

How Ready Can You Be? Profiling Indonesian Teacher's Preparedness for an Online Teacher Professional Development Program

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Abstract

Online teacher professional development has emerged as a promising approach to enhancing teachers' competencies and improving classroom experiences, ultimately leading to improved student academic achievements (de Kramer et al., 2012). However, an effective online teacher professional development program must be tailored to meet teachers' needs and account for the complexities of their teaching practices. This article reports on a need analysis conducted via surveys and focuses on group discussions with 1544 teachers from across Indonesia, aimed at designing a Massive Open Online Course (MOOC) for online teacher professional development. The need analysis focused on several key areas, including the participants' Information and Computer Technology (ICT) background, beliefs, abilities, and their prior experiences and needs in teacher professional development. The findings highlight the importance of carefully designing the MOOC's technical requirements, content, and delivery. Specifically, the MOOC must incorporate specific modes, materials, tools, and activities that are deemed beneficial for the teachers. In terms of content, the MOOC must aim to enhance teachers' skills in specific teaching activities, create a positive learning environment for students, and cater to different ability levels. Moreover, the MOOC delivery should include reflection and sharing activities to foster collaborative learning among the participants. These findings have significant implications for designing effective online teacher professional development programs that can meet the needs of teachers in diverse settings.

Keywords: online teacher professional development, MOOC, need analysis

INTRODUCTION

Research has argued that online professional developments have the potential to enhance teacher expertise and improve teacher retention (Erickson, Noonan, & McCall, 2012) as well as reinforce learning and critical thinking (Şendağ & Odabaşı, 2009). As reviews on research in teacher professional development have pointed out the importance

of understanding the nature of teaching and learning as contextual and complex (Opfer & Pedder, 2011) and emphasised the importance of considering teachers' identity, their learning stage, and their learning needs and growth (Lay et al., 2020) in the design of a professional development program, when online professional development is designed appropriately, it may have the potential benefit of developing and improving many elements of teacher competencies (Orleans, 2010).

The research presented here is part of a project to create a Massive Online Open Course (MOOC) that delivers modules for teachers' professional development to meet the need to leverage secondary English teachers' capacity to integrate ICT into the classroom. As the MOOC needed to correspond to the needs of the project's potential participants, a need analysis was conducted on teachers in Indonesia, with the specific objectives of finding their ICT profiles and ICT readiness, pedagogical competences, their prior TPD experiences, and their expectations in using the MOOC. The research question posed, therefore, is what are the teachers' ICT profiles and readiness, pedagogical competences, prior TPD experiences, and expectations in using the MOOC.

Some of its notable practical benefits are how it has the potential to provide greater access in terms of coverage, ease, expenses, and loss of valuable classroom time for teachers (Alzahrani & Althaqafi, 2020; Dash et al., 2012; Lay et al., 2020; Masters et al., 2010; Reeves & Pedulla, 2011; Vu et al., 2014). This benefit is apt with the situation of Indonesia, where geographical distance and Internet connection, as well as the vast coverage, become an issue. Another practical benefit of online professional development involves suitability in the learning pace for the teachers and the possibility of immediate implementation in day-to-day teaching situations (Mccall, 2018).

In regards to the improvements in teacher competencies, online professional developments have the potential to enhance teacher expertise and improve teacher retention (Erickson et al., 2012) as well as reinforce learning and critical thinking (Şendağ & Odabaşı, 2009), promote collaboration with peers, teacher reflection, and teacher confidence (Bragg et al., 2021; So et al., 2009). It is expected that these improvements and enhancements in teachers' knowledge and skills may lead to improved teaching practices, eventually resulting in improved student academic performance. (De Kramer et al., 2012)

Reviews on research in teacher professional development have pointed out the importance of understanding the nature of teaching and learning as contextual and complex (Opfer & Pedder, 2011) and emphasise "the importance of considering teachers—who they are, where they are in their learning, and what they need to move forward in their learning and growth" (Lay et al., 2020, p. 3) in the design. Therefore, conducting a need analysis on the teachers who become the subjects of a teacher professional development program is imperative to ensure that the program successfully meets the needs of the teachers and that the design is based on contexts and the complexities of teachers' teaching and learning.

