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Application of Technology in Teaching and Facilitating of Islamic Education in 4thIndustrial Revolution: A Review

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ABSTRACT

This paperwork discussed the application of technology specifically in the flow of 4th Industrial Revolution in the teaching aids of teaching and learning. The main teaching aids are presented as a proposal to be applied in the teaching and learning of Islamic Education. Among them are the uses of PowerPoint, Websites and so on. The methodology of the study was based on "Systematic Literature Review" (SLR) method by examining books, journals and previous studies related to the topic of discussion and the content requirements analysis was adopted to obtain the results. However, there is a need to study in depth the use of technology so that the application can really contribute to the effectiveness of teaching and facilitating (PdPc). The choice of high technology teaching aids should be done with particular care, especially in Islamic Education so that it is suitable for academic use and can be integrated with traditional teaching methods.

Key words: Educational Technology, Learning Aid, Teaching and Facilitating.

1. INTRODUCTION

Technology has brought about a major change in Education especially in relation to the aspects of PdPc (Rogayah & MohdAderi 2016) [1]. In the era of the 4th industrial revolution, Malaysia had confronted new challenges such as globalization, liberalization, internationalization and the development of Information and Communication Technology (ICT). The Industrial Revolution (IR) is a form of advancement in human civilization (Mohamad, 2018) [2]. Therefore, the Ministry of Education (MOE) is working together in providing education development programs that can produce knowledgeable citizens, ICT literacy, skilled, and noble PIPP (2006-2010). MOE has introduced numerous policies or stratagems to promote education, including the launch of the Education Development Master Plan, PIPP (2006-2010). One of PIPP's cores is to empower the national schools. To empower this national school, the school preservation program, and the use of ICT in teaching and learning have been established (PIPP, 2006) [3]. To extend the use of ICT in schools, MOE targets all Primary Schools (SRK) and SMKs to have a comprehensive infrastructure, equipment, and software, as well as teachers and staff get adequate training to ensure effective use of ICT in teaching and learning (PIPP, 2007).

The information revolution that occurred as a result of ICT's progress gave new challenges to the teaching profession; this advancement needs to be utilized to enhance the character of the teaching profession in the 21st Century (Ward &Peppard, 2003). According to Rani (2017) which sees IR 4.0 is able to unlock a new scope to spark more problem-solving methods such as the energy imbalance faced by today's world, solving the problem of using the technology before, became proficient [4]. Thus, the development and rapidity of ICT in the globalization era demands educational institutions to make changes in order to continue to be relevant in terms of the provision and development of human capital to the country to achieve technologically advanced status (Christina Andin @Nur Qistina and Hazman 2009; Marlina et al. 2016) [5-6]. ICT has become a necessity in education and it has become an essential component nowadays and needs to be fully utilized by educators to create an informed and global-minded society (Syuhada and MohdAderi 2016; KhairunNisak et al., 2016) [7-8].

According to Che Yaakob (199I), Hasnuddin et al. (2015) & Maziahtusima Ishak et al. (2018), teachers are charged with many side tasks thus reducing their focus on the main task of teaching [9-11]. Che Yaakob's statement was supported by AbdullShukorShaari, Abd. Rahim Romle and Mohamad YaziKerya (2006) who stated apart from academic duties, teachers were also required to hold various posts such as the committee chairman and committee members [12]. It is a challenge in the PdPc process to enable Islamic Education teachers (GPI) to optimize the use of Technology.

