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Computer and Digital literacy For Trainers and Teachers

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Abstract: **In this paper, we want to discover how the sudden and fast shift to online teaching effected the Computer and Digital Literacy for the teachers and trainers. Many teachers and trainers although had a certification on the use of technology, but many of them did not use it to teach. There is no doubt that the more competent teachers are in technology and in IT Communication, the more successful teachers they will be when teaching online. This paper tries to answer these questions: What challenges did the teachers/trainer faced when moving to online teaching? What are their strength and weakness? And are they going to keep using the technology even after they go back to the traditional face-to-face learning?**

In addition, we wanted to see which applications are popular and what is the level of competency? Then finally, we want to discover practical solutions to the Digital Literacy gap and suggest ways to narrow the gap and increase teacher's digital literacy and computer skills.

Keywords: **Technology, Computer Skills, Teaching, Training, Digital literacy. Digital Competence.**

I. INTRODUCTION

Information technology and computers were introduced gradually to the educators during the past 10 years or more. It started by replacing the old overhead projector with the PC and new projectors that displays PowerPoint slide. Then the smart board was introduced. Most teachers and trainers did not feel any rush to learn new technology and how to teach online and only few tech savvy teachers were fully utilizing the power of technology and were trying the online teaching. That is until the 2020 Pandemic which forced schools around the world to migrate to online in a very short period.

Computer and digital literacy without any doubt are necessary skills that all should have, especially teachers. Teachers, today, need to communicate with students and fellow teachers using technology and methods that was not available in the past like email, social media, and other applications that are made for specially for schools. Teachers are not the only source of information, so they encourage students to search the net and learn more about the topic. The internet opened new horizons for learning and teachers who fully utilized it gained a lot and helped their student learn more effectively. Many teachers flipped their classrooms and discovered the benefits of having students learn at home and do their exercises during class. This way teachers can discover students who are facing difficulties and deal with it earlier.[7] Teachers who lack the necessary skills in Computers and technology in general will miss a lot of opportunities that is available to take learning to a new level were the learner is in the center and his role will be to guide and facilitate learning.

In addition to their content knowledge, Teachers and Trainers need to know how to use the Computer and Technology in their teaching [1]. The European Framework for the Digital Competence of Educators (DigCompEdu) is a scientifically sound framework, they focus on how digital technology is used to enhance education and training and make it more innovative [3]. The impact of technology on education is huge and it is becoming an essential tool in education. This added a big challenge to the teachers and trainers because technology keeps changing rapidly. These fast changes put more pressure on teachers to learn how to use this new technology in teaching and create innovative teaching approaches.

As established by the European Union [1], Digital competence is a key competence that is needed all the time. Digital Competence is defined as: "The and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet" [1].

Before the covid 19 pandemic not all those involved in teaching or training had to use technology and many could get away without using technology at all. Many trainers and teachers used the in-class lecturing method and all the exams were on paper, so they do not have to use technology. Even those who used technology in teaching it was limited to presenting using PowerPoint and writing the exams on Microsoft word.

ECDL (European Computer Driver License) was Launched in 1996 by the Council of European Professional Informatics Societies (CEPIS). The purpose of ECDL was to examine a way to raise the level of digital literacy throughout Europe. In 1997 the ECDL foundation was established to insure high standard of implementation. In 1999 it was introduced internationally and became ICDL (International Computer Driver License). It was introduced to the Arab region in 2001 by the UNESCO and in 2006 ICDL became a job requirement for teachers and administrators in all GCC countries.[8]

ICDL was introduced in 2002 as a mandatory requirement to be hired in the ministry of education, Kuwait University, or PAAET. Many who were certified and got the job as teachers did not use the technology in teaching because they did not have too. Only after the Corona pandemic started late 2019, that forced an unprecedented new circumstance. This pushed many to move to the online teaching instead of the traditional in-class and face to face teaching. This change created a big challenge for teachers and students at the same time. All needed to be competent in using Computer and learn how to utilize their skills and technology to perform their job effectively.

