

# Lecturers' Readiness in Online Teaching During COVID-19 Pandemic

Daniel Ardian Soeselo<sup>1,\*</sup> Veronica Dwi Jani Juliawati<sup>2</sup>, Gisella Anastasia<sup>2</sup>,  
Sandy Theresia<sup>1</sup>, Sanny Winardi<sup>1</sup>

<sup>1</sup>Department of Surgery, School of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia

<sup>2</sup>Department of Medical Education, School of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia

\*Daniel Ardian Soeselo, Email: [daniel.ardian@atmajaya.ac.id](mailto:daniel.ardian@atmajaya.ac.id)

## ABSTRACT

**Background:** The COVID-19 pandemic has caused a sudden shift towards online learning in education system. The readiness of lecturers in conducting online learning is one of the essential pre-conditions for online learning in medical education system. **Aims:** This study aims to measure lecturers' attitudes towards online teaching competencies and their differentiating factors. **Methods:** This descriptive-analytic study was conducted in June-July 2020, which was three months after full-online learning was implemented in Atma Jaya Catholic University of Indonesia. The Faculty Readiness to Teach Online (FRTO) questionnaires with four sub-scales (course design, course communication, time management, and technical competency) as the instruments were given to the medical lecturers to evaluate their readiness to teach online. The validity and reliability of lecturers' responses were examined. We used multivariate analysis of variance (MANOVA) to analyse the differences in lecturer's attitude towards online teaching competencies with reference to gender, age, education level, academic rank, and years of teaching. **Results:** A total of 63 lecturers from our institute participated in this study, 35% were males and 65% were females, with the mean age group of the respondents was between  $41.63 \pm 7.95$  years old. The FRTO questionnaires results show overall high rates ( $3.50 \pm 0.74$ ) of the lecturers' attitudes to teach online. Course communication were rated the highest ( $3.79 \pm 0.66$ ), followed by course design ( $3.46 \pm 0.76$ ), technical competence ( $3.39 \pm 0.71$ ), and time management ( $3.35 \pm 0.82$ ). Results from multivariate analysis show significant differences in gender ( $p < 0.05$ ), age ( $p < 0.05$ ), and years of teaching ( $p < 0.05$ ) for lecturers' attitudes towards online teaching competencies. **Conclusions:** The findings of this study show a good level of lecturers' readiness to teach online. General training for lecturers should be conducted to accommodate the differences in their readiness levels.

**Keywords:** "Lecturer readiness", "online learning", "medical education".

## 1. INTRODUCTION

The COVID-19 pandemic has caused a dramatic impact on human life worldwide and led to the population, social-economy and health care systems.[1] It was declared as a national public health emergency by the Indonesian government in March 2020, leading to the implementation of large-scale social restrictions policy to prevent the spread of the disease. Closure of schools, universities, and workplaces led to a sudden shift towards distance

learning system in all education sectors.[2,3] As a response, the medical education has also urgently transitioned the entire curriculum to full-online learning.[4]

In our institution, mixed learning system has been implemented over the past few decades, it is an education system comprised of online learning combined with conventional learning system. Before the COVID-19 pandemic, online learning system was not fully adopted as a modality of teaching within medical education in our institution. The current

situation has forced all educational sectors to fully-shift to online learning system to ensure the continuity of education despite the large-scale social restrictions policy. Medical students' learning activities have been substituted with online lectures, video conferencing sessions, and online assignments.

There are many universities struggle and lack the essential experience, time, and skills they need to deliver instruction, assignments, and examinations through online platforms. The readiness of lecturers is one of the essential pre-conditions for online learning in medical education system. Lecturers should gain familiarities with online teaching tools and have necessary skills in online teaching. Lack of competence was found to be one of the barriers met by the faculty when engaging with the implementation of online learning. Lecturers' competencies for online teaching are different compared to the traditional face-to-face teaching.[5,6] This study aims to evaluate lecturers' readiness to teach online by measuring their attitudes towards online teaching competencies and their differentiating factors.

**2. METHODS**

This descriptive-analytic study was conducted in June-July 2020, which was three months after full-online learning was implemented in Atma Jaya Catholic University of Indonesia. We included all medical lecturers from Faculty of Medicine and Health Sciences, Atma Jaya Catholic University of Indonesia as the study population. This research was approved by the ethical review board of Atma Jaya Catholic University of Indonesia. We used convenience sampling method to select the respondents from lecturers who are registered as active employees and participated in online teaching during the COVID-19 pandemic.