2. METHODOLOGY

This study used a systematic literature review and content analysis methods. There were three themes used in the data

search which comprise of "Islamic Education", "Application of Technology in Teaching and facilitating" and "4th Industrial Revolution". These themes showed that there were three fundamental assessments of the Islamic Education subject i.e. the need to evaluate the application of technology that can contribute to the effectiveness of teaching and facilitate (PdPc), teachers' proficiency in Information and Communication Technology (TMK) and selection of high-tech teaching tools that are appropriate for use in class.
Technology is evolving rapidly and is gaining a place in the education system. Progress in education technology has seen considerable help in improving the effectiveness of teaching and learning processes. Hence, the discussion will focus on the use of teaching aids that can be applied in teaching and learning especially in Islamic Education. Among the content discussed are high technology teaching aids, PowerPoint slides, Internet access in the classroom, the use of textbooks on websites, resources and web links, integrating website components for traditional teaching, websites as teaching and learning tools based on Web pages. Industry 4.0 is related to what is called the "smart factory" [33]. In a smart factory, a virtual copy of the physical world and decentralized decision making can be developed [34]. Also, physical systems can cooperate and communicate with each other and with humans in real time, all enabled by the IoT and related services.

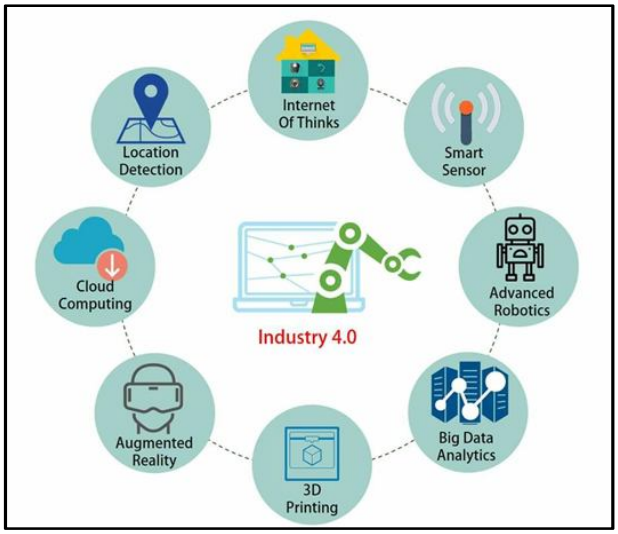

Figure 1: Dutton (2014) &Buhr (2015)

High Technology Teaching Aids

Today's education requires technology to assure uttering education in Islamic Education is more effective and appropriate according to the modern-day transmission. The call for the use of technology is the motivation for producing teaching that has an impact and can help in achieving the goals of teaching. Various changes that occur in today's society cause the teaching and learning of Islamic Education to be tailored to the demands of the times. (Hasnuddin Rahman, Norfaizuryana Zainal &Azzarahton Karim, 2015) [10], (Shah Rulbani Zakaria, Mohd Isa Hamzah, & Khadijah Abdul Razak, 2017) [13]. Several suggestions are given to make teaching and learning of Islamic Education more enjoyable, with the application of multimedia methods in education that integrates text, sound effects, vocals, music, animation, video and interactive computer software (Kamarul Azmi & Ab. Halim, 2007) [14].

The quest for today's technology is vital in strengthening the PdPc process becoming more appealing and productive (Khadijah et al., 2014 [15]; Hasnuddin et al., 2015 [10]; Rogayah and MohdAderi 2016[1]), creating a fun learning environment and enhancing the quality of teachers' teaching (Sharifah Nor Puteh&KamarulAzman 2011 [16]; Joseph Anjuman and Wan Rozali, 2013; Syuhada and MohdAderi 2016[7]) in addition to accelerating student acceptance and able to generate students' thinking (Ain Zawani, 2014 [17]; Norasmahani et al.2015; Thanabalan and Thanabal, 2015 [18]; Yazid Abu Bakar, 2016 [19]).

Even the use of technology in the PdP process can improve the effectiveness of the PdPc process and facilitate students to understand the teaching (AsnuurienNajmaet, 2008 [20]; Norliza et al., 2013 [21]; Ahmad Fkrudin et al., 2014 [22]; Abu Yazid Abu Bakar, 2016 [19]), can provide equal opportunity in learning to all students regardless of background, increase student self-motivation, enable students to access information and gather in a short time, and enhance students' creativity and imagination (Robiah and Nor Sakinah, 2007) [23] and enhance cognitive achievement among students (Sharifah Nor Puteh and Kamarul Azman, 2011 [16]; Anuar and Ahmad Nelson, 2013; Thanabalan and Thanabal 2015 [18]).