When the pandemic started everybody had to stay home and education stopped for a time. Then it was decided to start teaching online. This caused problems and challenges for those who were incompetent and lacked basic computer and digital skills.

In this paper I will try to focus on the teachers' and trainers' digital competency after one year of teaching online. I will try to find which applications they mostly use from Microsoft 365. In this paper, I want to discover where do they need help most, and are they going to use the same technology after the pandemic is over? Especially now they have seen the benefit of using the technology in teaching and how it saved them time and made education fun for some teachers and students.

A sample from those who are working in the field of teaching and training mostly from the Public Authority for Applied Education and Training (PAAET). PAAET is an academic institute that is under the ministry of education in Kuwait. Their goal is to provide the workforce with well-trained manpower. This is done throughout their 5 colleges and 9 institutes.

II. LITERATURE REVIEW

During the last few years, the Information and Communication Technology (ICT) have received great attention in the education research. Studies found that ICT improved the quality of education and increased students' participation. [6]

Studies show that interactive learning shifts learning from the teacher centered to student centered learning, where students ate encouraged and self-motivated to learn [9]. Using computer simulations in teaching will help students learn better, but this will not succeed if the teachers did not have the necessary competencies to implement it effectively. [10] When we increase teachers' digital competency, this will enable them to help students with technology issues and incorporate it into their classrooms [11].

According to Eid Alharbi, having high skills in digital competency and Computers will benefit teachers all teachers. Computer skills is not only for those who teach computers or science topics, it will also benefit teachers who teach any subject like Arabic, English, and many others [12].

Delivering Learning is not limited to the traditional to the traditional face to face method of teaching, there is Online Training and Teaching. A third method is combining both traditional and online teaching and this called blended learning. A study was done by Safar and AlKhezzi [5] on a group of students and in this study, they compared two groups of students. The first group used only face to face teaching method, while the second group used the blended method. They discovered that the second group, that used blended training, outperformed the first group. Their attendance was higher, and they got better grades.

Using Information Technology in teaching benefits the teacher and student. According to study done by Cox on the relationship between motivation and ICT, he found that it had great positive effect on students [13]. ICT in education increased student's commitment to learning, made learning more joyful, and increased self-esteem. More than 50% of the students agreed that the use of ICT in teaching helped them to understand the topic better. This is mostly because the students can progress in the topic at their pace, and they can choose the time and place they want to learn. When students have access to the learning material, they can feel confident that they can always go back and learn what they forgot or missed.

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III. RESEARCH QUESTION

In this paper I will try to find the level of computer and digital competency that the trainers and teacher reached after more than one year of using online training. To see if they were prepared for online teaching and how much time of training they got and how satisfied they were with the training they received. I want to discover how many are producing digital content. In addition, I want to see what were the challenges that they faced and are they going to use the technology that they discovered after they go back to the traditional face to face teaching.

IV. METHODOLOGY

After more than one year of using technology to teach online, I wanted to assess the teachers/trainers' digital skills and their evaluation of their experience. I used quantitative and qualitative research methodology. I investigated studies that were pertinent to this study. Experts in the field were also consulted and interviewed, including faculty members of PAAET and Kuwait University. A questionnaire was created based on previous studies and the input of these experts. The pilot questionnaire was sent to colleagues to check for any problems and understanding the questionnaire. There were some changes made to the final questionnaire based on the input of colleagues and experts.