Questionnaires were used as the data collection method. We used the Faculty Readiness to Teach Online (FRTO) questionnaires with four sub-scales (course design, course communication, time management, and technical competency) as the instruments. These questionnaires have been reviewed and used in previous international published studies to capture overall lecturers' readiness to teach online through their attitudes towards online teaching competencies. Respondents were asked to rate their attitude towards online teaching competencies on a 5-point Likert scale from 1 (never) to 5 (always). The questionnaires were distributed through Google Forms. The validity and reliability of lecturers' responses were then examined. We used multivariate analysis of variance (MANOVA) to analyse the differences in lecturer's attitude towards online teaching competencies with reference to gender, age, education level, academic rank, and years of teaching. The data processing software used in this research was IBM SPSS Statistics 26.

**3. RESULTS**

We collected 63 questionnaires completed by medical lecturers from our institute. The respondents consist of 41 (65%) females and 22 (35%) males, with the mean age group of the respondents was between  $41.63 \pm 7.95$  years old. Greater number of respondents have masters/specialists/sub-specialists educational level which were 49 (78%) respondents. Most of the respondents including 42 (67%) respondents work as assistant professors. In terms of years of teaching experience, a majority of the respondents have worked as lecturers for 0-5 years including 18 (29%) respondents and for more than 15 years including 18 (29%) respondents. (table 1)

**Table 1.** Distribution of Respondents

		Mean (SD)	N (%)
<b>Gender</b>	Male		22 (35%)
	Female		41 (65%)
<b>Age</b>		41,63 (7,95)	
	21-30		3 (5%)
	31-40		27 (43%)
	41-50		22 (35%)
	51-60		11 (17%)
<b>Educational Level</b>	Bachelors		1 (2%)
	Masters/Specialists/ Sub-specialists		49 (78%)

	PhD	13 (21%)
<b>Academic rank</b>	Instructor/lecturer	17 (27%)
	Assistant professor	42 (67%)
	Associate professor	4 (6%)
<b>Years of Teaching</b>	0–5 years	18 (29%)
	6–10 years	14 (22%)
	11–15 years	13 (21%)
	More than 15	18 (29%)

Cronbach's alpha was used to show the internal consistency (reliability) of the respondents' responses to the FRTO questionnaire. Cronbach's alpha for all items was 0.88. Cronbach's alpha for each subscale was 0.80 (course design), 0.80 (course communication), 0.85 (time management), and 0.88 (technical competence). The FRTO questionnaires

results show overall high rates ( $3.50 \pm 0.74$ ) of the lecturers' attitudes to teach online. Course communication was rated the highest ( $3.79 \pm 0.66$ ), followed by course design ( $3.46 \pm 0.76$ ), technical competence ( $3.39 \pm 0.71$ ), and time management ( $3.35 \pm 0.82$ ) (table 2)

**Table 2.** Descriptive Statistics on FRTO Questionnaire Responses by Item

<b>Lecturers' Readiness Competencies</b>	<b>Mean</b>	<b>SD</b>
<b>Course Design</b>		
Create an online course orientation (e.g., introduction, getting started)	3,70	1,14
Write measurable learning objectives	3,60	1,28
Design learning activities that provide students opportunities for interaction (e.g., discussion forums, wikis)	4,32	0,91
Organize instructional materials into modules or units	3,06	1,26
Create instructional videos (e.g., lecture video, demonstrations, video tutorials)	2,51	1,45
Use different teaching methods in the online environment (e.g., brainstorming, collaborative activities, discussions, presentations)	3,81	0,98
Create online quizzes and tests	3,38	1,26
Create online assignments	3,51	1,16
Manage grades online	3,24	1,49
<b>Total</b>	<b>3,46</b>	<b>0,76</b>
<b>Course Communication</b>		
Send announcements/email/other social media reminders to course participants	3,32	1,38
Create and moderate discussion forums	3,73	1,17
Use email or other social media to communicate with the learners	4,24	0,86