Whenever this technology device is used wisely and properly, it can improve the strategies in teaching and learning especially in assisting students to be actively involved in learning and interacting with each other, as long as the students are given prompt feedback, valuing multiple talents and learning styles, unhesitant and organized, and communicate with keen in teaching and learning (Lucas & Bernstein, 2005 [24]). However, technology can lead to less quality teaching. Although there are many encouragements for using all or some of the high technology teaching aids in teaching, this does not mean it is mandatory to use. The most important thing to take note is the advantages and disadvantages of each technology, its relevance, the way and the goals of teaching and decided if it can help students to understand the lesson.

There are some concerns that need to be pleaded for an example; is there any evidence that this technology tool that will be used will help to increase the effectiveness in the teaching of Islamic Education? Is there evidence that this technology tool will help students and strengthen their memory level towards the lesson learned? Will this technology be more dangerous than its value? Will this technology complement the teaching and enable teachers to

achieve education goals? It is not easy to answer these questions in its early stages. This is because there is no adequate evidence to prove the effectiveness of using these technology aids in the short and long term. It needs to be practiced first before making a decision. At the very least, reading on technology tools should be emphasized while soliciting advice from experienced colleagues and experienced users around the world. Priority should be given to technology tools that can improve the quality of teaching and facilitating rather than vice versa. There are some of the tech instructional tools used by teachers today, especially teachers of Islamic Education.

Johan @ Eddy External (2013) suggested that a teacher should master the basic skills of using computers such as Microsoft Word, Microsoft Excel, Microsoft Access, Microsoft PowerPoint and the Internet [25]. TengkuNorhayati (2015) notes that most Islamic Education teachers use computers to prepare annual teaching plans, produce notes, produce BBMs like PowerPoint and so forth [26].

Mastery Powerpoint Usage

PowerPoint could be referred to a presentation software in teaching. It is easily presented via a slide projector from the computer to the screen. If Kleenex is famous by assigning to any facial tissue brand, so is Microsoft PowerPoint representing most similar presentation software including Corel presentation, Apple keynote and others related to its software. However, the most popular software and the choice of Islamic Education teachers is Microsoft PowerPoint.

Hansen (2011) believes that teachers need to have the skills and capabilities to bring about changes in education and learning at all levels of society through global thinking and open attitude to receive the latest thoughts and approaches in line with developments in science and technology [27]. Islamic Education teachers should be able to master them in various aspects of using PowerPoint slides. While PowerPoint can highlight, point, animate, and provide structure for learning in every way, it can also take over the lecture if we let it. Therefore, do not let PowerPoint's presentations be boring, overwhelmingly written in one slide, long description of each slide, too many gimmicks, animations and so on (Lucas & Bernstein, 2005) [24]. When this happens in the class, PowerPoint can become a barrier to learning. Teachers also need to explore PowerPoint's potential to be applied in teaching and facilitating processes.

In reality, PowerPoint does not turn off the lesson but PowerPoint user can turn off teaching! Therefore, diligent efforts should be made to customize PowerPoint with the aim and style of teaching. When its use is well implemented, it will have a positive impact. The primary basis for applying PowerPoint slides in teaching and facilitating is that teachers need to have computer skills. The skill of using computers as a teaching tool is very important, especially for Islamic Education teachers. Hence, current teachers should equip themselves with computer skills, not only as teaching tools but also as communication tools, in order to obtain information related to education (Mok Soon Sang, 2009) [28].

