20New%20Delhi.pdf.

[7] Janesh Sanzgiri, "MOOCs for Development? A Study of Indian Learners and Their Experiences in Massive Open Online Courses," (Ph. D. diss., The Open University, 2020): https://www.proquest.com/openview/e5bc1153640ddb559a4290282edcc56a/1?pq-origsite=gscholar&cbl=18750&diss=y.

[8] Guido Makransky et al., "Equivalence of Using a Desktop Virtual Reality Science Simulation at Home and in Class," *Plos One* 14, no. 4 (2019): e0214944, https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0214944.

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during the start of the COVID-19 pandemic to emphasize the difficulties and possibilities in rethinking HE.[9] In the midst of the buzz surrounding MOOCs and access to high-quality HE, the researchers took a controversial stance based on their qualitative research.[10] The MOOC phenomenon received harsh criticism on a number of fronts. The spread of MOOCs in HE and their societal ramifications were discovered through a comparison of the USA and Europe.[11] Graduate students' perceptions of studying IFRS through MOOCs were investigated.[12] The dropout rate of MOOC students has been found to be too high in a number of studies. A group of scholars proposed adopting an alternative perspective on success and dropout in light of the learners' point of view.[13] To disseminate awareness of the benefits of MOOCs in India, however, the GoI issued a number of announcements that were helpful to the researchers in understanding how they may be implemented in academic settings.[14,15] The use of a mixed-method approach was emphasized by a group of researchers in relation to MOOC activities and its evaluation procedures.[16]

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[9] Lorenz S Neuwirth, Svetlana Jovic, and B Runi Mukherji, "Reimagining Higher Education During and Post-COVID-19: Challenges and Opportunities," *Journal of Adult and Continuing Education* 27, no. 2 (2021): 141–156, https://doi.org/10.1177%2F1477971420947738.

[10] David Nemer, and Jacki O'Neill, "Rethinking MOOCs: The Promises for Better Education in India," *International Journal of Information Communication Technologies and Human Development (IJICTHD)* 11, no. 1 (2019): 36-50, https://www.igi-global.com/article/rethinking-moocs/221310.

[11] Valentina Goglio, "The Diffusion and Social Implications of MOOCs A Comparative Study of the USA and Europe," (Routledge, 2022): 207-221, https://www.taylorfrancis.com/chapters/mono/10.4324/9781003009757-12/conclusions-valentina-goglio.

[12] Julieth E. Ospina-Delgado, María A. García-Benau, and Ana Zorio-Grima, "Learning IFRS through MOOC: Student and Graduate Perceptions," *Accounting Education* 30, no. 5 (2021): 451-471, https://doi.org/10.1080/09639284.2021.1925131.

[13] Maartje A. Henderikx, Karel Kreijns, and Marco Kalz, "Refining Success and Dropout in Massive Open Online Courses Based on the Intention–behavior Gap," *Distance Education* 38, no. 3 (2017): 353-368, https://www.tandfonline.com/doi/full/10.1080/01587919.2017.1369006.

[14] University Grants Commission, Massive Open Online Courses an Initiative under National Mission on Education through Information Communication Technology (NME-ICT) Programme, (F. No. 8-1/2015-TEL, March 11, 2016a): https://www.ugc.ac.in/pdfnews/3885329_MOOCs-Guideline-(Development--Funding).pdf.

[15] University Grants Commission, UGC (Credit Framework for Online Learning Courses through SWAYAM) Regulation, 2016, (No. F.1-100/2016 (MOOCs/e-content), July 20, 2016b): https://www.ugc.ac.in/pdfnews/0272836_moocs.pdf.

[16] Edward Meinert et al., "Protocol for a Mixed-methods Evaluation of a Massive Open Online Course on Real World Evidence," *BMJ Open* 8, no. 8 (2018): e025188, http://dx.doi.org/10.1136/bmjopen-2018-025188.

II.2. Review of research related to MOOC and professional development (PD)

The need for professional training for teachers was felt in the post-COVID-19 environment as educators looked forward to the prospect of instruction delivery in a mixed mode.[17] There is evidence pointing to the benefits of MOOCs for teachers' professional development (TPD).[18] Were the instructors' techno-optimists or pessimists in the twenty-first century? A pilot study was conducted internationally to discover the solution.[19] According to a report, by offering continuous professional development (CPD) through online courses, social and economic mobility could be enhanced.[20] A team of researchers has offered advice on how to incorporate MOOCs into classroom instruction for the benefit of teachers.[21] MOOC continued to be a frequent research area for TPD.[22,23] According to research, MOOCs could help employees develop their digital skills.[24] A comparative study of two MOOC platforms' students revealed that the courses helped them improve their classroom attentiveness.[7] On the potential of MOOCs as a tool for human development, there were exemplary

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[17] UNESCO, Teacher Task Force, and ILO, Supporting Teachers in Back-to-School Efforts Guidance for Policy-Makers, (May, 2020): 1-5, https://teachertaskforce.org/knowledge-hub/supporting-teachers-back-school-efforts-guidance-policy-makers.