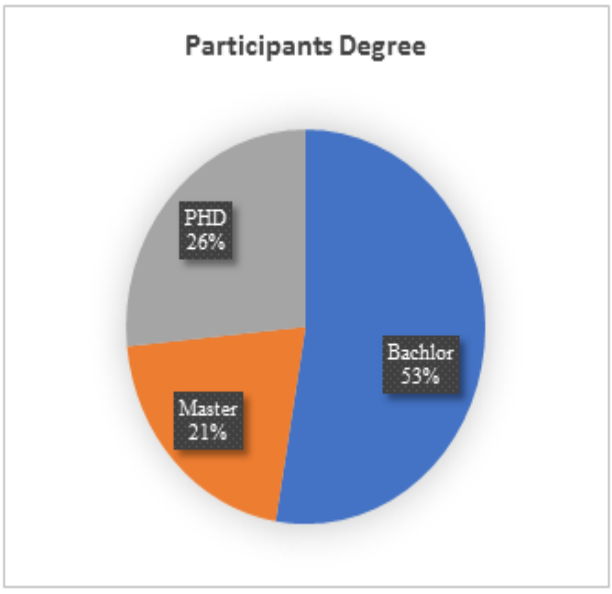
After finalizing the questionnaire, it was decided to use MS forms because it is easy to create, distribute and collect the feedback. It is also available for free for all teachers. A survey was created using MS Forms that is one of the Microsoft 365 tools. The questionnaire form was posted online. I went over the questionnaire with few of my friends and they found some small issues, like branching was not working for some questions. After I fixed all the issues, the link to the questionnaire form was distributed to the participants. I contacted many teams in Microsoft Teams that included all the trainers and teachers that work at PAAET. I also distributed the link to the questionnaire using social media and emails to target other teachers/educators. Most of the participants were PAAET teachers and trainers.

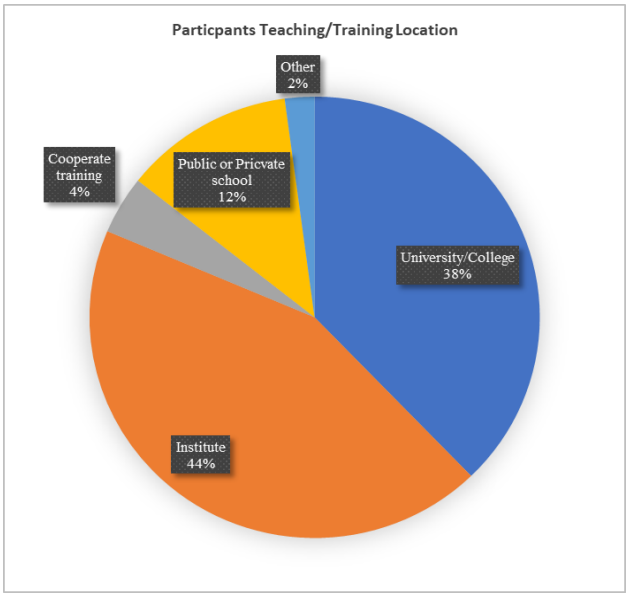
In the questionnaire, I focused mostly on the application provided by Microsoft 365. This is because PAAET, Kuwait University, and public schools in Kuwait use Microsoft 365. They also use MS teams to conduct their classes online [4].

Sample

Since I used PAAET Microsoft 365, the sample that I collected was mostly from PAAET (Public Authority for Applied Education and Training) 152 out of 188 participants and that is about 82% of the sample population. I also used PAAET communication channels like MS Teams, Yammer, and direct messages to colleagues. I had to send the link to the survey that is available online to encourage the teachers and trainers to participate. I got a total of 187 responses after more than two months making it available online and promoting it. Because English might be a barrier to some, I wrote the same question in English and Arabic.

From the 197 participants 52% had a bachelor's degree, 21% had a master's degree, and 27% are PHD holders. And 44% of them are teaching in an institute, 37% teach in a college or University, 4% are Cooperate Trainers, and 12% are teaching in a Public or Private School. The following chart shows the profile for the participants:





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V. RESULTS

When asked about ICDL certification 73% are certified and 27% are not. Out of the 187 only 4% got the ICDL certification less than a year ago. Six percent got it between 1 and 5 years ago, and 24% got it between 5 and 10 years ago. Finally, 66% got the ICDL certification more than 10 years ago. In the sample 90% had their ICDL certification more than 5 years ago.