Many Islamic Education teachers use PowerPoint slides as a helping tool during teaching due to existing facilities with the software built in. As it has been known, PowerPoint slides are digital versions of overhead transparencies or printed distributions used to present a topic, concept and theory lists, pictures, diagrams, tables and so on. Therefore, we can get the best through PowerPoint by using tracking capabilities to attract students' interest and attention. This is because the use of overhead transparency with circulation notes at the same time is not as straightforward. In addition, to display texts and figures, PowerPoint can be loaded with audio and video clips, multiple animations and simulations and can be linked to various sources from the Internet. All these facilities are able to stimulate and attract students (Lucas & Bernstein, 2005) [24].

Powerpoint Links Through the Internet

Discussing technology in education, we can not run away from Internet use. The presence of the World Wide Web network allows individuals or organizations undoubtedly disclose any information. However, if it is used for immoral purposes then it will have a negative impact on student life (Syed Ismail & Ahmad Subki, 2010) [29].

If a classroom has direct access to the Internet, then we can connect the PowerPoint slides that are used directly to the Website that will bring the place, the sound and other information that makes the teaching material look more alive and stimulates the student to browse it later. Using PowerPoint links through the Internet, teachers can deliver teaching and learning by continuously bringing their students to specific Websites on lessons learned (Lucas & Bernstein, 2005) [24].

In teaching and learning of Islamic Education, teachers can use links in PowerPoint slides to bring their students to relevant Websites either provided by the Ministry of Education or private blogs, where teachers only use their computer cursor as indicators to highlight relevant teaching information. Then the teacher clicks on some of the articles that are additional reading material for students. There are many other Websites that can be linked to teaching and learning. Therefore, when accessing is done in teaching and learning sessions, these resources have a very effective and powerful teaching value.

Textbook Website

The pedagogical value of a textbook Website depends on the features that publishers have produced. The most wanted website related to textbooks is a site that gives students the opportunity to actively interact with teaching and learning materials rather than simply clicking on a computerized textbook (Lucas & Bernstein, 2005) [24]. In Malaysia, the

government has provided a website uploaded all teaching and learning materials through the ministry of education including preparing textbooks through the Website of teachers and students can find it at www.gemaislam.net.

All of these are intended to facilitate teachers and students to undergo the teaching and learning process. Typically, this organized Web page contains specific topics or chapters in textbooks. Most Websites have provided a summary of each chapter, but the better is something outside the textbook. In addition, there are interactive learning modules including a brief tutorial on the subject area of the chapter, the opportunity to collaborate or manipulate concept examples, the diversity of forms of online online demonstration, the challenge of thinking critically about a concept or a research, and a link to online articles and other Websites if further explorations are directed. A better textbook website offers facilities that allow students to evaluate and test their progress on the learning process (Lucas & Bernstein, 2005) [24].

Sources and Website Links

Website links associated with textbooks by publishers, and other resources are valuable, but the lack of use depends on the suitability of the content, the quality of the material, the monies imposed on the Website, and also depending on student readiness. The most stable Internet site is likely to change the Web address (URL) with other frequencies when they update the page or add new features. Therefore, if a student tries to enter a Website that has used an expired URL, it does not automatically move to the new page and the content links will be lost. Although the path is still visible on the publisher's Website, it can also be time-consuming if the website manager does not update frequently (Lucas & Bernstein, 2005) [24].

A lot of effort is needed to address the problem of an expired address. Before starting it, try first entering the Website to verify the current URL. If the address has changed, the URL needs to be changed to what it should be. If no shipping address is offered, the search can be created by typing the name of the Website on www.google.com or another search engine to see if it is still available. If the teacher has the certainty about the accuracy of all Websites that will be used during the first week of the class, at least the students will not be disappointed and more likely to enjoy Internet-related learning. Once the lesson begins, the teacher should remind the students that the URLs often change and ask them to help the teacher update by following the outlined procedures and reporting to the teacher via the correct URL email once they find it. Then, the teacher can transfer this information to the whole class. This procedure not only makes the process easier to update teachers but also improves the ability of students to use the Internet (Lucas & Bernstein, 2005) [24].

