

Assessment Of Professional Digital Competence Of University Teachers

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ABSTRACT

The entire world is encountering with an outbreak of COVID-19 from the inception of 2020. Pakistan has also been affected as well in this not equally but to a greater extend. COVID-19 emerged as a tremendous challenge for the whole nation. The Assessment of Professional Digital Competence (PDC) of the university teachers is of growing importance in the classroom context. As a result, the significance of the digital resources especially in teaching is essentially increasing day by day. The assessment of Professional Digital Competence has matured as an integral component of every academic institution. The main objective of this study therefore was to assess the Professional Digital Competence (PDC) of university teachers of different faculties of International Islamic University Islamabad. This study utilized a quantitative paradigm. The population of the study included 635 teachers (both male and female) of all faculties of International Islamic University Islamabad. A sample of 242 teachers was selected according to Morgan's table. A stratified random sampling technique was used to select the sample. The Researcher collected data Online from all the Departments of International Islamic University Islamabad (IIUI) and the responses were recorded through Google form. The questionnaire was used to collect data and it consisted of 5-point Likert scale which were analysed using mean scores and ANOVA. It is concluded that mostly teachers were not skillful to apply advanced or custom search options to go for the data on internet. It is determined that teachers were not well equipped with all the necessary skills to explore the virtual learning environment effectively. Professional Digital Competence helps in developing the quality of teaching. Prepare and develop the professional competencies and encourage the university teachers to attend training programs.

Keywords: Assessment; Professional Digital Competence; University Teachers; Internal and External Barriers; Challenges and Possibilities; Digital Learning Resources; Information Commission Technology

1. INTRODUCTION

Assessment of Professional Digital Competence has shifted as a priority in education. As a result, the competences in different capacities (affective, cognitive, socio-emotional and physical) that an enables mobilization to perform effectively according to the need of the context (Perronoud, 2004). Competence is a direly needed attribute to carry out a selected activity. In other words, they're a set of abilities and personal desires to finish a mission. Competencies are significant to estimate a person's aptitude to satisfy the selected mission or task position. In human resources, skills are on the total divided as knowledge, abilities, or behaviour. There are many different methods to categorize them however this easy shape has to be beneficial to explain the achievement of the concept. The conception of the competence is undeniably important as its characteristics are evolving over time period. It is an ability to choose for mobilization of the skills, attitude and knowledge to equip individuals to come up with desired responses for the professional situations.

Professional Digital Competences come in various forms. They are the sources that permit the student, to acquire information simply (Trivedi, 2010). Assessment of Professional development contributes to a valuable framework for exploring teacher identity and the relationships between a teacher's personal and professional lives (Bukor, 2011). Assessment of Professional Digital competences is possible in much paperwork. Professionals try and immediately get appropriate entry to digitized records and include a ramification of records inclusive of multimedia. They're the sources that allow the student to get facts without problems (Trivedi, 2010). The Professional Digital Competence has become an integral component of each academic institution. As we apprehend, technology is a mode of learning now-a-days. It is an innovative instructional tool widely used in higher education which strongly affects learning, research, and communication. Technology is integrated not by imposing this teaching approach, it is rather mandatory; however, the approach allows it as a strategy.

The scarcity related to the fundamentals of Information & Communication Technology is witnessed in university teachers which are valued by the teachers as it polished their teaching practice. They are aware of the use of ICT in future as well (Maquilón, 2013). The Professional Digital Competence has turned out to be a fundamental issue of every educational institution. The progressive academic device is widely utilized in higher education that has a strong impact on gaining knowledge of studies, and conversation. Professional development is related to abilities and knowledge gained for personal as well as career development. Professional development is crucial for students learning and academic achievement (Adam Namamba,). If teachers do not possess knowledge and skills they need to teach and communicate effectively, then their students will suffer and have a bad effect on academic records. To teach effectively, teachers attend ongoing teacher professional development programs. If the teachers are aware of their selves, their decisions become more appropriate for teaching. The teachers extend their self-understanding through professional development activities and self-understanding of teachers reflects, teachers about what, why, and how they are teaching (Kelchtermans, 2011).