Respond to student questions promptly (e.g., 24 to 48 hours)	4,37	0,79
Provide feedback on assignments (e.g., 7 days from submission)	3,86	1,09
Use synchronous web-conferencing tools (e.g., Google Class, Microsoft Teams, Zoom, Skype)	4,70	0,59
Communicate expectations about student behavior during online course (e.g., netiquette)	3,32	1,23
Communicate compliance regarding academic integrity policies	3,16	1,33
Apply copyright law and fair use guidelines when using copyrighted materials	3,43	1,40
Apply accessibility policies to accommodate student needs	3,78	1,10
<b>Total</b>	<b>3,79</b>	<b>0,66</b>
<b>Time Management</b>		
Schedule time to design the course prior to delivery (e.g., a semester before delivery)	2,68	1,34
Schedule weekly hours to facilitate the online course	3,81	1,11
Use features in learning management system in order to manage time (e.g., online grading, rubrics, SpeedGrader, calendar)	3,37	1,24
Use facilitation strategies to manage time spent on course (e.g., discussion board moderators, collective feedback, grading scales)	3,00	1,26
Spend weekly hours to grade assignments	3,63	1,00
Allocate time to learn about new strategies or tools	3,59	1,12
<b>Total</b>	<b>3,35</b>	<b>0,82</b>
<b>Technical Competence</b>		
Complete basic computer operations (e.g., creating and editing documents, managing files and folders)	4,14	0,82
Navigate within the course in the learning management system (e.g., Moodle, Ms Teams)	4,03	1,05
Use course roster in the learning management system to set up teams/groups	3,44	1,24
Use online collaborative tools (e.g., Google Drive, Dropbox)	3,46	1,27
Create and edit videos (e.g., iMovie, Movie Maker, Kaltura)	2,06	1,27
Share open educational resources (e.g., learning websites, Web resources, games and simulations)	3,52	1,28
Access online help desk/resources for assistance	3,03	1,23
<b>Total</b>	<b>3,39</b>	<b>0,71</b>
<b>Sum</b>	<b>3,50</b>	<b>0,74</b>

Results from multivariate analysis showed significant differences between lecturers' attitudes towards online teaching competencies and lecturer's gender (wilk's lambda = 0.56;  $f(4, 58) = 11.26$ ,  $p = 0.00$ ), age group (wilk's lambda = 0.58;  $f(12, 148) =$

$2.79$ ,  $p = 0.00$ .), along with lecturer's years of teaching experience (wilk's lambda = 0.57;  $f(12, 148) = 2.97$ ,  $p = 0.00$ ). No significant differences were found in the other variables. (table 3)

**Table 3.** Multivariate analysis between variables

Variable	Wilks' Lambda	F	Hypothesis df	Error df	p value
Gender	0,56	11,26	4,00	58,00	0,00
Age	0,58	2,79	12,00	148,45	0,00
Education level	0,93	0,50	8,00	114,00	0,85
Academic rank	0,83	1,35	8,00	114,00	0,23
Years of Teaching	0,57	2,97	12,00	148,45	0,00

Significant differences were found between all four subscales of attitude towards online teaching competencies (including course design, course

communication, time management, and technical competence) and lecturer's gender with the p-value of 0.00, 0.00, 0.00, and 0.02 respectively. (table 4)

**Table 4.** Analysis between Online Teaching Competencies and Lecturer's Gender

Source	Competencies	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	Course design	1038,22	1,00	1038,22	24,39	0,00
	Course communication	2154,94	1,00	2154,94	44,05	0,00
	Time management	350,83	1,00	350,83	20,21	0,00
	Technical competence	197,49	1,00	197,49	5,54	0,02

Another significant difference was found between the attitudes towards online teaching competencies

(specifically technical competence subscale) and lecturer's age group with the p-value of 0.00. (table 5)

**Table 5.** Analysis between Online Teaching Competencies and Lecturer's Age

Source	Competencies	Type III Sum of Squares	df	Mean Square	F	Sig.
Age	Course design	77,64	3,00	25,88	0,43	0,73
	Course communication	188,32	3,00	62,77	0,75	0,53
	Time management	24,97	3,00	8,32	0,35	0,79
	Technical competence	637,40	3,00	212,47	7,22	0,00

Lastly, a significant difference was also found between the technical competence subscale of online teaching competencies and lecturer's years of teaching experience with the p-value of 0.00. (table 6)

**Table 6.** Analysis between Online Teaching Competencies and Lecturer's Age Years of Teaching Experience

Source	Competencies	Type III Sum of Squares	df	Mean Square	F	Sig.
Years of Teaching	Course design	201,71	3,00	67,24	1,16	0,33
	Course communication	385,91	3,00	128,64	1,60	0,20
	Time management	32,26	3,00	10,75	0,46	0,71
	Technical competence	746,82	3,00	248,94	9,03	0,00

#### 4. DISCUSSION

The current situation along with the physical distancing policy have caused a sudden shift to fully-online learning system. Face-to-face lectures, bedside teaching, and other learning opportunities are postponed. However, our institution continued its efforts to substitute them with online lectures and assignments, along with clinical teaching sessions with case simulations through video conferencing platforms. Online learning implications in medical education have been known to produce positive outcomes. However, there has never been a more unprecedented challenge for lecturers to update their digital skills and to be able to become digitally-literate.[6,7]