AS for the number of years in teaching or training in the sample: 36% spent more than 20 years, 34 % spent between 10 and 20 years, 10% for people who spent between 5 and 10 years, and finally 20% spent less than 5 years in the field.

In the question about digital devices that they own and use, they were given the option to choose more than one answer. In the sample 162 owns smartphone 97 on tablet 173 on laptops and 96 on a PC.

The following table and chart show the result for the time teachers/trainers spent using the computer when they are not teaching online:

Table 1: Time teachers spent on computer when not teaching online

	Less than 2 hours	3-6 Hours	More than 3 hours	None
Learning new work-related IT skills	44.9%	27.8%	17.1%	10.2%
Shopping online	55.6%	19.8%	5.9%	18.7%
Social Media	39%	27.3%	30.5%	3.2
Entertainment	48.9%	28.8%	8.6%	23.7%
Learning new things	50%	32.8	13.4	3.8

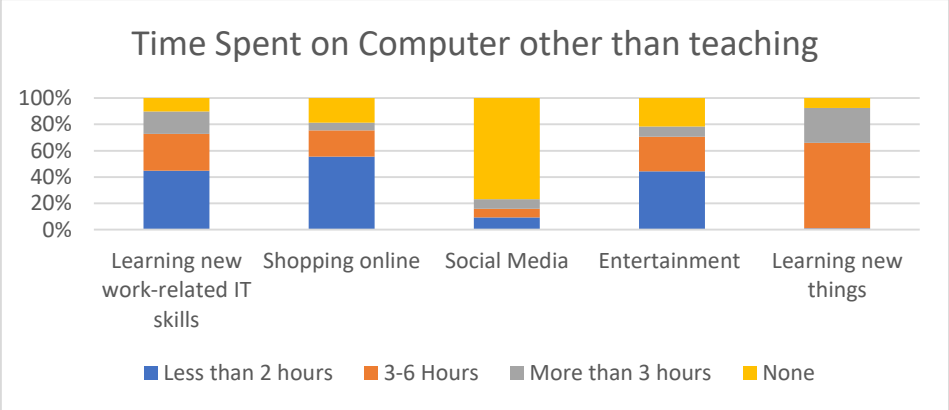

Figure 1: Time teachers spent on computer when not teaching online

As shown in the following chart, teachers' Self-assessment showed that most of the teachers/trainers are competent when it comes to using the popular applications (Like windows, word, excel, and PowerPoint). However, they are either not aware of some MS software or less competent in the less popular applications like Planner and sway.