1.1. STATEMENT OF THE PROBLEM

Assessment of Professional Digital Competence of the teachers has become a priority in education in Pakistan, limited research work is available on the subject matter up till now. In a professional scenario, the capacity for mobilization of skills, knowledge and attitudes is the

competence of an individual. The assessment of competence is challenging and gets more complex while tackling in a complex and multifaceted. This study is therefore going to Assessment the Professional Digital Competence (PDC) in university teachers because the assessment is very important for university teachers to impart knowledge, skills, and attitudes regarding their content and will explore the Assessment of Professional Digital Competences (PDC) of university teachers in the teaching and learning process.

1.2. OBJECTIVES OF THE STUDY

The objectives of the study were to:

1. To assess the Professional Digital Competence (PDC) of university teachers of different faculties of International Islamic University.
2. To compare the level Professional Digital Competence (PDC) of university teachers of different faculties of International Islamic University.
3. To investigate the challenges (barriers) of Professional Digital Competence (PDC) of university teachers.

1.3. RESEARCH QUESTIONS

In light of designed objectives, the research questions of the study were:

1. What is the level of Professional Digital Competences (PDC) by University Teachers in the teaching and learning process?
2. What challenges university teachers face regarding Professional Digital Competence (PDC) in teaching and learning?

1.4. HYPOTHESIS

The following hypothesis is developed for the objective number two:

H₀₁ There is no significant difference in mean scores of Professional Digital Competence (PDC) of university teachers of different faculties of International Islamic University.

1.5. SIGNIFICANCE OF THE STUDY

This research is very important for several reasons. Assessment of Professional Digital Competences (PDC) is very important for university teachers to impart knowledge, skills, and attitudes regarding their content. The finding of this study would be beneficial for the teachers and students. This study would be beneficial for the students, researchers, scholars, teachers training institutions, and educational institutions involved in higher education as it may help them to identify and run training of teachers regarding these competencies. The results of this study would be helpful for educational authorities as they would get to know what kind of system should be developed by resolving the concerns of university teachers. This study was the part of literature; the results would go a long way in facilitating future researchers who wish to investigate the possibilities and challenges of professional digital competence of university teachers in the same paradigm.

1.6. DELIMITATIONS OF THE STUDY

This study was delimited to university teachers of International Islamic University Islamabad (IIUI).

2. LITERATURE REVIEW

The whole world is facing an outbreak of covid_19 by the start of 2020. Pakistan has been affected too in this same time that emerges as a difficult challenge. Assessment of Professional Digital Competence provides a useful framework for exploring teacher identity. Assessment of Professional Digital Competencies provides access to a large variety of multimedia and multi-type documents. Ferrari (2012) views Professional Digital Competence as a set of abilities, abilities and knowledge of using gadgets or digital devices in classrooms to show efficacy of work, resolve problems with creativity and problem-solving techniques, become autonomous, flexible and reflective at workplace. This also helps individuals participate, socialize, consume and empower themselves positively. The eight key abilities forever long learning are characterized in the European Europe as "a blend of information, abilities and mentalities that are satisfactory to the unique situation" and give a typical reference structure bound to the leaders, teachers, social accomplices and the actual understudies.

2.1. TYPES OF DIGITAL SKILLS

How to assess digital skills, it is first important to comprehend what advanced abilities are and how they are sorted. Digital skills, here and there likewise called advanced capabilities or skills incorporate the "knowledge and skills required for an individual to be able to use ICTs to accomplish goals in his or her personal and professional life" (Commission on Science and Technology for Development, 2018). Digital skills consist of a "combination of behaviours, expertise, know-how, work habits, character traits, dispositions and critical understandings" (Broadband Commission for Sustainable Development, 2017). They hence incorporate specialized abilities as well as psychological abilities just as non-intellectual delicate abilities like relational abilities and relational abilities.

2.2. LEVELS OF DIGITAL SKILLS

Digital skills may be better perceived by ordering them into capability levels. Putting these abilities on a field gives a pathway to examine. For instance, an individual commonly needs to accomplish fundamental abilities prior to proceeding onward to middle of the road or progressed abilities.

2.3. DIGITAL SKILLS FRAMEWORKS

The assessing digital skills levels, we need to address the significance of advanced abilities structures. The digital skills systems themselves, however it is essential to comprehend the major advanced abilities structures in light of the fact that numerous evaluation approaches are built around a specific system. A digital skills system gives methods for ordering and arranging the intricacy and scope of advanced ranges of abilities. Structures make a typical language and some of the time recommends capability levels or learning results (Vuorikari & Punie, 2019). Digital skills systems are utilized to educate strategy, instructional arranging, and appraisal

apparatuses (ITU, 2018). This segment gives a short outline of four of the significant systems presently utilized for strategy and estimation.