The need analysis can portray the teachers' general attitude toward using technology in the classroom. Parasuraman (2000) postulated that technology readiness is "people's propensity to embrace and use new technologies for accomplishing goals in home life and at work." He mentioned that there are four dimensions to measure readiness to embrace new technology, among others: 1) Optimism which shows people's positive attitude and belief that technology can provide users more control, flexibility, and efficiency in their lives; 2) Innovativeness which shows people's willingness to be the pioneer and leader in technology;

3) Discomfort which shows people's sense of having lack of control and being overwhelmed by technology; and (4) Insecurity which shows people's distrust and scepticism toward the affordances of technology (Parasuraman, 2000).

METHOD

The need analysis was conducted as mixed-method research, employing traditionally considered qualitative and quantitative research methods. The use of this approach is necessary as the need analysis investigated the same underlying phenomenon (of teachers, their classroom practices, and past online TPD experiences, in which quantitative and qualitative data are needed (Leech & Onwuegbuzie, 2009) 1) to involve participants in the program, 2) to develop, implement and evaluate a program, and finally, 3) to obtain more complete and corroborated results (Creswell & Plano Clark, 2018)

The rationale for using this approach is twofold: 1) the online TPD program was aimed at teachers from all over Indonesia, and thus sufficient coverage of information from the population in the form of descriptive statistics data was necessary; 2) specific information on teachers' background, interests, and classroom practices was necessary to be scrutinised in details, and such information could only be sought qualitatively.

The data for the quantitative research was collected through an internet survey delivered via Microsoft Teams using a snowball sampling recruitment approach through teachers in Indonesia Technology-Enhanced Language Learning (iTELL) association and analysed in descriptive statistics. One thousand five hundred sixty-three (1563) participants filled out the survey, but upon scrutiny, only data from one thousand five hundred forty-four (1544) participants were used in the analysis. Reasons for data exclusion included multiple submissions and incomplete answers. Upon completing the survey, 687 participants were invited to attend the Focus Group Discussions (FGDs), and 310 participants agreed to be involved in the FGDs. Two data collectors then conducted 11 FGDs. The data from the interviews in the FGDs were qualitative and analysed using thematic analysis.

The themes and questions posed in the survey and FGDs focused on seeking information on the participants' demographic background, ICT background, ICT beliefs, pedagogical competences, ICT abilities, and their TPD interests, experiences, and needs.

FINDING AND DISCUSSION

ICT Background

The information on *ICT background* aimed to provide recommendations on designing the MOOC platform, particularly in its provision and delivery mode, ensuring that teachers in Indonesia can access the MOOC platform and materials easily. The data gained was on the teachers' connection speed of their internet access and device owned.

Regarding the internet connection speed, the findings are similar to the distribution of teachers in Indonesia. Teachers living on Java Island mostly enjoyed high and medium internet connection speeds (39% and 16%, respectively), while other major or groups of islands experienced medium internet connection speeds. Most notably, teachers in Maluku and Papua only had the option of low internet connection speed (3%). On the internet connection speed, most teachers in Indonesia had the option of medium internet speed (63%), followed by 19% of low and 18% of high internet speed. In the case of devices, almost all teachers had access to handphones (98%), and laptops (96%), with more than half of the

participants could also access printers (57%). Some also used scanners (13%) and tablets (13%).

Data from Datareportal (Kemp, 2021) shows that there has been a significant increase in internet users (16%) between January 2020 and January 2021. However, similar to the uneven access to the Internet connection in the findings above, although the Internet penetration reached 73.7% as of January 2021 (Kemp, 2021), it has not been widely accessible to all regions. Intersecting the information on the internet connection speed and the devices owned by the participants, Figure 1 below shows that most teachers used laptops/computers or handphones with medium internet connection speed.