[18] Pradeep Kumar Misra, "MOOCs for Teacher Professional Development: Reflections and Suggested Actions," *Open Praxis* 10, no. 1 (2018): 67–77. https://openpraxis.org/article/10.5944/openpraxis.10.1.780/.

[19] Łukas Tomczyk et al., "Are Teachers Techno-optimists or Techno-pessimists? A Pilot Comparative among Teachers in Bolivia, Brazil, the Dominican Republic, Ecuador, Finland, Poland, Turkey, and Uruguay," *Education and Information Technologies* 26, (2021): 2715–2741, https://link.springer.com/article/10.1007/s10639-020-10380-4.

[20] Runchana Pam Barger, "Democratization of Education through Massive Open Online Courses in Asia," *IAFOR Journal of Education: Technology in Education* 8, no. 2 (2020): 29-46, https://eric.ed.gov/?id=EJ1265753.

[21] Peter G. M. de Jong et al., "Twelve Tips for Integrating Massive Open Online Course Content into Classroom Teaching," *Medical Teacher* 42, no. 4 (2020): 393-397, https://doi.org/10.1080/0142159X.2019.1571569.

[22] Commonwealth of Learning, Policy Brief: Leveraging MOOCs for Teacher Development in Low-Income Countries and Disadvantaged Regions, (November, 2021): 1-16, http://hdl.handle.net/11599/3980.

[23] Benjamin Hertz et al., "A Pedagogical Model for Effective Online Teacher Professional Development—Findings from the Teacher Academy Initiative of the European Commission," *European Journal of Education* 57, (2022): 142–159, https://onlinelibrary.wiley.com/doi/epdf/10.1111/ejed.12486.

[24] Sarah Edelsbrunner et al., "Promoting Digital Skills for Austrian Employees through a MOOC: Results and Lessons Learned from Design and Implementation," *Education Sciences* 12, (2022): 89-105, https://www.mdpi.com/2227-7102/12/2/89.

findings accessible.[25] In order to integrate technology into education, a group of academics conducted a study on the assessment of teachers' digital competency.[26] According to a survey on teachers' attitude, they are open to more structured training that will increase the effectiveness of the online learning environment.[27] The impact of pre-service teachers' attitude toward web-based training in an online setting was investigated using self-regulated learning (SRL) skills.[28] Wu and Chen (2022) conducted a thorough investigation to identify the variables influencing the efficacy of MOOC teachers. The teachers were evaluated from the viewpoint of human capital.[29] To determine the function of TPACK and EFL teachers in China's emotional and evaluative attitude toward technology, a dichotomous model was created.[30] MOOC was introduced as an additional TPD tool. A fictitious learning model was used to increase the percentage of in-service teachers who completed their MOOC courses.[31]

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[25] Balaji Venkataraman, and Asha Kanwar, "Changing the Tune: MOOCs for Human Development? – A Case Study," in *MOOCs and Open Education Around the World,* eds. Curtis J. Bonk, Mimi Miyoung Lee, Thomas C. Reeves, Thomas H. Reynolds, (Routledge, 2015): 27, https://www.routledge.com/MOOCs-and-Open-Education-Around-the-World/Bonk-Lee-Reeves-Reynolds/p/book/9781138807419.

[26] Alberto A. P. Cattaneo, Chiara Antonietti, and Martina Rauseo, "How Digitalised Are Vocational Teachers? Assessing Digital Competence in Vocational Education and Looking at its Underlying Factors," *Computers & Education* 176, (2022): 104358-104375, https://doi.org/10.1016/j.compedu.2021.104358.

[27] Sanjay Dey et al., "A study on the Effectiveness of Online Mode of Education during the Covid-19 Pandemic through the Awareness and Attitude of Teachers," *Research Review International Journal of Multidisciplinary* 7, no. 1 (January, 2022): 5-25, https://rrjournals.com/index.php/rrijm/article/view/48/33.

[28] Hasan Ozdal et al., "Effectiveness of Self-Regulated Learning Skills on Web Based Instruction Attitudes in Online Environments," *Pegem Journal of Education and Instruction* 12, no. 1 (2022): 182-193, View of Effectiveness of self-regulated Learning skills on web-based instruction attitudes in online environments (pegegog.net).

[29] Bing Wu, and Wei Chen, "Factors Affecting MOOC Teacher Effectiveness from the Perspective of Professional Capital," *Behaviour & Information Technology*, (2022): 1-16, https://doi.org/10.1080/0144929X.2021.2024596.

[30] Meng Zhang, and Sitong Chen, "Modeling Dichotomous Technology Use among University EFL Teachers in China: The Roles of TPACK, Affective and Evaluative Attitudes towards Technology," *Cogent Education* 9, no. 1 (2022): 2013396-2013420, https://doi.org/10.1080/2331186X.2021.2013396.