3. METHODOLOGY

This study utilized a quantitative approach. According to Matthews and Ross (2010) quantitative research methods are basically applied to the collection of data that is structured and which could be represented numerically. Generally quantitative data is collected when researcher has adopted the positivist epistemological approach and data is collected that can be scientifically analysed. It was assessment study/research. Self-assessment of teachers about their competence was done. The quantitative research method was used. It was descriptive research and a survey was conducted. The population was comprised of teachers (both male and female) of all faculties of International Islamic University Islamabad. Stratified random sampling technique was used for this study. Proportionate stratified sampling was done and sample was selected according to representation in population. There are a total of 635 teachers in all faculties of International Islamic University Islamabad and sample is 242 teachers according to Morgan's table. Transparency was adopted in the present data collection, based on step-by-step basis. The Researcher collected data Online from all the Departments of International Islamic University Islamabad (IIUI) and the responses were recorded through Google Form. The questionnaire was used to collect data and it was consisting of 5-point Likert scale. Data were analysed using mean and ANOVA through SPSS.

3.1. DATA ANALYSIS AND FINDINGS

The responses recorded from the Google form were organized and analyzed.

Table 1. Professional digital competences in using tools

Sr No.	Statements	SD	D	N	A	SA
1	I am able to use tools for storing and managing shared files and content (e.g.: Drive, Box, Drop box, etc.).	-	-	10%	70%	20%
2	I know the use of Online communication tools: forums, instant messaging, chats, video conferencing, etc.	-	-	20%	60%	20%
3	I am able to use Software available in my university (e.g., marks, attendance, communication with families, content, evaluating tasks, etc.).	-	-	10%	60%	30%
4	I can use social networks, learning communities, etc. for sharing educational information and content (e.g.: Face book, Twitter, Google+, or others).	-	-	-	60%	40%
5	I can use tools for producing QR codes (Quick Response).	-	-	30%	60%	10%
6	I can use tools for creating voice recordings (podcasts).	-	-	50%	20%	30%

7	I know about the use of protecting devices against threats from viruses, malware, etc.	-	-	-	60%	40%
8	I am good at developing systems for protecting devices and documents (access control, privileges, passwords, etc.).	-	-	30%	60%	10%
9	I know about the basic computer maintenance tasks to avoid possible operational problems (e.g.: updates, cleaning cache or disc, etc.).	-	-	-	60%	40%
10	I can use microphones, headphones, and printers.	-	-	-	80%	20%
11	I do use tools for carrying out the evaluation, mentoring, or monitoring of students.	-	-	10%	70%	20%
12	I am capable to use different ways to update me and include new devices, apps, and tools.	-	-	40%	60%	