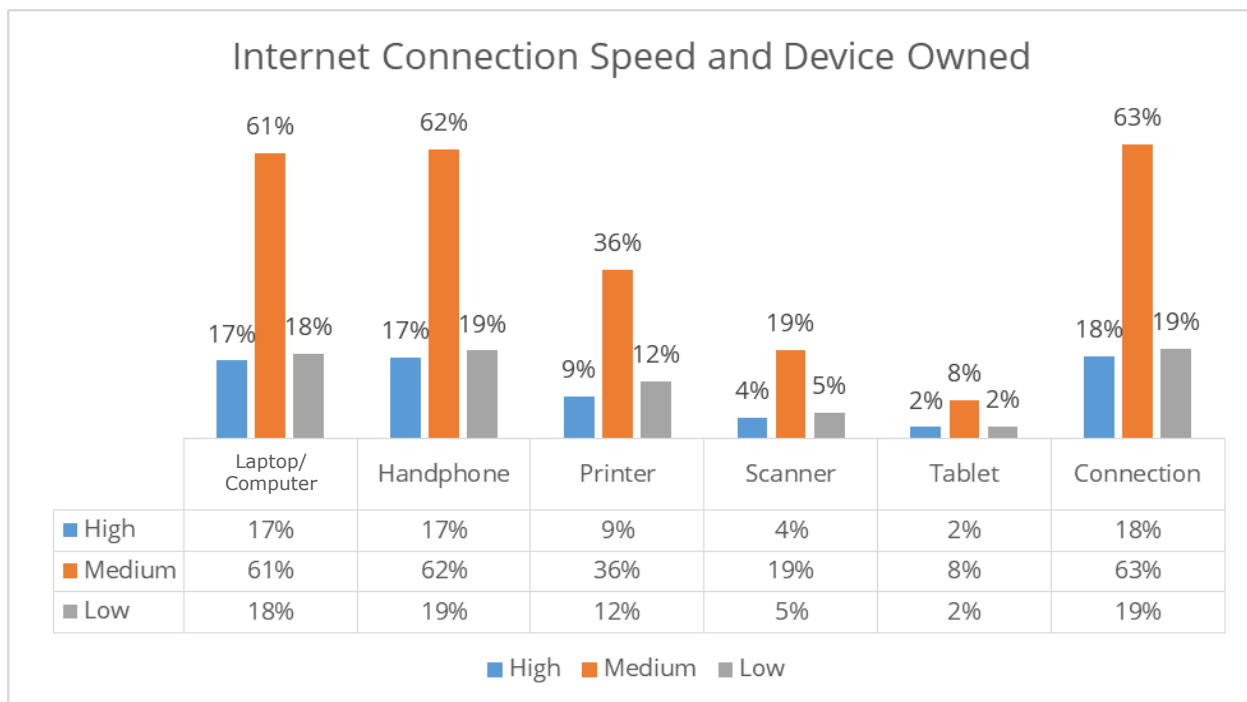


Figure 1. The Intersection of Internet Connection Speed and Device Owned

The results suggested that the MOOC be accessible via laptops/computers or handphones, with materials and activities that required low to medium internet connection speed. They also suggested that asynchronous and audio or text-based materials or exchanges were preferable, as they did not require high internet connection speed. The choice of this mode, materials, and activities would also allow those from areas with low internet connection speed to access the MOOC to ensure its accessibility in all regions in Indonesia.

ICT Beliefs, Pedagogical Competence, and ICT Abilities

The data on *ICT Beliefs* and *TPD interests* were necessary to ensure that the MOOC design would receive positive responses from the target teachers. By discovering *the pedagogical competences, ICT abilities, and TPD needs* of the participants, the MOOC could be designed to meet the level of competences and abilities of the target teachers and to cover the topics/skills still lacking in the teachers or needed by the target teachers.

ICT Beliefs

In general, teachers believed that technology was useful for teaching and learning. Expressly, they agreed on the usefulness of technology in easing their job (94.04%) and improving their performance (99.68%). For learning, almost all participants agreed on technology's potential to improve student performance (93.39%). At a glance, the survey results show overwhelming positive beliefs toward using technology in teaching and learning, as the answers leaned toward above 90%.

However, the FGDs revealed further in what sense the technology was perceived as beneficial or problematic for the teaching and learning processes. On the student's side, the success of the learning was in the expression of attitudes toward the teaching-learning process, such as being active, interactive, engaged, enthusiastic, etc. Some also mentioned achieving the level of having specific abilities, such as the ability to collaborate, to learn independently, etc. On the teachers' side, success was expressed through abilities to do certain teaching activities.

It may be concluded from the survey results and the FGDs that teachers' attitudes toward technology were generally positive. To be specific, among the positive benefits of technology, the participants of the FGDs mentioned the usefulness of using technology for their work in terms of the opportunities to teach innovatively and creatively, to access easily (even unlimited) varied/innovative materials/learning resources, to conduct scoring and assessment processes that are well-structured and well-documented, to upgrade their technological knowledge, and to communicate easily with the students and the parents. They also noticed that using technology gave students more intrinsic motivation. As decision-makers in the classroom, teachers should have positive beliefs towards using technology. Zhao et al. (2006) mentioned two related beliefs critical in enabling teachers to use technology for meaningful learning: 1) that using technology will bring certain benefits, and 2) that technology is compatible with existing practice.