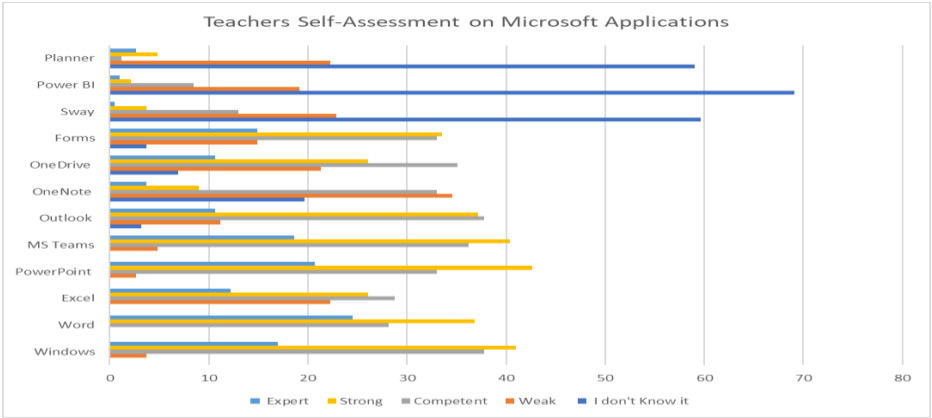

Figure 2: Teacher's assessment of their computer skills

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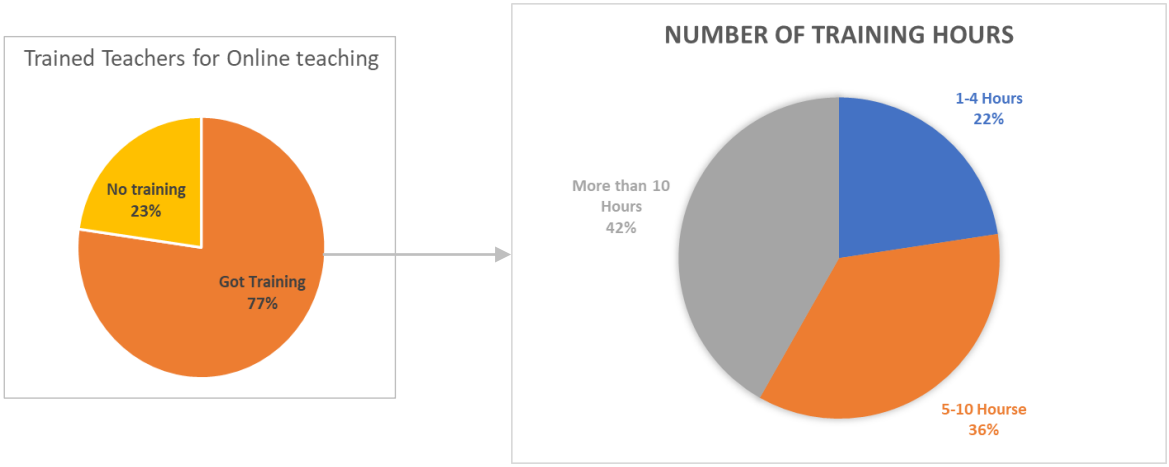
In the sample 77% of the participants got training to prepare them to teach online and 23% did not receive any training. In the sample, out of those who received training 42% got more than 10 hours of training, 36% got between 5 and 10 hours of training, and 22% got between 1 and 4 hours of training.



Those who received the training in the sample, their average evaluation of the training was 3.93 out 5. And those who gave the high evaluation rating (4 or 5), 53% of them said that they produce digital educational material like digital documents, audio, or educational videos. In the sample 31% do not produce digital educational material.

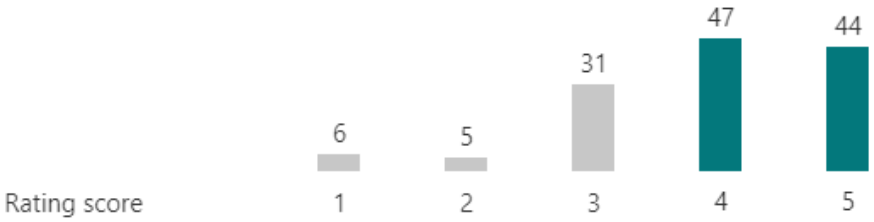


Figure 3: Teacher ratings for the training to prepare them for Online

Teachers were asked to assess themselves on their online teaching competency and how do they perceive their teaching online skills, 45% said it is excellent, 41% said it is average, 9% said it was acceptable, and 5% said it needs lots of development. The following chart shows the result:

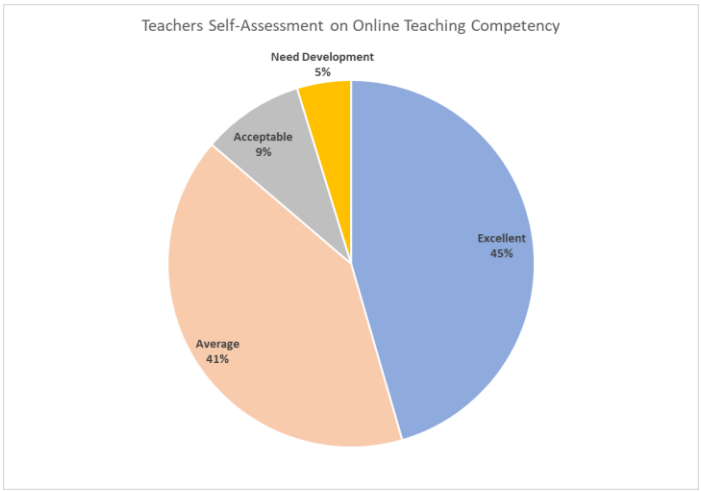


Figure 4: Teachers Self-Assessment on Online Teaching Competency

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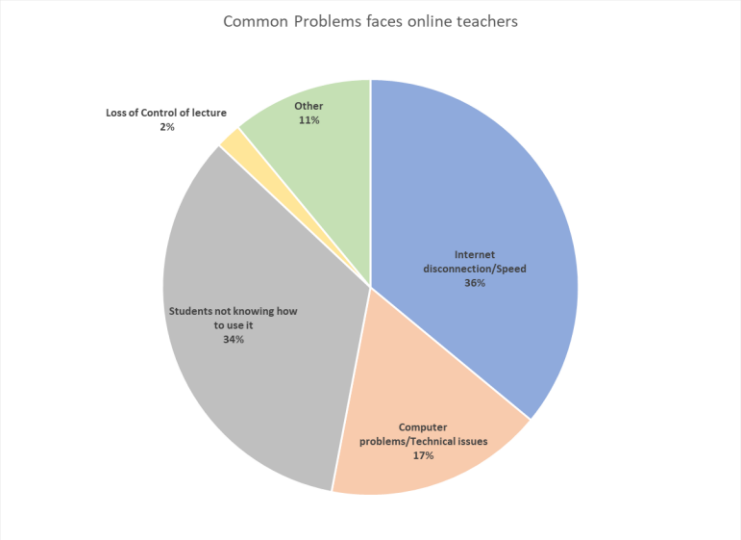
The Following Chart shows the common problems teachers/trainers face when teaching online, and it shows that most problems are related to the internet connectivity or Speed 36% and 34% of the students face difficulty in joining the online class:



The following chart shows the samples response to the question: How do you rate your skills when teaching online on the following? The three skills that most teachers were either weak or they do not know it were: Adding lessons to OneNote class, Moodle, and using Kahoot.