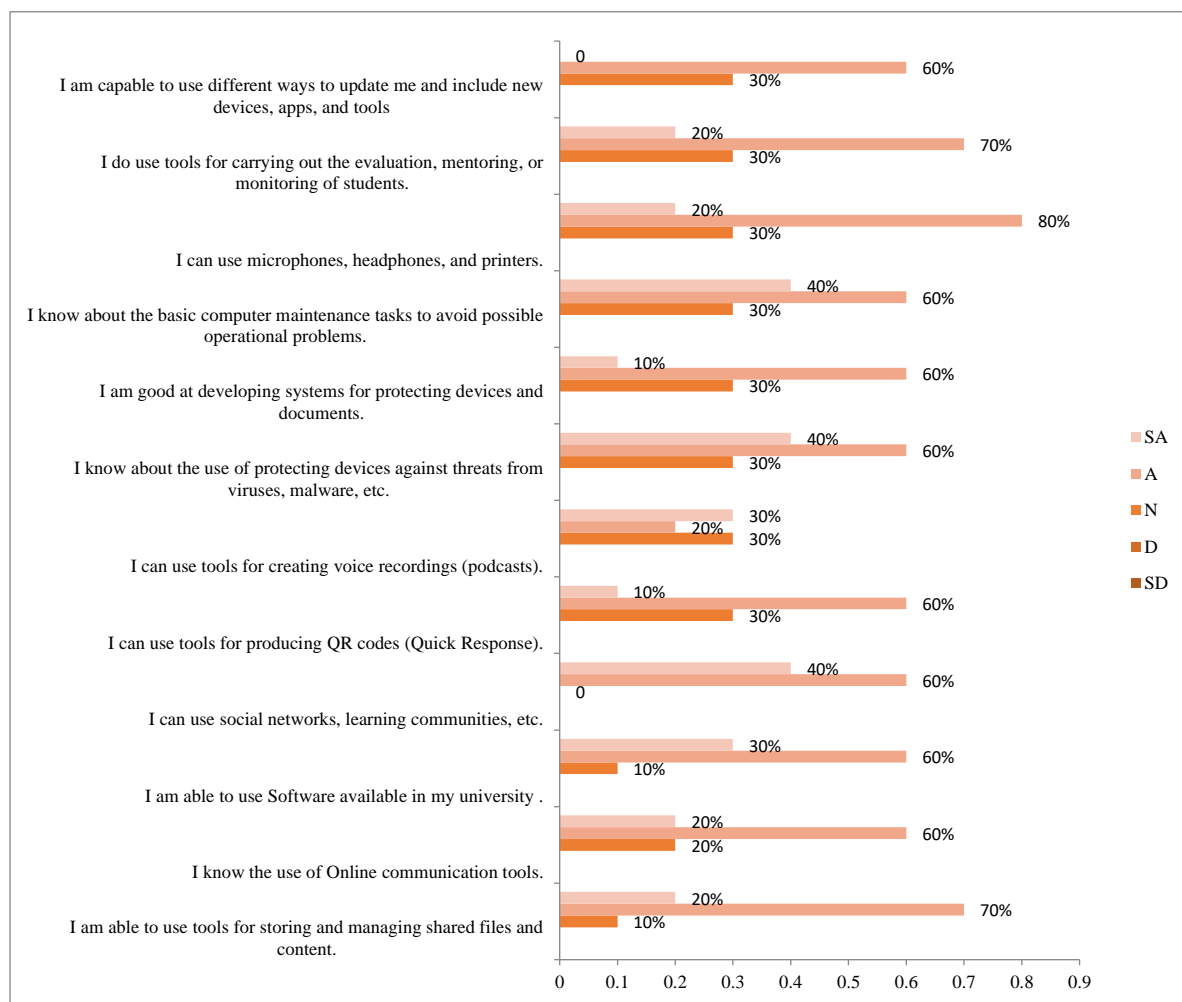


Fig. 1. Pictorial representation of the responses to the levels of professional digital

Result of Table 1 reflected that investigate the digital competences in using tools for professional digital competences. An average of 70% participants is found to be accomplished in the professional digital competence in using digital tools while 40% of the participants opt to stay neutral in while giving response. Almost 90% of the candidates reportedly have good

command over the use of different tools for the storage and management of the data. The online communication tools are commonly in practice among 80% of the sample population. About 90% of the respondents seem to be familiar with the use of soft-wares that are in use for the student's evaluation at the university. All of the respondents appeared to be an active user of the social network sites and they seemed to be well aware of the different tools and soft-wares to protect their systems from the threatening viruses or programs. Also, the 70% of the participants can generate quick responses digitally. 50% of the sample is found skilled in the voice recording tools.

Table 2. Analysis of the digital competencies

Sr. No.	Statements	Category	Scale	No. of Responses
1	I am able to use tools for storing and managing shared files and content (e.g.: Drive, Box, Drop box, etc.).	High Competency	45-58	197
2	I know the use of online communication tools: forums, instant messaging, chats, video conferencing, etc.	High Competency	45-58	165
3	I am able to use Software available in my university (e.g. marks, attendance, communication with families, content, evaluating tasks, etc.).	Moderate Competency	31-44	165
4	I can use social networks, learning communities, etc. for sharing educational information and content (e.g.: Face book, Twitter, Google+, or others).	High Competency	45-58	175
5	I can use tools for producing QR codes (Quick Response).	High Competency	45-58	150
6	I can use tools for creating voice recordings (podcasts).	High Competency	45-58	197
7	I know about the use of protecting devices against threats from viruses, malware, etc.	Basic Competency	17-30	166
8	I am good at developing systems for protecting devices and documents (access control, privileges, passwords, etc.).	High Competency	45-58	165
9	I know about the basic computer maintenance tasks to avoid possible operational problems (e.g.: updates, cleaning cache or disc, etc.).	High Competency	45-58	155
10	I can use microphones, headphones, and printers.	High Competency	45-58	145
11	I do use tools for carrying out the evaluation, mentoring, or monitoring of students.	Basic Competency	17-30	195
12	I am capable to use different ways to update me and include new devices, apps, and tools.	Moderate Competency	31-44	193

The overall competencies for the individuals have been checked using table 2. It has been analysed those which competencies are present among the teachers. Usually there were four levels of competencies named basic, moderate, high and expert competencies. In this table the high competencies of teachers were separated so as to find the efficiency of teachers within the stable environment. Most of the teacher's lye in high competencies, basic and moderate. This table shows that most of the teachers fall in the category of high competency which reflect the increased level of education as well as expertise.