However, they also revealed the opposing sides or the problems of using technology in their work, from the teacher-, student-, and technical sides. From the teacher's side, using technology was viewed as time-consuming because it disregarded regular working hours. The teacher also felt they had insufficient time to provide feedback, monitor students (mainly to prevent plagiarism/cheating), and explore ICT tools. In addition, some teachers also expressed their lack of ICT skills, particularly in creating engaging/ innovative lessons using technology. From the student's side, the teachers in the FGDs saw a lack of student-student interaction and participation when technology was used. Interestingly, there was a conflicting answer regarding students' motivation, as they seemed to embrace the opinion that technology could increase students' intrinsic motivation and demotivate them. In the case of technical problems, the teachers in the FGDs revealed various problems in using technology, among a few, frequent blackouts, unstable internet network, slow/limited internet connection, the cost to buy internet quota, and the unavailability of devices or limited storage/memory in their devices.

Teachers' beliefs about technology's usefulness are mainly affected by their prior experiences and attitudes (Borg, 2002). Such experiences can be obtained through interactions with peers or experts, experiencing successes and failures when trying specific technology tools, and revisiting their pedagogical approach based on their specific teaching context (Arnold & Ducate, 2015). Different teachers will have different beliefs depending on

their prior knowledge, teaching context, attitudes, and general pedagogical knowledge, which influence how they identify the affordance of technology and how they react to challenges (Haines, 2015; Liu & Kleinsasser, 2015; O'Dowd, 2015)

Pedagogical Competences

In preparation for a MOOC course, it is necessary to determine the teachers' initial pedagogical abilities and ICT skills and their confidence if they are involved in a digital course. The participants mostly perceived themselves as having sufficient pedagogical competence in conducting teaching-learning processes, with more than 60% claiming that they could identify students' linguistic problems, support and facilitate students' learning and interaction through the provision of learning activities, teaching approaches, appropriate materials, and assessed the students in various ways. Around 16%-23.70% even went as far as being confident about these abilities. However, 6.67%-17.6% still felt that their pedagogical competences were lacking.

Considering the lack of competences, in the order of needs, the participants stated that the following topics were useful: (1) how to use various teaching approaches, especially Technological Pedagogical Content Knowledge (TPACK) (17.6%); (2) how to support students' interaction (12.69%); (3) how to identify students' linguistics problems (9.84%); (4) how to facilitate students' learning through various activities (9.46%); (5) how to assess students (9.39%); and, (6) how to select appropriate teaching materials (6.67%).

ICT Abilities

Regarding ICT skills, the survey asked the participants about the tools/applications they were familiar with, had used in their teaching, and/or helped other teachers use them. Microsoft products, such as PowerPoint, Word, and Excel, are listed as the ones that the participants used for both personal and professional purposes (over 40%), followed by online discussion forum/social media and Learning Management System (LMS) (31.09%), Google Apps (28.82%), online assessments (23.90%), media editing (image – 22.60%, audio – 16.26%, video – 15.48%), online polling and stickies (9.59% and 8.35% respectively).

The FGD results added an interesting finding of using Google Classroom and WhatsApp as the most used tool/apps. In the case of Google Classroom, it was widely used because the government provided teachers with accounts for Google Education products to teachers as a solution for teaching during the pandemic. As for WhatsApp, the familiarity and use of this chat application is no surprise, as the finding was similar to the report of Datareportal in January 2021, which put WhatsApp as number 2 in the list of most-used social media platforms in Indonesia after YouTube.

The FGDs also implored the typical activities that used technology in administrative, teaching, and learning processes. The results reveal that the participants mostly used technology in creating, providing, and delivering learning activities, followed by activities for assessment for/of learning, providing learning sources, administrative purposes, creating materials, collaborating, and lastly, as a teaching platform. In response to these findings, setting teacher professional development objectives through the MOOC can entail several possible routes.

The first route is the provisions of opportunities for teachers to gain new knowledge of the tools/applications or the skills in using technology for activities that they least do,

under the assumption that they did not do the activities because they lacked the knowledge of potential technology for the activities or the skills to use technology in doing the activities. If this route is taken, the MOOC should focus on potential teaching platforms, collaboration activities, or material creation activities, as these were mentioned the least.