[31] Ning Ma et al., "A Learning Model for Improving In-Service Teachers' Course Completion in MOOCs," *Interactive Learning Environments*, (2022): 1-16, https://doi.org/10.1080/10494820.2021.2025405.

II.3. Critical appraisal of the literature review and the rationale of the study

The aforementioned survey of the literature revealed that numerous studies on MOOCs and APD were conducted, with participants being professors or students in a variety of settings and scenarios. However, very little study has been done on the CSS1 and CSS2 students and teachers to understand their attitudes regarding using MOOCs for their APD. Therefore, more study in the area was warranted. It is clear that HE was the primary research area for MOOCs. However, the phenomenon was slowly gaining traction in the Indian setting. The administration was eager to introduce it at various educational levels. Any policy's implementation success depends on the coordinated efforts of all relevant parties. The purpose of this study was to examine how teachers and students saw MOOCs in relation to their APD. Thus, the authors attempted to present a comparative analysis through this paper by including two significant groups of educational stakeholders, specifically students and teachers from two national HEIs of India, coded as CSS1 and CSS2.

III. Variables

The factors in the current study were split into two groups.

i) Major variable: Attitude towards MOOC usage for the APD
ii) Categorical variables: Institutional status (HEIs) & professional status (teachers & students of the HEIs)

IV. Research objectives

The subsequent two research objectives (ROs) served as the foundation for the study.

RO1: To study the attitude towards MOOC usage for the APD of the students and teachers of the CSS1 and CSS2.

RO2: To compare the attitude of the students and teachers of CSS1 and CSS2 towards MOOC usage for their APD of the students and teachers of the CSS1and CSS2.

V. Research hypothesis

The following null hypothesis was developed for the quantitative study of RO1, and RO2 was established by comparing the mean values of the samples' scores on the attitude scale.

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$H_0$1: There will be no significant difference in attitude towards MOOC for their APD between the professionals i.e., the students (of CSS1 + CSS2) and teachers (of CSS1 + CSS2).

$H_0$2: There will be no significant difference in attitude towards MOOC for their APD between the institutes i.e., the (students + teachers of) CSS1 and CSS2.

$H_0$3: There will be no significant difference in attitude towards MOOC for their APD between the students of CSS1and CSS2.

$H_0$4: There will be no significant difference in attitude towards MOOC for their APD between the teachers of CSS1and CSS2.

$H_0$5: There will be no significant difference in attitude towards MOOC for their APD between the students and teachers of CSS1.

$H_0$6: There will be no significant difference in attitude towards MOOC for their APD between the students and teachers of CSS2.

VI. Explanatory (research) questions

Five explanatory (research) questions (EQs) were framed, each of which contained a list of possible responses, from which a respondent would choose one based on his or her own characteristics and circumstances in order to conduct in-depth qualitative analysis of the divergence of different groups in attitude toward MOOC usage.

EQ1: Did you face any kind of problem during the participation in MOOC? If yes, please explain.

EQ2: How did the MOOC /online course help you in your APD?

EQ3: How easy it was for you to go for e-learning through MOOC with regular institutional academic assignments?

EQ4: Would you like to attend MOOC in the future? If yes, then explain what type of MOOC you wish to attend.

EQ5: What is your overall experience about MOOC/online course?

VII. Methodology of the research

VII.1. Research tool and ethical considerations for the research

Self-determination theory served as the foundation for the descriptive survey. The main focus of the study was still online learning. This study used a mixed-method approach to research. A self-created Likert scale plus the aforementioned EQ questionnaire made up the research tool. The Likert

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scale of 14 statements was used to collect quantitative data. There were both positive and negative statements. The statements received the following affirmative responses: 5, 4, 3, 2, and 1. For the negative type of statements, the marking trend was reversed. Data gathering took place from March to September 2021, primarily during the COVID-19 epidemic and related lockdown. The tool was changed into a Google form to take data collection into account. The draught tool was used in the standardization process. The population was given access to the finished instrument for data collection.

The researchers continued to be cautious when it came to ethical issues in study. The research instrument was divided into four sections: general information, demographic information, part for collecting quantitative data, and section for collecting qualitative data. The participants received clear information about the study's goal in the general information section. Data collection was carried out using an anonymous form. No information about the subjects' personal information was taken into consideration during the data collection process. A statement regarding the upkeep of data confidentiality was attached. Whatever information was gathered, it was done so with the respondents' consent.

VII.2. Validity of the scale

By contrasting the three experts' opinions on the 14 assertions of the scale, the content validity of the scale was assessed. 13 of the statements were kept. Three key components were found by factor analysis, and under these three, 12 items were distributed. Finally, the final piece was tossed. The Cronbach's alpha reliability of the scale was determined to be 0.701.

VII.3. Population and sample/respondents

A comparison between the CSS1 and CSS2 was conducted. Due to their proximity in terms of location and similarities in HE transactional practices, the two national HEIs were taken into consideration. All the students and faculty members of the aforementioned institutions made up the study's population. 257 CSS1 and CSS2 students and teachers made up the study's sample. The samples came from various demographic groups. Table 1 below shows the sample size for this study.