The presence of students visiting the Website is an important part of confirming URLs, while ensuring that the content in them is appropriate and relevant to teaching and facilitating. This is partly true because there are links in it that bring students to a more generic Website and make it useless. Finally, teachers need to ensure that the recommended links to the students will bring them to the credible, up to date, reputable, and reliable information (Lucas & Bernstein, 2005) [24].

Combining Website Components for Traditional Teaching

Most institutions nowadays have Web-based teaching and facilitating grounds such as foreign universities Blackboard, WebCT or E-College which are the basis of their own property. This is contrary from the public Website. This platform allows educators and students to exchange information in a protected and confidential way. We can use this platform in Islamic Education to intensify active learning, respond quickly to students and improve teacher and student relationships as this platform stores: (a) Medium to send syllabus and assignments, (b) Personal email (e) Medium for teaching assistants, including PowerPoint demonstrations and completed job assignments, (f) Places for students to submit assignments; (c) Places of discussion are open to students and teachers; which has been completed for grading purposes, (g) Test management and grading facilities, (h) Student grade books, and (i) Announcing course information (Lucas & Bernstein, 2005).

The use of the teaching and learning platforms by submitting the syllabus and the assignment of the course can be avoided from being copied and published in print material on such information. Most teachers using Blackboard or other platforms are no longer using written materials, either by personal wants or university-cost savings rules that require students to spend on printing. Therefore, access to a Web component that is merged allows the teacher to provide written material only once, if the student loses the material, the teacher can send it to the Website for a new print. Here are the features of the platform in question:

(1) Uploading (Send To Website) Study Material

One of the best features of this platform is to provide the opportunity to deliver a variety of learning materials. We can send PowerPoint slides (using the Internet or not), examples of excellent or poor assignments that have been written by former students, PDF documents and include audio and video clips. All these can be made at the discretion of the teacher either to the whole class or to a chosen student. Prior to delivery, this material should be reviewed by an informed person to ensure that it does not violate intellectual property rights when doing so (Lucas & Bernstein, 2005) [24].

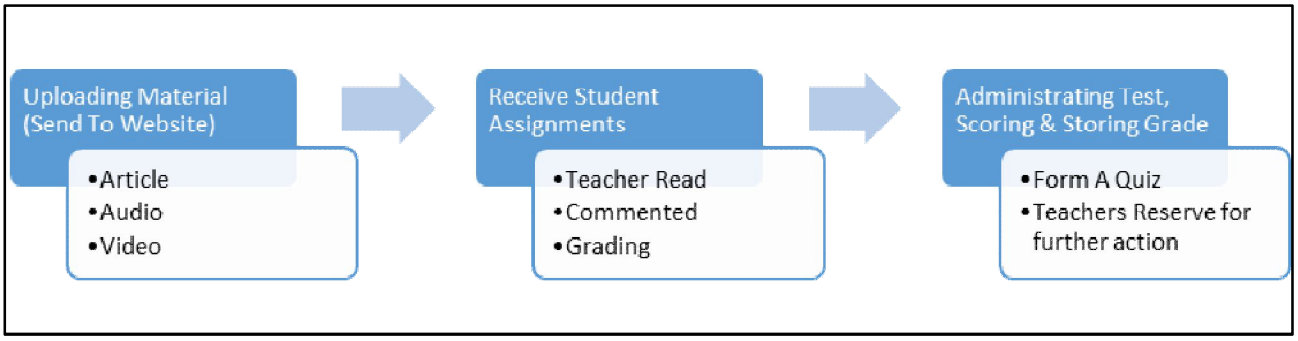

Figure 2: Lucas & Bernstein, 2005

(2) Receiving Student Assignments

After students complete one task, either in the form of paper, research or presentation PowerPoint multimedia, students can post their assignments on this platform where teachers can read and respond to comments, suggestions or grades, and then re-publish the results to students. This learning style can make student and teacher relationships more dynamic and fast. However, it takes a lot of extra work, especially when the teacher tells the student to submit the first task draft. Teachers will spend a lot of time reading and responding to student assignments on the computer. Therefore, these possibilities need to be resolved when using this teaching and learning platform (Lucas & Bernstein, 2005) [24].