Another route is to provide additional knowledge on tools/applications or skills in using technology for activities that they mostly do, in this case, the activities of creating, providing, and delivering learning activities, followed by activities of assessment for/of learning, providing learning sources, administration, and upgrading the teacher's current knowledge and skills in using technology for their job.

In the attempt to provide technology-focused TPD, three aspects need to be incorporated into the TPD Program. The first introduces emerging technologies and their instructional functions, and the second discusses how to use the technology to create genuine interaction, increase cooperation and promote students' creativity (Wu & Wang, 2015). Therefore, helping teachers to integrate technology should not be conducted through a one-shot event or isolated programs. Teachers need a series of interconnected, situated, and sustained experiences to construct new practices through experimentation and reflection (Zhao, 2022). When utilising technology, Koehler et al. (2011) highlighted that teachers frequently lack the skills and dispositions to play around and experiment with technology tools. To create transformative learning experiences, teachers need to draw upon their creativity, find different approaches to educational technology and be willing to experiment with technology and ideas.

Teacher Professional Development (TPD) Prior Experiences and Needs

The findings on the *TPD prior experiences* and *TPD Confidence* helped design a platform with delivery means and features that would likely be familiar to the target teachers. The results of ICT confidences are for understanding their intended action after the TPD. The results show that around 60% of the survey participants had done TPD training previously and that 28.95% had done this training both synchronously and asynchronously. In comparison, predominantly 31.93% had done it in synchronous mode. During the FGDs, the participants shared the topics of TPD that they had experienced. Most topics touched upon equipping teachers with the specific skills of using particular tools/applications/LMS, creating learning materials using technology, or more general topics of online learning or technology integration. These topics, albeit useful for the teachers, do not indicate if, within the training, they were introduced to or reflected on implementing certain pedagogical principles when using technology for learning.

To seek that the topics relevant to the implementation of pedagogical principles were of interest or need of the teachers, a list of TPD needs surrounding such topics was presented to the survey participants. They were asked to rank the ones they needed the most for their work. The participants' answers aligned with their typical activities in using technology, i.e. creating, providing, and delivering learning activities. Thus, the top three of the most needed TPD training were related to these activities, i.e., designing interactive classroom activities, developing engaging teaching materials using technology and employing innovative approaches to teaching English using technology. The following three activities in the list focused on students, in which teachers expressed the need to create learning environments that nurture autonomy, promote collaboration among students and be able to identify

students' problems. The rest of the needs were the ones that are related to the use of specific technology for learning.

The last part of the survey was on their confidence in doing a TPD program should the opportunity arise. This part consisted of possible stages of a typical TPD program, which included being confident in doing the program, collaborating with other program participants, trialling the newly acquired competence from the program, and reporting back the trial results to the program as it is expected the participants of the MOOC would not only engage and collaborate within the MOOC but took the competence into practice and reflected on the practice. Generally, the survey participants responded positively to the stages of the online TPD program, with a percentage nearing or over 70%.

However, the most interesting finding is in the stage of reporting the trial back to the online program. The percentage of those who felt slightly confident and not confident in reporting back is the highest among other stages (21.57% and 3.76%, respectively). This result can be interpreted as their reluctance to share their application experiences with the TPD to reflect on their practices. Consequently, if reflection on practices is an important activity in TPD, the design of the MOOC activities will need to be directed to provide a safe environment for the participants to reflect without being judged.

RECOMMENDATIONS FOR MOOC DESIGN AND DELIVERY

MOOC Technical Requirements

Based on the Internet connection results and the ownership of devices, it is suggested that the MOOC be accessible via *laptops/computers or handphones*, with materials and activities that require *low to medium Internet connection speed*. Also, to avoid teachers' low motivation or reluctance to be involved in the MOOC, several potential technical issues must be addressed by creating/providing network-, access- and cost-friendly materials. Therefore, *asynchronous and audio or text-based materials or exchanges* are preferable, as they do not require high internet connection speed. As for the tools/applications provided via the MOOC, using *MS Office, Google apps, and WhatsApp* is advisable as these tools/applications are familiar, widely used, and available for teachers. As time was also mentioned as a discouraging factor in using technology, the activities in the MOOC need to be kept *at a reasonable and feasible length for the teachers, with high flexibility of access in terms of time*. The choice of these modes, materials, tools/applications, and activities will also allow those from areas with low internet connection speed to access the MOOC to ensure its accessibility in all regions in Indonesia.