VIII. Presentation of data

Table 1 mentions the sample size for this study. Figure 1 depicts the same for easier visualization.

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VIII.1. Histogram and descriptive statistics

The randomization method was applied throughout the study. The truth was demonstrably represented by the histogram (Figure 2) that follows of the entire sample scores. The odds ratio analysis of the data from the respondents was used to further investigate the fact of randomization. We have shown the descriptive statistics for each stratum in Table 2.

IX. Analyses of data

IX.1. Quantitative data analysis

In order to analyze the quantitative data, GraphPad Prism 5 and SPSS 17 were used. ANOVA and t-tests were used to evaluate the null hypotheses. Students and teachers from each institution participated in a comparative research that was conducted on two institutions, CSS1 and CSS2. In the beginning, the researchers made an effort to examine the issue from a broad spectrum, taking into account the degrees of institutes and professionals. As a result, 30 respondents from each area of the sample frame were selected by systematic randomization to create Table 3 for the ANOVA. The descriptive statistics for the attitude scores of the respondents chosen at random in equal numbers (N=30) from each of the four strata of the ANOVA matrices are presented in Table 4. Table 5 presents the ANOVA results.

$H_0$1: The F value for the professionals, which is displayed in Table 5, is 1.783. At the 0.05 level of significance, this value is not significant. As a result, research showed that there were no significant differences between the professionals (teachers and students). So the *null hypothesis $H_0$1 was retained*.

$H_0$2: According to Table 5, the institutes' F value is 2.515, which at a 0.05 level of significance is not significant. Thus, it suggested that there were no significant differences between the institutes and the professionals (students and teachers) associated to them. So the *null hypothesis $H_0$2 was retained*.

At the 0.05 level, the interactions between professionals and institutes (i.e., professionals * institutes) were significant. According to their institutions, it suggested that there might be a major difference between students or teachers. T-tests were required to make sure of this. Tukey's t tests were thus employed to determine whether the other 4 null hypotheses were tenable. The outcomes of the independent t-tests are shown in Table 6.

$H_0$3: The distinction was not statistically significant (NS), as indicated by the "p" value of 0.381. Therefore, *the null hypothesis was retained*. This

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indicated that there were no appreciable differences between the two national HEIs' students' attitudes regarding the research problem.

$H_0$4: Since the 'p' value was 0.005 in this case, the difference was significant (S). Therefore, *the null hypothesis was not retained*. This indicated that there was a large attitude gap between the teachers at the two national HEIs.

$H_0$5: 'p' was calculated to be 0.001. The difference was therefore substantial (S). Therefore, *the null hypothesis was not retained*. This indicated that there was a considerable attitude gap between CSS1 students and faculty when it comes to the research challenge.

$H_0$6: Since the 'p' value was 0.378, the difference in this case was not significant (NS). Therefore, *the null hypothesis was retained*. This indicated that there was no discernible difference in attitude towards the research problem between CSS2 students and teachers.

Comparing the mean scores of the samples from ANOVA Table 6 allowed for the establishment of RO2 using the quantitative data already available. The comparison shown in Table 7 allowed the researchers to determine the nature of the interactions between the institutes and the professionals that had previously existed (Figure 3).

IX.2. Qualitative data analysis

The qualitative analysis of the research problem was related to the second component of the research technique. So, using their content and theme analysis, the replies to each EQ were micro-analyzed. Below, absolute frequencies were used to illustrate the results of each EQ. Figures 4 and 5 provided, respectively, the students' and teachers' condensed replies to EQ1 for comparison examination.

Figures 4 and 5 demonstrated that technical issues with internet connectivity or bandwidth were the main cause of the MOOC learning problem. Other issues that students might encounter include a personal attention deficiency, a lack of awareness, a lack of personal interest, etc. The lack of time was another obstacle for teachers. Indicative replies for the EQ2 question were "enrichment of subject knowledge and development of new skill," "preparation of examinations like JAM/NET/GATE/TET etc.," "PD/ enhancing employment potential," "credit transfer in academic evaluation," "not applicable to me," and "didn't help in any way." Figures 6 and 7 provided a comparison of the sample groups.

Figures 8 and 9 in EQ3 categorically displayed the respondents' feedback.

Figures 8 and 9 showed that majority of the comments were favorable. Figures 10 and 11 from EQ4 depicted the respondents' perspective.

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Figure 10 showed how the students were imagining themselves participating in MOOCs and APD in the future.

Figure 11 showed that the professors' opinions regarding their future participation in MOOCs varied significantly. EQ4 once more showed that respondents had a generally optimistic perspective for the future. Figures 12 and 13 summarized the pros' final comments on EQ5.

In the EQ5 survey, a sizable portion of responses fell into the blend experience, satisfactory, and extremely satisfied categories. The researchers observed something of a similar nature to what they had seen in Figure 12, in Figure 13. Those in CSS1 were discovered to be happier than teachers in CSS2. The reception was mostly favorable for EQ5 as well.