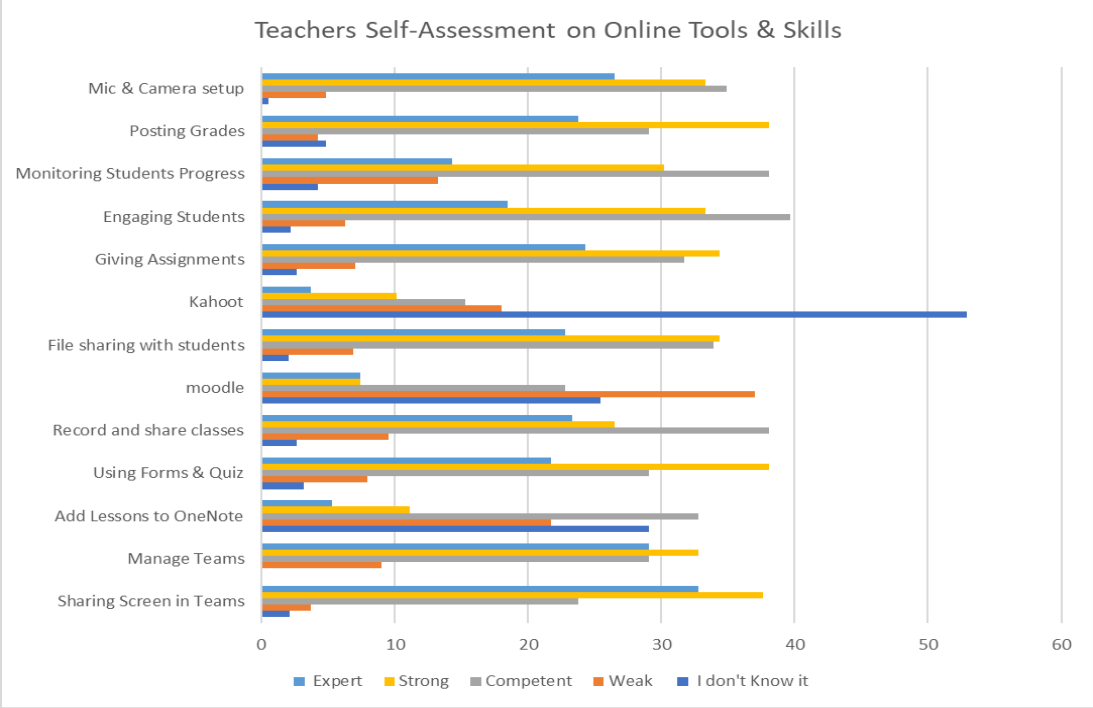


Figure 5: Teachers Skills for teaching online

Most of the teachers and trainers use PowerPoint for teaching. So, I asked if they used technology (other than PowerPoint) in training/teaching before 2020 (before the corona pandemic), and 67% said yes they did while 33% answered no.

Using the PC for teaching online gives the teacher more options to share screen and do more fun things. Teachers in the survey that uses the PC for that purpose are 62%, 25% use the tablet, and 13% use their smart phones.

Most of the teachers/trainers use YouTube to Develop their computer and digital skills. YouTube was used be 72% of the population sample, LinkedIn learning was 15%, Udemy was used 6%, and 8% use other resources.

When teachers/trainers need help with the computer or any technical issues, 54% will search the net for an answer, 27% call a friend, 18% call the help desk, and 1% find another way to solve the problem.

Participant were asked which of the following training areas would you be interested in to help you teach e-learning courses?

Table 2: Subjects that teachers are interested in to create e-learning material

General Computer Skills	69
Email Skills	32
Instructional Design eLearning	128
Creating online content	93
Saving and managing your Files	53
Protecting your Data	103
Other	7

When we go back to normal life, are you going to keep using the new technology you used in teaching during the pandemic? For this question 74% said yes, 25% said maybe, and 1% said no.

VI. DISCUSSION

In the introduction we mentioned the importance of digital and computer competence especially for education. The government understands that and makes it an obligation to get ICDL certified before working in the education field. But as we discovered from the sample, we found out that 90% had a certification that is more than 5 years. During the 5 years all the software that they learned and got certified on were changed dramatically and will keep changing. That is why it is not enough to ask for a certification to ensure the Digital competency, but to continue developing these skills for teachers and trainers.

The more the teacher are skilled in the computer and digital they will bring creativity and increase the teaching effectiveness [5]. Furthermore, teachers will be skilled and can produce learning materials that can be available online so students can access them anytime and from anywhere.

Although 69% said that they produce digital documents, 68% wanted to learn Instructional Design for E-Learning. That shows that they are interested on developing this skill to produce high quality course that meats the international standard and is more effective.

I work in PAAET and I have asked many teachers and trainers about the training they got to prepare them to teach online, I found out that all the training they have received was focused on MS Teams. I received the same answer when I asked teachers teaching at public schools and the University. In Figure 2 we see that teachers/trainers are familiar with the popular applications that comes with Microsoft 365, but they are not competent on the less popular applications like Sway, OneNote, Forms, and Planner. Although all these programs are available, but they are not fully utilized.

OneNote class is a very powerful application and teachers can use it to add their lesson plan, follow up with assignment and give recorded individual feedback, and share lessons. Unfortunately, more than 51% of the participants in study are either not familiar with it or they did not hear of it. They are missing a great tool that will help them with teaching online and even when teaching face to face. Because this application will provide a tool to follow each student's performance individually.