MOOC Content

Juxtaposing the findings on teachers' beliefs in ICT, pedagogical competences, ICT abilities, TPD prior experiences, and TPD needs, the following recommendations are offered for designing the MOOC content/topics. Firstly, the findings suggest that the MOOC that the teachers prefer is the one that provides opportunities for teachers *to have the ability to perform certain teaching activities, provides a learning environment that enables students to express positive attitudes toward the teaching-learning processes, and be at a certain level of abilities*. Therefore, the top three of the most needed TPD training are related to the abilities to perform certain teaching activities, i.e., *designing interactive classroom activities, developing engaging teaching materials using technology, and innovative approaches to teach English using technology*. The following three activities focus on the students, in which

teachers expressed the need to create *learning environments that nurture autonomy and promote collaboration among students and of being able to identify students' problems*. The rest of the needs are the ones that are related to *the use of specific tools/applications for the teaching-learning process*. Secondly, considering the lack of competences, the MOOC should provide specific topics on (1) *how to use various teaching approaches, especially TPACK*; (2) *how to support students' interaction*; (3) *how to identify students' linguistics problems*; (4) *how to facilitate students' learning through various activities*; (5) *how to assess students*; and, (6) *how to select appropriate teaching materials*.

This finding is consistent with past research in online teacher professional development, in which the content of the MOOC needs to meet learner needs effectively (Farris, 2015) and contain practical examples, group projects, and video demonstrations to get teachers' attention and enhance their confidence (Qian et al., 2018) and practical activities that include hands-on activities and real-life observations (O'Dwyer et al., 2007; Yeh et al., 2011) that encourages students to reflect on learning and receive feedback (Desimone, 2009; Qian et al., 2018).

MOOC Delivery

The recommendation of the MOOC delivery incorporates the findings on TPD prior experiences and the TPD confidence of the teachers. The complete stages of delivery of the proposed MOOC are 1) *being involved in the program*; 2) *collaborating with other program participants*; 3) *trialing the newly acquired competence from the program*; and 4) *reporting back the trial results to the program*. However, it is found on the findings of TPD prior experiences that the training needs to include topics that enable teachers to reflect and consider the pedagogical principles in implementing specific technology in their teaching, as their prior training is more on improving their competencies in integrating technology into their teaching, without considering the pedagogical principles that lie behind the integration.

Therefore, in the findings on TPD confidence in the stages of a proposed online TPD, the stage that includes reflection on the application of technology in the actual context needs to be highlighted and emphasized; in this case, *Stage 4 of reporting back the trial results to the program* as a means of reflection. Also, since the teachers are mostly reluctant to share their application experiences back to the TPD, Stage 4 is intended to provide a safe environment for the teachers to reflect without being judged, as a reflection on teachers' instructions and beliefs (Liu, 2012) is one of crucial elements of an effective online teacher professional development.

CONCLUSIONS

Research has argued that online professional developments have the potential to enhance teacher expertise and improve teacher retention. As reviews on research in teacher professional development have pointed out the importance of understanding the nature of teaching and learning as contextual and complex and emphasised the importance of considering teachers' identity, their learning stage, and their learning needs and growth in the design of a professional development program, the need analysis in this paper is crucial to design the MOOC that successfully meets the needs of the teachers. The design is also based on contexts and teachers' teaching and learning complexities.

The need analysis results show that the MOOC needs to be designed carefully in terms of the technical requirements, content, and delivery of the MOOC. The choice of specific

modes, materials, tools/applications, and activities of the MOOC are crucial in setting the basic technical requirements for the MOOC to be useful for teachers. The MOOC design should also consider contents that enable teachers to have the abilities to perform certain teaching activities, provides a learning environment that enables students to express positive attitudes toward the teaching-learning processes, and be at a certain level of abilities. In the delivery of the MOOC, the delivery stages need to be carefully considered. They must include the activities of reflecting on their training and sharing the results of their training at the end of the delivery period.

With the increased use of online modes in delivering teacher professional development programs after the pandemic, the question is no longer whether online professional development programs are more effective or successful than traditional face-to-face ones. Instead, more research should be conducted to find strategies that maximise the benefits of such programs for teachers that will eventually improve the quality of students learning and performance. In addition to research on need analyses, studies that reflect and evaluate the implementation of the MOOC program following the need analysis also have the potential to be conducted.