X. Findings

The following conclusions were made when the quantitative data were analyzed:

1. When it came to their attitude toward using MOOCs for their APD, the students' and teachers' cumulative scores did not greatly diverge from one another.
2. Regarding their attitude on using MOOCs for their APD, the two national HEIs with their inmates (teachers + students) did not significantly differ from one another.
3. Regarding attitude on using MOOCs for their APD, students from the two national HEIs did not significantly differ from one another.
4. The attitude of the teachers at one national HEI (CSS1) and another (CSS2) towards the use of MOOCs for their APD were very different.
5. Regarding the use of MOOCs for their APD, the CSS1 faculty and students had very different attitudes.
6. The CSS2 students' and teachers' attitude scores regarding the research problem did not significantly differ from one another.

When compared to CSS1 students, CSS2 students were shown to have a more upbeat attitude. Teachers' attitude regarding the research problem was more favorable for CSS1 than CSS2 teachers. Our earlier conclusions were strengthened by the qualitative data analysis part, which also established the ROs and provided a thorough study of the research problem.

XI. Limitations

There were not many restrictions on the research. Which were

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1. The newly introduced Google format used for collecting data might be somewhat difficult particularly for the aged teachers.
2. There might be wide diversity among the clientele over the research topic.
3. The researchers had to be satisfied by a small sample size due to a barrier set up by world-wide COVID-19 pandemic during the period of data collection.

XII. Results and discussions

The demographics of the respondents were taken into account during the investigation, which led to some intriguing findings. The respondents above the age of 40 were found to represent themselves less frequently. Thus, the generational divide had an impact on this MOOC research. A similar kind of observation was recorded by earlier studies.[32] It was noted that female teachers did not participate very well in this study. Consequently, a sense of gender parity in HE and MOOC activities was felt.[33] It was observed that a sizable portion of respondents had not yet taken part in any MOOCs or online courses. The researchers therefore saw the need for a curriculum to familiarize learners with MOOCs. According to a report, MOOCs could promote social inclusion and mobility.[34] But just a small portion of the locality's influence on MOOCs was observed in our study. From respondents with various subjective backgrounds, a diverse distribution of respondents' representation was seen. A MOOC from any subjective background was therefore thought to not be equally appealing. With regard to the respondents' overall teaching experiences, a similar downward trend was seen across all participant age groups. Participants with research insight contributed more to this MOOC's research and practices than other participants.

The researchers were able to statistically identify the research objectives through the testing of null hypotheses and comparison of the mean scores of

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[32] David Santandreu Calonge, and Mariam Aman Shah, "MOOCs, Graduate Skills Gaps, and Employability: A Qualitative Systematic Review of the Literature," *International Review of Research in Open and Distributed Learning: IRRODL* 17 no. 5 (2016): 67-90, https://www.erudit.org/fr/revues/irrodl/2016-v17-n5-irrodl04876/1064705ar.pdf.

[33] Arnab Kundu, and Tripti Bej, "Perceptions of MOOCs among Indian State University Students and Teachers," *Journal of Applied Research in Higher Education* 12, no. 5 (2020): 1095-1115, https://www.emerald.com/insight/content/doi/10.1108/JARHE-08-2019-0224/full/html.

[34] Carmen Marta-Lazo,Sara Osuna-Acedo, and Javier Gil-Quintana, "sMOOC: A Pedagogical Model for Social Inclusion," *Heliyon* 5, no. 3 (2019): e01326, https://doi.org/10.1016/j.heliyon.2019.e01326.

the respondents. Teachers at different institutions exhibited quite different attitude (ref. $H_0$4), but students couldn't see these distinctions (ref. $H_0$3). Teachers and students occasionally displayed significant differences in attitude (ref. $H_0$5), but such differences were not always be guaranteed (ref. $H_0$1, $H_0$2, $H_0$6). In comparison to their peers in other institutions, the CSS2 students and CSS1 teachers showed a more upbeat mood than the other three strata (ref. Figure 3). Significant variations between some groups might be brought about by the strong reported positive attitude of the CSS1 faculties and the prevalent dysfunctional connection between institutions and professionals.

A qualitative study of the EQs was conducted in order to analyze the issue thoroughly. The responders' technical problems were highlighted in EQ1. The students' personal issues were another area of worry. Time restrictions for teachers continued to be a problem. A small percentage of respondents in EQ2 were found to use MOOCs for credit transfer. Therefore, it might be concluded that the GoI MOOC policies were being implemented.[15] Only a small percentage of respondents reported having bad feelings about taking a MOOC. Such comments need to be considered for the root cause analysis. MOOC sensitization initiatives were required at institutional levels in response to comments of the "Not applicable to me" kind of response from a significant portion of samples. A few respondents found it extremely difficult to participate in the MOOC. It is necessary to investigate the cause of these events. In varying degrees, past research has supported the perceived usefulness and accessibility of the online courses/MOOCs in EQ1-3.[35] EQ4 highlighted the students' comments' futuristic framework, which covered nearly every facet of PD. Less enthusiasm was seen on the part of the teachers for combining MOOC with the improvement of their soft skills. Our findings were consistent with past studies conducted in a different setting.[36] According to the respondents' EQ5 scores, their MOOC learning experiences were generally favorable. In this instance as well, CSS1 teachers were discovered to be happier than their CSS2 counterparts. In addition to the positive comments, a few unfavorable responses were also noted and should be taken into account.[37] The respondents' attitude about the research problem