(3) Grade Administrating Test, Grading and Grading Administration

One of the priorities of using this learning platform is the opportunity to create quizzes or tests that can be retrieved from the Website, which requires essentially short answers and receive instant feedback on their performances.

The feedback can be measured by a number of scores or in full results, including the response of each item, correction of each item, explanation of the wrong answer and provide suggestions for further reading of the title of the item left. The results of these quizzes and tests online can be calculated for student grades or utterly used as an attempt to help students prepared and improve their achievement in future exams.

However, in this case, the test or quiz can be made but can not be accessed until the specified time and it can be provided in the form of limited or unlimited tests. Some of these platforms require teachers to prepare grade books to include student-grades that can be automatically generated (Lucas & Bernstein, 2005). Inserting grades automatically into student grade books is a useful function for recording test results or other tasks that have been posted online. Teachers can also apply it to include those results that are conducted offline. Grade book production is a time consuming and complex, but it can save time in the long run as it automatically calculates scores or grades.

E-mail

One of the email-platform advantages is that all messages relating to the class will appear in one corresponding place of course on the server platform, not in departmental or private email. This advantage is offset by the fact that it will usually take a long time to access and download e-mail from this learning platform because login is required before reading the course in this email. Additionally, emails containing attachments may take longer to download than through regular email programs (Lucas & Bernstein, 2005) [24]. Therefore, some teachers have chosen not to use this learning email platform functionality. They use in the reverse such as for each course being taught, the use of new e-mail in their personal account or department is required. This speeds up the downloading process, but if the teacher chooses this option, they need to remind each entity in the class to check the email daily.

Teacher-Student Discussion Page

The Faculty's discussion site is a feature of a learning platform that allows teachers to increase their discussion topics and get students to enter them by commenting and responding to their friends' comments. It is called threaded discussion, which is very useful as an interactive community-building tool. Whether teachers want to use this feature or not are dependent on oneself and personal commitment. If the teacher wants to provide guidance and discussion, the teacher should read all the comments, give feedback to all students or some of them as well as provide grades (Lucas & Bernstein, 2005) [24].

Website as a Teaching Tool

If the institution maintains an Internet-based learning platform, it can be helpful for every course of teaching and learning. Even with the absence of a platform, teachers can still create their own Websites that allow them to convey personal information, research and publications, syllabuses and other information to students.

The effort to create a personal website requires considerable thought and planning and attention to ensure that it operates properly. Otherwise, it can make the students confused and desperate because they do not meet their wishes, that students

can not open their teacher's Website because of a possible problem or error. But is this private website useful to students? This question will be answered when it is developed and the teacher can identify the deficiency. In other words, as a high technology teaching tool, teachers need to know the advantages, disadvantages, and uses of this tool for students (Lucas & Bernstein, 2005) [24].

Website Based Learning

Rapid technological advances nowadays have to make web-based learning a major innovation in education. This learning is a type of online learning that combines streaming video, PowerPoint presentations, audio descriptions and other software in the delivery of teaching and learning. Learning takes place entirely through Websites (Noriati A. Rashid, et al., 2010) [30,35].

Teaching and facilitating through the Internet is inappropriate for every teacher or student, but it can be of great benefit in many situations. These courses support a wide range of learning styles and students choosing this Web-based learning out of the traditional, highly motivated, organized, disciplined traditional class forms as well as exposure to new experiences and technology savvy. Teachers using Web-based learning must have the same characteristics and are willing to work harder, especially at the beginning of each teaching and facilitating term (Lucas & Bernstein, 2005) [24].