The researcher wanted to investigate the challenges faced by the university teachers in professional digital competences. The questionnaire was designed accordingly and the individuals were asked to register their responses. The analysis pointed out that almost 77.6% of the respondents were prone to high competency, 11.2% basic competency and 11.2% moderate competency in the usage and excelling of digital skills. Almost 40% of the respondents stayed neutral. And, 60% of the respondents did not appear in agreement to the provided situation.

Table 3. Responses of challenges of Digital competencies

Sr No.	Statements	SD	D	N	A	SA
1	Relevant courses material for teachers is not available in online classes.	-	10%	-	60%	30%
2	I cannot teach the course material better online than traditional classes.	-	-	10%	70%	20%
3	I have no experience of using technology for online teaching.	-	30%	20%	40%	10%
4	I am not satisfied with the e-learning content.	-	10%	10%	70%	10%
5	I do not receive proper feedback on my teaching during an online class.	-	10%	-	80%	10%
6	Lack of time and economical costs can be seen as closely connected difficulties for professional development.	-	-	-	90%	10%
7	Lack of qualities of digital technologies in teaching and learning.	-	-	-	60%	40%
8	Lack of technological infrastructure and resources for university teachers.	-	-	-	50%	50%

Responses to the levels of challenges faced by the university teachers in professional digital competences

Note: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree & SA=Strongly Agree

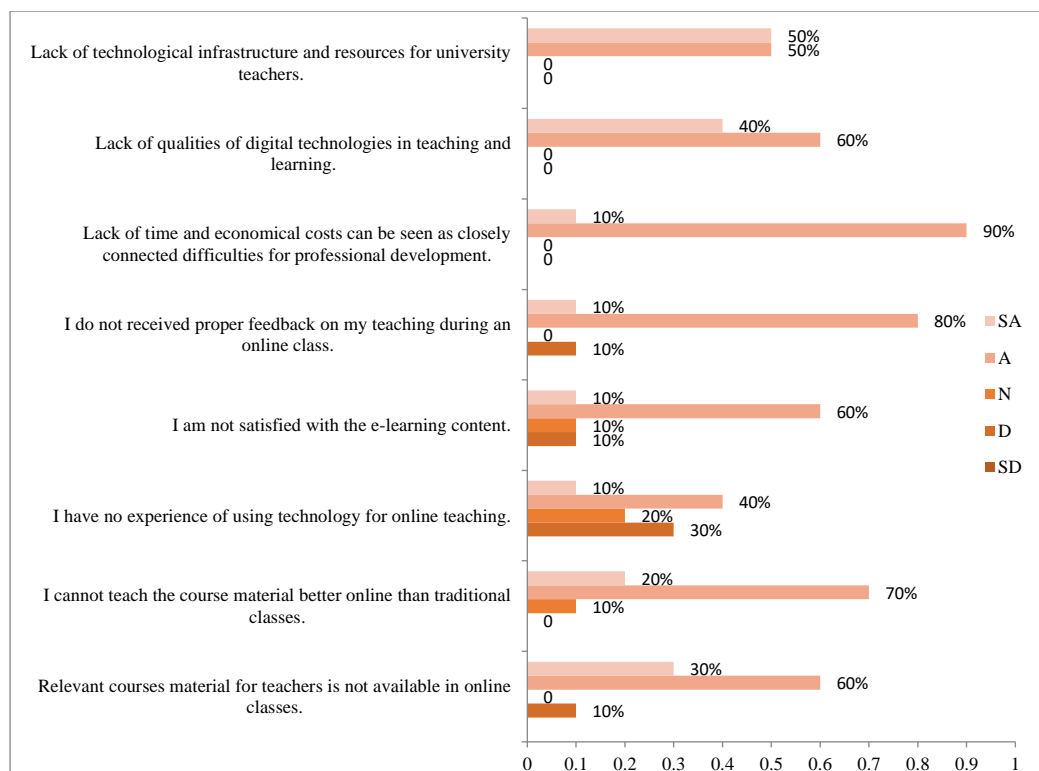


Fig. 2. Pictorial representation of the responses to the levels of challenges faced by the Analysis of the Responses to the levels of challenges faced by the university teachers in professional digital competences

3.2. HYPOTHESIS TESTING OF DATA:

3.2.1. Hypothesis:

Null Hypothesis H_0 : There is no significant difference in the mean scores of Professional Digital Competence (PDC) of university teachers of different faculties of International Islamic University.