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[35] Amer Mutrik Sayaf et al., "Factors Influencing University Students' Adoption of Digital Learning Technology in Teaching and Learning," *Sustainability* 14, (2022): 493-510, https://www.mdpi.com/2071-1050/14/1/493.

[36] Smadar Donitsa-Schmidt, Rony Ramot, and Beverley Topaz, "Shaping the Future of Distance Learning in Teacher Education: MOOCS during COVID-19," *Perspectives in Education* 40, no. 1 (2022): 250-267, https://journals.ufs.ac.za/index.php/pie/article/view/5258.

[37] Michela Giordano, and Maria Antonietta Marongiu, "We Are a Global Community': Communicating Knowledge through MOOCs and Teacher Training Platforms," *Journal of*

were generally positive, as seen by the EQ2 through EQ5. Our findings in this study were consistent with those of Wang, Wang, Cui, and Zhang (2021), albeit in a different setting.[3]

XIII. Conclusion

The purpose of the study was to examine how students and teachers felt about using MOOCs for their APD. In this study, a diverse influence of demographic factors was found. In general, the institutes and professionals had similar attitudes, although their interactions with particular group levels occasionally revealed a noticeable difference. Compared to their CSS1 peers, the CSS2 students maintained a more cheerful attitude. The teachers' perspective painted a quite different picture. It was discovered that each of the four distinct groups had a favorable attitude toward the study's problem. Even the conclusions of the quantitative results were reinforced by the qualitative examination of the EQs. However, the researchers believed that if the respondents received adequate training on using MOOCs, there shouldn't be any significant differences in attitude toward using MOOCs for APD between groups of teachers, students, or students and teachers in HEIs. The findings of this empirical study could have a significant impact on both education stakeholders and policy makers. Given that it was a preliminary study, larger-scale research involving additional institutions of this type across the nation and the world might provide us with a better picture of the situation.

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Annex

Table 1

The Sample Frame

		Professionals	
		Students	Teachers
Institute	CSS1	112	48
	CSS2	52	45

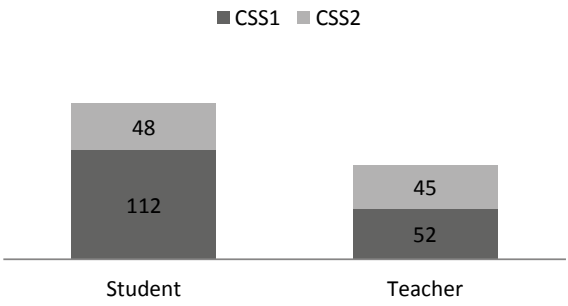

Figure 1

Distribution of Sample/Respondents

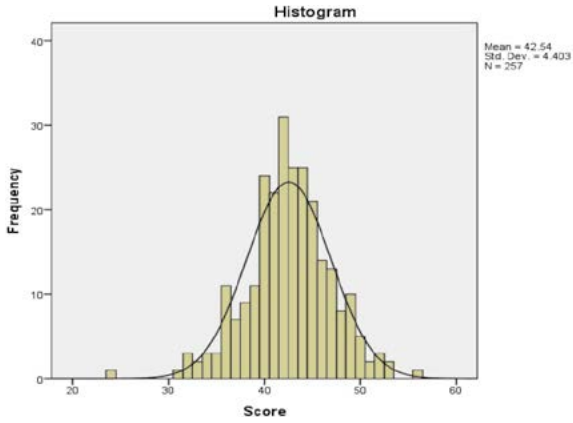

Figure 2

Histogram_Total Sample Scores

Table 2

Descriptive Statistics

Strata	N	Mean	Median	SD	Sk	kur
Total	257	42.54	43.00	4.403	- 0.264	1.087
AC	112	42.375	42.0000	4.11134	0.189	0.102
BC	48	41.6250	42.0000	4.01394	- 0.320	- 0.396
AD	52	42.7885	42.0000	3.91246	0.188	- 0.402
BD	45	41.2000	42.0000	5.52103	- 0.659	1.041

Table 3

ANOVA Matrices

		Professionals		
		A (Students)	B (Teachers)	Total
Institutes	CSS1 (C)	AC_{30}	BC_{30}	60
	CSS2 (D)	AD_{30}	BD_{30}	60
	Total	60	60	120

Note. A = Students, B = Teachers, C = CSS1, D = CSS2.