Online learning system in medical education have several challenges including lack of in-person interaction, communication, time management, and technological skills.[8] It is essential for the lecturers to be prepared in online teaching. Lecturer competencies for online teaching are very different compared to traditional teaching system. Lecturers need to have a good grip of competency in three major areas: technology, pedagogy, and content knowledge. Other essential areas include administrative issues, technical skills, time and support to online teaching, designing, and managing course modules. Lecturers need to focus on instructional time and space, virtual management and communication techniques.[9,10] It is important to evaluate the readiness of lecturers to teach online so that we can identify what they are still lacking of and the barriers to their ability in online teaching. The transition to online learning system also requires the institution's support in planning such a transition.[8]

Our study results showed a significant difference between attitude towards online teaching competencies and lecturer's gender. Female lecturers' attitudes were significantly higher than male lecturers' attitudes about the importance of course design, course communication, time management, and technical competence. These results are similar to a study by Martin, et al which found that female

lecturers place higher importance on online teaching competencies than male lecturers do, they also found that female lecturers have a greater preference for using technology in instruction than male lecturers do. These findings oppose the gender stereotypes in technology usage in higher education.[9] Moreover, a study by Chang, et al also showed that female perceptions were significantly higher than male perceptions about the importance of course design and expressed significantly more positive value beliefs and practice in online instruction and communication.[11] Gender differences have been shown to exist in communication styles. Male communication style tends to be more direct and straightforward, while females are more indirect and polite. The female communication pattern and traits tend to be nurturing, empathetic, and respectful. It is considered as the rapport-type communication style. These differences in communication styles affect how lecturers communicate online.[12,13] Time management is also a greater concern for female lecturers than males, especially among those who have families.[9]

Another significant difference was found between the attitude towards online teaching competencies (specifically technical competence subscale) and lecturer's age group. We found that lecturers aged more than 51 have poorer attitude towards technical competence. Many researchers have identified differences in attitudes toward technology use based on age group. According to Chang, et al, the elderly has poorer attitudes toward technology than the young, respectively.[11] A case study by Mardiana, et al also found that lecturers aged more than 57 encounter difficulties in using online teaching technologies as they are still used to- and prefer the conventional way of teaching.[14]

Years of teaching experience also has a significant difference on lecturers' attitudes on the importance of technical competence. Our multivariate analysis results showed that lecturers with more than 15 years of teaching experience have significantly poorer attitude towards technical competence than the other lecturers with fewer years of teaching experience. These results coincide with those obtained by

Onasanya, et al, since their study revealed that there is a significant difference between lecturer's years of experience and attitudes towards the integration of technology facilities and equipment into teaching. The less experienced lecturers are more disposed towards the use of technology facilities than their senior colleagues with more than 16 years of teaching experience.[15] A study by Alshammari, et al also showed a similar finding since in their study the main predictors of attitudes towards technology use were age and work experience.[16]

Our study has several limitations. First, the response rate was low, as we only received 63 complete responses from the total of 130 target samples. The sample is not representative enough for the target population who teach online. Second, we only focused on a specific type of lecturers, which were lecturers from the faculty of medicine and health sciences only, it would have been more resourceful to have responses from various disciplines. Lastly, due to the nature of the study, we used self-reported structured questionnaires and some lecturers might not be familiar enough with all the competencies for online teaching which can cause a response bias.

Despite the limitations, the findings offer for evaluations and improvements in medical education online teaching. Regardless of gender, age, educational level, academic rank, and years of teaching experience, all lecturers may be required to teach more online classes. Therefore, lecturers (especially those who are not familiar enough with using online technologies) need more trainings to develop the needed skills in online teaching and to develop positive attitude towards online teaching competencies.

## 5. CONCLUSION

The findings of this study show a good level of lecturers' readiness to teach online. It is important for the lecturers to be prepared in all four areas of online teaching including course design, course communication, time management, and technical. Therefore, general trainings for lecturers should be conducted to accommodate the differences in their readiness of online teaching. Further studies based on our findings should be conducted in more various disciplines and in different universities across the province or country. We also recommend further investigations on students' readiness in online learning system along with the benefits and barriers as perceived by students as well as linking their learning outcomes with online teaching skills of lecturers.

## AUTHORS' CONTRIBUTIONS

DAS – developing research proposal and collecting data. VDJJ – developing research proposal and collecting data. GA – developing research proposal and collecting data. ST – data analysis and publication manuscript. SW – data analysis and publication manuscript. All authors read, discussed, and approved the final manuscript.

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