REFERENCES

- Alzahrani, F., & Althaqafi, A. (2020). EFL Teachers' Perceptions of the Effectiveness of Online Professional Development in Higher Education in Saudi Arabia. *Higher Education Studies*, 10(1), 121. <https://doi.org/10.5539/hes.v10n1p121>
- Borg, S. (2003). Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. *Language Teaching*, 36(2), 81–109. <http://doi.org/10.1017/S0261444803001903>
- Bragg, L, Walsh, C., & Heyeres, M. (2021). Successful design and delivery of online professional development for teachers: A systematic review of the literature. *Computers & Education*, 166, 104158. <https://doi.org/10.1016/j.compedu.2021.104158>
- Creswell, J. W., & Clark, V. L. P. (2018). Designing and conducting mixed methods research 3rd Edition. Sage publications.
- Desimone, L. M. (2009). Improving Impact Studies of Teachers' Professional Development: Toward Better Conceptualizations and Measures. *Educational Researcher*, 38(3), 181-199. <https://doi.org/10.3102/0013189x08331140>
- Dash, S., Magidin de Kramer, R., O'Dwyer, L. M., Masters, J., & Russell, M. (2012). Impact of online professional development on teacher quality and student achievement in fifth grade mathematics. *Journal of Research on Technology in Education*, 45(1), 1-26. <https://doi.org/10.1080/15391523.2012.10782595>
- de Kramer, M. R., Masters, J., O'Dwyer, L. M., Dash, S., & Russell, M. (2012). Relationship of online teacher professional development to seventh-grade teachers' and students' knowledge and practices in English language arts. *The Teacher Educator*, 47(3), 236-259. <https://doi.org/10.1080/08878730.2012.685795>
- Directorate General of Early Childhood Education, Primary Education, and Secondary Education. (2022, July). *Teachers Data - Early Childhood Education, Primary Education, and Secondary Education*. Retrieved August 21, 2022, from <https://dapo.kemdikbud.go.id/guru>

- Erickson, A. S. G., Noonan, P. M., & McCall, Z. (2012). Effectiveness of online professional development for rural special educators. *Rural Special Education Quarterly*, 31(1), 22-32. <https://doi.org/10.1177/875687051203100104>
- Farris, S. (2015). Think 'e' for engagement. *The Learning Professional*, 36(5), 54.
- Government of Republic Indonesia. Law of the Republic Indonesia Number 14 (2005) on *teachers and lecturers*. Retrieved from http://aturan.dikti.:the/upload/uu_14_2005.pdf
- Haines, K. J. (2015). Learning to identify and actualize affordances in a new tool. *Language, Learning and Technology*, 19(1), 165-180. Retrieved from <http://www.scopus.com/inward/record.url?eid=2-s2.0-84922220760&partnerID=40&md5=1db81ee215db3b2054d2e8a301f0d431>
- Jonassen, D. H., & Reeves, T. C. (1996). Learning with technology: using computers as cognitive tools. In D. H. Jonassen (Ed.), *Handbook of Research for Educational Communications and Technology* (pp. 693-719). New York, NY: Macmillan.
- Kemp, S. (2021, February 11). *Digital 2021 Indonesia* (January 2021). Retrieved August 18, 2022, from <https://datareportal.com/reports/digital-2021-indonesia?rq=Indonesia>
- Koehler, M. J., Mishra, P., Bouck, E. C., DeSchryver, M., Kereluik, K., Shin, T. S., & Wolf, L. G. (2011). Deep-play: Developing TPACK for 21st century teachers. *International Journal of Learning Technology*, 6(2), 146-163. <https://doi.org/10.1504/IJLT.2011.042646>
- Lay, C.D., Allman, B., Cutri, R. M., & Kimmons, R. (2020). Examining a Decade of Research in Online Teacher Professional Development. *Frontiers in Education*, 5 (573129). <https://doi.org/10.3389/feduc.2020.573129>
- Leech, N.L. & Onwuegbuzie, A. J. (2009). A typology of mixed methods research designs. *Quality & Quantity*, 43(2), 265-275. <https://doi.org/10.1007/s11135-007-9105-3>
- Liu, M. H. (2012). Discussing teaching video cases online: Perspectives of preservice and inservice EFL teachers in Taiwan. *Computers & Education*, 59(1), 120-133. <https://doi.org/10.1016/j.compedu.2011.09.004>
- Liu, M., & Kleinsasser, R. C. (2015). Exploring EFL Teachers' CALL Knowledge and Competencies: in-Service Program Perspectives. *Language Learning & Technology*, 19(1), 119-138.
- Marquez, B., Vincent, C., Marquez, J., Pennefather, J., Smolkowski, K., & Sprague, J. (2016). Opportunities and challenges in training elementary school teachers in classroom management: Initial results from classroom management in action, an online professional development program. *Journal of Technology and Teacher Education*, 24(1), 87-109.
- Masters, J., De Kramer, R. M., O'Dwyer, L. M., Dash, S., & Russell, M. (2010). The effects of online professional development on fourth grade English language arts teachers' knowledge and instructional practices. *Journal of Educational Computing Research*, 43(3), 355-375. <https://doi.org/10.2190/EC.43.3.e>
- McCall, A. (2018). Teacher perceptions of online S/OP® professional development (Doctoral dissertation).
- O'Dowd, R. (2015). Supporting in-Service Language Educators in Learning to Telecollaborate. *Language Learning & Technology*, 19(191), 63-82. Retrieved from <http://llt.msu.edu/issues/february2015/odowd.pdf>