Table 4

Descriptive Statistics of the Attitude Scores of the Respondents Selected Randomly with Equal Number (N=30) from Each of the 4 Strata of ANOVA Matrices

Professionals	Institute	Mean	Std. Deviation	N
A	C	41.4667	3.83930	30
	D	42.4000	4.33590	30
	Total	41.9333	4.08746	60
B	C	44.7333	3.60969	30
	D	41.2667	5.47681	30
	Total	43.0000	4.91969	60
Total	C	43.1000	4.04508	60
	D	41.8333	4.93059	60
	Total	42.4667	4.53545	120

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Table 5

ANOVA Results

Source	Sum of Squares	Df	Mean Square	F	Sig.
Intercept	216410.133	1	216410.133	11305.880	.000
Professionals	34.133	1	34.133	1.783	.184 **NS** (p>0.05)
Institute	48.133	1	48.133	2.515	.116 **NS** (p>0.05)
Professionals * Institute	145.200	1	145.200	7.586	.007 **S** (p<0.05)
Error	2220.400	116	19.141		
Total	218858.000	120			

Note. NS = Not Significant, S = Significant.

Table 6

Independent t-test Results

Null Hypothesis	Group Details	Interaction Details	N	DF	Difference of Mean	SE_D	P [Sig. value (2-tailed)]	Level of significance
$H_0$3	AC vs. AD	I/P interaction	30 30	58	-.93333	1.05736	0.381	NS(p>0.05)
$H_0$4	BC vs. BD	I/P interaction	30 30	58	3.46667	1.19757	0.005	S(p<0.05)
$H_0$5	AC vs. BC	I/P interaction	30 30	58	-3.26667	0.96212	0.001	S (p<0.05)
$H_0$6	AD vs. BD	I/P interaction	30 30	58	1.13333	1.27535	0.378	NS(p>0.05)

Note. P = Professionals, I = Institute.

Table 7

Comparative Study of Mean Scores from the ANOVA Table 6

Institution	Students' mean score (A)	Teachers' mean score (B)
CSS1 (C)	41.47	44.73
CSS2 (D)	42.40	41.27

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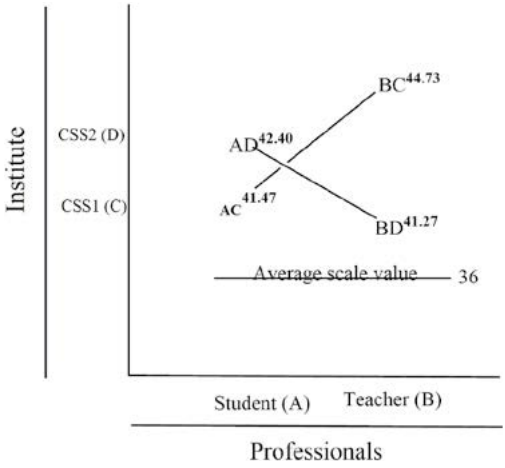

Figure 3

Interaction between Professionals and Institutes (Disordinal)

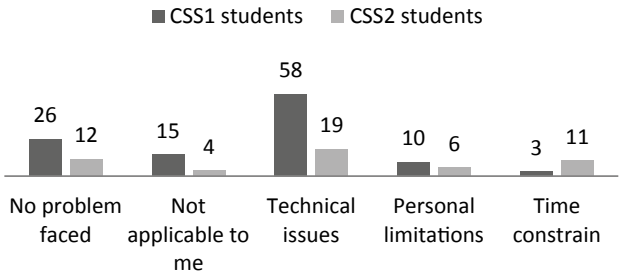

Figure 4

Students' Responses_EQ1

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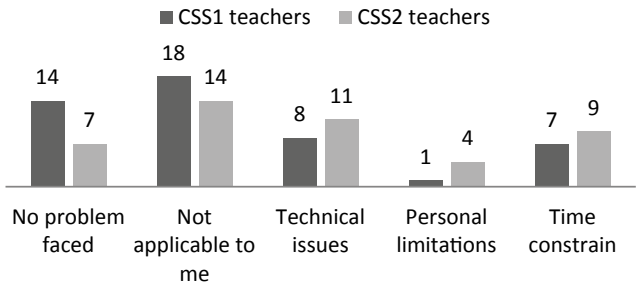