Another great tool that is available for free for all PAAET staff is Moodle. It is a learning management System that help teachers organize their lessons and assign HomeWorks or exams to students. Teachers can share their e-content weather it is a video, PDF, or PowerPoint slides. They can also use it to communicate with students. Unfortunately, 62% of the participants are not familiar with it and not using it. This is because they are not aware it exists and are not provided with the necessary training to use it. As a PAAET training faculty, I know training was provided for Moodle, but it seems that it was not enough. Another reason might be that there is no encouragement to use it. This need to be studies further.

Producing Digital Educational material

A regression analysis was done on the data gathered from the questionnaire to find how ICDL, experience, or self-learning on producing digital educational material like educational videos, infographics, and audio material. First, the sample showed that there is no relationship between those who got the ICDL certification and their skill to produce digital training material see Table 3.

As we see in Table 4 that resulted from the analysis, the more work experience in teaching the more skilled they are in producing digital content for their students. Finally, Self-learning is a good indicator for high digital literacy. Table 5 shows that teachers who spent more time in self-learning are more competent and skillful in producing digital education material.

Table 3: ICDL and production of Digital learning

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.953723	0.953723	1.426606	**0.2338483**
Residual	185	123.6773	0.668526		
Total	186	124.631			

Table 4: Work Experience and production of Digital learning

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.864228	1.864228	2.809247	0.095411486
Residual	185	122.7668	0.663604		
Total	186	124.631			

Table 5: Self-Learning and production of Digital learning

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.958415	1.958415	2.953445	**0.087367611**
Residual	185	122.6726	0.663095		
Total	186	124.631			

One of the things that was discovered in the interviews is that many of the trainers and teachers faced a big challenge in engaging the students during the lectures, as one of them said: It was very challenging to engage students during traditional teaching, with online teaching it is impossible. When asked what tools he uses to engage the students? he said none.

The result of the questionnaire showed that teachers were incompetent in these three skills: adding lesson to OneNote Class, Moodle, and Kahoot. Although these applications are available for free and make learning fun and more engaging, many teachers do not know anything about them, or they do not use them effectively.

That is why it is recommended to introduce these application and other ones to the teachers so they can become aware of what is available and chose what works for them. Online teaching can be engaging if the teachers are highly competent and know how to use the technology to communicate effectively with the students [14]. Teachers can build a healthy learning environment and encourage students to learn. On the other hand, a teacher with low digital competency can create a barrier between him and his students, thus hindering the learning experience.

I recommend further research done to assess the digital competency for the students. It is true that most students use smart mobiles and play games on the internet, but in the survey one of the high challenges that teachers and trainers faced is that many of the students did not know how to use the technology. Students need to be skillful in using the technology to communicate with the teacher and share his files. Another study I recommend is to do a similar study specifically for Kuwait University since they have large number of students and teachers. The result of these study should be combined and have a team of teachers and trainers cone up with innovative solutions to the challenges that face teachers and students in applying technology in education and come up with an actionable plan to raise their Digital competency.

VII. CONCLUSION

There is no doubt that the 2020 Corona Pandemic brought technology to the education, but it was fast and enforced a new reality. Those who resisted using technology did not have a choice and had to use it to do their job. The Pandemic forced teachers and trainers to use the technology to teach online. Some of them may find it difficult at the beginning, but all of them discovered the beautiful world of technology and how it can help them with teaching. That is why in the survey 74% said that they will continually use it after we go back to the traditional face to face teaching. In the sample 25% said they might continue to use the technology and for those we should continue to encourage them and provide them with the support they need to feel more confident with Technology. Only 1% said that they will not use the technology, and this is a very small percentage, since 99% are willing to continue to use it.

In Conclusion, it is not enough to measure the teachers/trainer's digital competence before they were hired. We need to continually develop their digital and computer skills. Technology is continuously improving and in a fast pace. To keep up with it, there should be a systematic plan for continues development in Digital literacy and computer skills. Teachers and Trainers need to be given many options to develop their computer skills. These options might include support groups, E-Learning materials, Videos, books, articles, and traditional training. Another suggestion is to create computer clubs in each institute that will encourage teachers and students to learn to gather and build a learning community. This will build and increase trust between students and teachers.

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