Alternate Hypothesis H_1 : There is significant difference in mean scores of Professional Digital Competence (PDC) of university teachers of different faculties of International Islamic University.

The information about digital competency of the university teachers is arranged in tabular form to test the hypothesis. One-way Anova is applied to test the hypothesis.

Table 4. Anova Single Factor, Summary

Sources of Variation	Sum of Squares	Df	Mean Squares	F	Sig.
Between Groups	133.5172	1	133.5172	12.74882	0.00074
Within Groups	586.4828	56	10.47291		
Total	720	57			

As the calculated p-value (0.00074) is less than the significant level, $p=0.05$, therefore, the null hypothesis is rejected. It supports the hypothesis that there is no significant difference in mean scores of Professional Digital Competence (PDC) of university teachers of different faculties of International Islamic University.

Table 5. Level of Teachers' Competence

Sources of Variation	Sum of Squares	Df	Mean Squares	F	Sig.
Between Groups	1.066667	1	1.066667	0.955883	0.33879
Within Groups	265.5833	238	1.115896		
Total	266.65	239			

As the calculated p-value (0.33) is greater than the significant level, $p = 0.05$, this shows that there are significant differences in mean scores of Professional Digital Competence (PDC) of university teachers of different faculties of International Islamic University. The teachers vary in their digital competencies greatly.

4. DISCUSSION & CONCLUSIONS

Abilities gadget offers techniques for ordering and arranging the intricacy and scope of superior levels of abilities. Structures make a normal language and a number of the time recommends functionality degrees or learning effects. Digital abilities structures are utilized to educate approach, instructional arranging, and appraisal apparatuses (ITU, 2018). This segment gives a brief define of four of the massive structures presently utilized for strategy. According to Helleve (2020), the pedagogy is improved through comprehension of the digital devices and importance of digital techniques. Teachers stated that they response to students queries through emails, What's-app, Telegram, Skype, Face-book, Twitter, Snap-chat, LinkedIn, and Instagram. It is far evident that a trainer has to sense assured of their capacity to use technology so that you can decide to its endured use in the classroom (Partner, Ottenbreit & York, 2007).

Concluded that teachers were well aware of the professional digital competences in using digital tools. Determinedly that they had a good hand at the use of virtual support system to store files and documents. They knew how to use physical gadgets (like hard disk, CD, USB memory, memory card) as well as virtual (including Google drive, one drive, Drop-box, I-Cloud) tools to save the data. Teachers were proficient in using digital tools for sharing information and communicating the others. They were used the E-mails, Google Drive, Scribed, and Slide-share, Scoop it, Instagram, Flickr, etc for conveying information to their students or mates. Mostly teachers were not skilful to apply advanced or tradition search options to go for the data on internet. However, teachers were not well equipped with all the necessary skills to explore the virtual learning environment effectively.

4.1. RECOMMENDATIONS

On the basis of findings and conclusions following recommendations were drawn: Research suggests that the university teachers may be trained through proper training plans and training workshops. Teachers may be trained in professional digital competences. It explains how a teacher can use the technologies to teach his students and interact with them in a better way and deliver knowledge in a batter way. It creates innovative learning environment with the help of technologies and helps to master the rules of copyright and helps to learn a lot about creativity and teaches them to get maximum output with the help of technology. Professional Digital Competence helps in developing the quality of teaching. Prepare and develop the

professional competencies and encourage the university teachers to attend training programs. Training needs for university teachers regularly and continuously to keep up with their training needs on an ongoing basis. Opportunities for university teachers to attend national and international conferences that discuss the assessment of professional digital competencies in university teachers. Faculty of Arabic, Shari'ah and law Languages and Literature Usuluddin (Islamic Studies) may enhance their PDC skills through trainings.

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