- O'Dwyer, L. M., Carey, R., & Kleiman, G. (2007). A study of the effectiveness of the Louisiana Algebra I online course. *Journal of Research on Technology in Education*, 39(3), 289-306. <https://doi.org/10.1080/15391523.2007.10782484>
- Opfer, V. D., & Pedder, D. (2011). Conceptualizing Teacher Professional Learning. *Review of Educational Research*, 81(3), 376-407. <https://doi.org/10.3102/0034654311413609>
- Orleans, A. V. (2010). Enhancing teacher competence through online training. *The Asia-Pacific Education Researcher*, 19(3), 371-386. <https://doi.org/10.3860/taper.v19i3.1848>
- Parasuraman, A. (2000). Technology Readiness Index (TRI) a multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, 2(4), 307-320. <https://doi.org/10.1177/109467050024001>
- Qian, Y., Hambrusch, S., Yadav, A., & Gretter, S. (2018). Who needs what: Recommendations for designing effective online professional development for computer science teachers. *Journal of Research on Technology in Education*, 50(2), 164-181. <https://doi.org/10.1080/15391523.2018.1433565>
- Reeves, T. D., & Pedulla, J. J. (2013). Bolstering the Impact of Online Professional Development for Teachers. *The Journal of Educational Research*, 1, 50-66.
- Şendağ, S., & Odabaşı, H. F. (2009). Effects of an online problem based learning course on content knowledge acquisition and critical thinking skills. *Computers & Education*, 53(1), 132-141. <https://doi.org/10.1016/j.compedu.2009.01.008>
- So, H. J., Lossman, H., Lim, W. Y., & Jacobson, M. J. (2009). Designing an online video based platform for teacher learning in Singapore. *Australasian Journal of Educational Technology*, 25(3). <https://doi.org/10.14742/ajet.1144>
- Vu, P., Cao, V., Vu, L., & Cepero, J. (2014). Factors driving learner success in online professional development. *International Review of Research in Open and Distributed Learning*, 15(3), 120-139. <https://doi.org/10.19173/irrodl.v15i3.1714>
- Wu, Y.-T., & Wang, A. Y. (2015). Technological, Pedagogical, and Content Knowledge in Teaching English as a Foreign Language: Representation of Primary Teachers of English in Taiwan. *The Asia-Pacific Education Researcher*, 24(3), 525-533. <http://doi.org/10.1007/s40299-015-0240-7>
- Yeh, Y. C., Huang, L. Y., & Yeh, Y. L. (2011). Knowledge management in blended learning: Effects on professional development in creativity instruction. *Computers & Education*, 56(1), 146-156. <https://doi.org/10.1016/j.compedu.2010.08.011>
- Zhao, Y., Frank, K. A., & Ellefson, N. C. (2006). Fostering Meaningful Teaching and Learning with Technology: Characteristics of Effective Professional Development. In E. A. Ashburn & Ro. E. Floden (Eds.), *Meaningful Learning using Technology* (pp. 161-179). New York: Teacher College, Columbia University.
- Zhao, Y. (2022). New Context, New Teachers, and New Teacher Education. *Journal of Technology and Teacher Education*, 30(2), 127-133. Waynesville, NC USA: Society for Information Technology & Teacher Education. Retrieved September 11, 2022, from <https://www.learntechlib.org/primary/p/221169/>