Figure 5

Teachers' Responses_EQ1

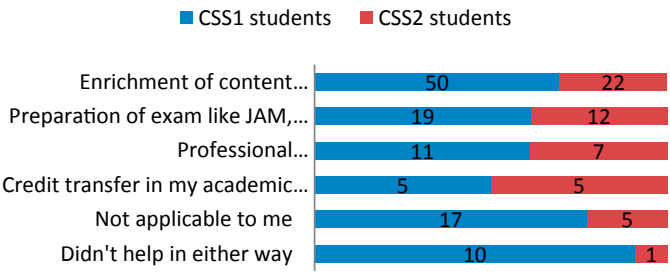

Figure 6

Students' Responses_EQ2

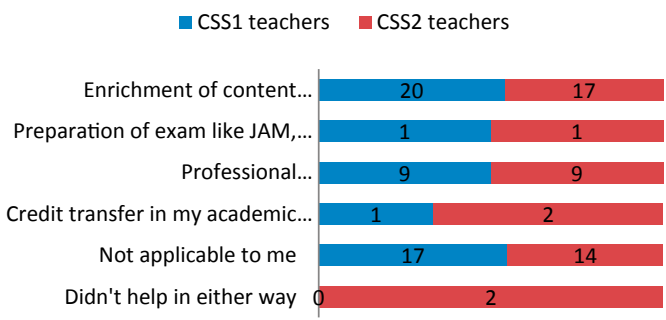

Figure 7

Teachers' Responses_EQ2

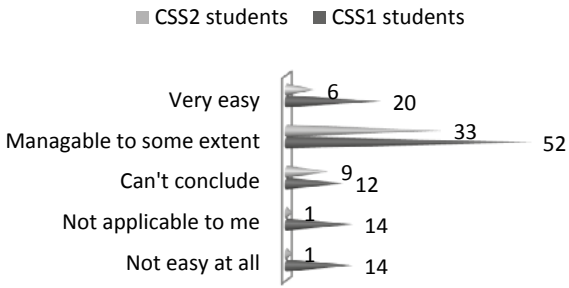

Figure 8
Students' Responses_EQ3

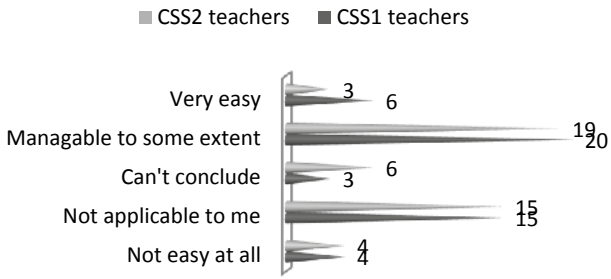

Figure 9
Teachers' Responses_EQ3

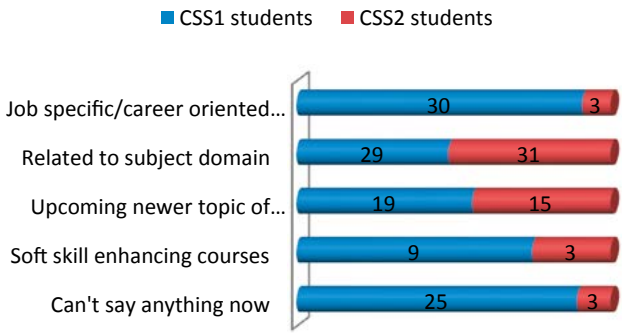

Figure 10
Students' Responses_EQ4

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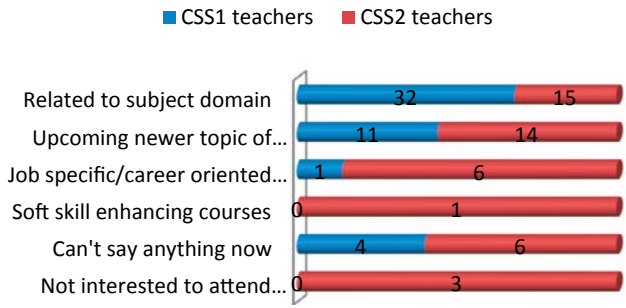

Figure 11
Teachers' Responses_EQ4

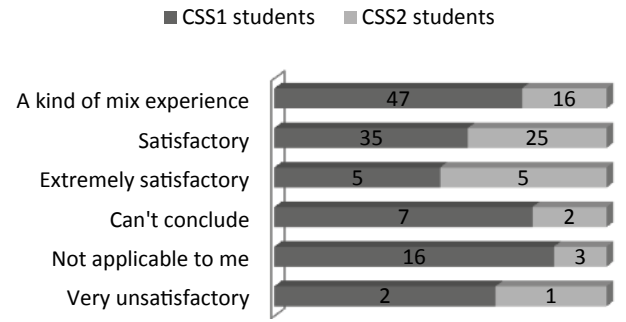

Figure 12
Students' Responses_EQ5

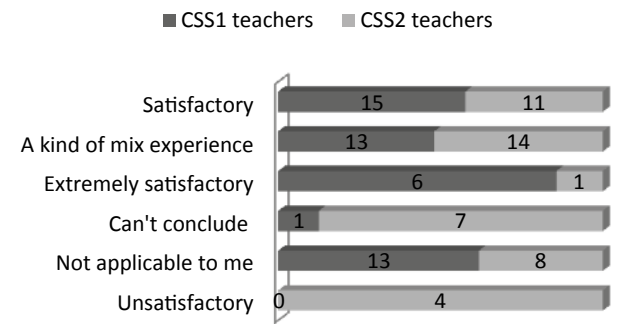

Figure 13
Teachers' Responses_EQ5