3. CONCLUSION

Based on the discussion, it can be concluded that the application of technology in teaching and facilitating is a necessity in education in particular relating to high tech teaching aids such as the use of PowerPoint slides, Internet access in the classroom, the use of textbooks on Websites, Web sources, integrating website components for traditional teaching, Website as a teaching tool and Web-based learning. Hence, it is necessary to increase the speed of the internet network in the school or institutional areas to launch broadband speeds to gradually develop teachers' affairs - level in downloading ABM materials in text, graphics, video segments, and animation. Overall, technological tools that have been shown to have the potential to create more Islamic teaching and facilitating Islamic education, promoting active learning, enriching student relationships with course materials, and casting a broader range of learning. The use of technology in Islamic Education also provides the opportunity for teachers to hone skills while providing new learning experiences to students. However, the adoption of technology needs to be done with caution so that its application in PdPc of Islamic Education can really improve the grasp of student science.

REFERENCES

1. RogayahMohd Zain & MohdAderi Che Noh. 2016. KesanGlobalisasiKeAtas Pendidikan Islam Kini. Prosidingwacana Pendidikan Islam Siri Ke 11(WPI11), Hlm 35-42
2. Mohamad Abdullah. (2018, 3 Januari). Hadapicabaranrevolusiperindustrian 4.0. Dimuatturundaripada http://www.utusan.com.my/rencana/utama/hadapi-cabaran-revolusiperindustrian-4-0-1.583711#ixzz55uxWB2Sh
3. Pelan Induk Pembangunan Pendidikan (PIPP) (2006). Pelan Induk Pembangunan Pendidikan 2006-2010 (EdisiPelancaran PIPP 2006). BahagianPerancangan dan Penyelidikan Dasar Pendidikan. Kementerian Pelajaran Malaysia.
4. Rani, C. S. (2017, 11 September). CelikIndustri 4.0. Dimuatturundaripada http://www.utusan.com.my/rencana/utama/celik-industri-4-0-1.524994
5. Christina Andin @ Nur Qistina Binti Abdullah&Hazman Bin Ali. (2009). PenggunaanTeknologi Maklumat Dan Komunikasi (ICT) DalamKalangan Guru - Guru SekolahKebangsaan. T.tp
6. MarlinaSahaddin, MaimunAqhsaLubis, MohdAderi Che Noh &Sitti Rafidah Sahaddin. (2016). Blended Learning DalamPengajaran Dan Pembelajaran Pendidikan Islam. Prosidingwacana Pendidikan Islam Siri Ke 11(WPI11), Hlm 557-568.
7. Syuhada Md Samsudin&MohdAderi Che Noh. (2016). PembudayaanPenggunaanTeknologiDalamPengajaran Dan Pembelajaran Pendidikan Islam. Prosidingwacana Pendidikan Islam Siri Ke 11(WPI11), Hlm 191-201.
8. KhairunNisakSombar@ Abdul Hamid, MaimunAqshaLubis, MohdAderi Che Noh, HezlenSuzne Md Noor, ZawatilI'shqiMustapa. (2016). PersepsiPelajarTerhadapPenggunaanYoutubeDalamSubjek Pendidikan Islam. Prosidingwacana Pendidikan Islam Siri Ke 11 (WPI11), 247-260
9. Che, Y., C. (1996). Puncaketegangan guru matematiksekolahrendah di Kelantan. (TesisSarjanaSainsPengurusan, Universiti Utara Malaysia, Sintok).
10. Hasnuddin Bin Ab Rahman, Norfaizuryana Binti Zainal, & Nor Azzarahton Binti Ab Karim. (2015). KeberkesananPenggunaan ICT Di DalamPengajaran Dan Pembelajaran Pendidikan Islam BagiSekolahKebangsaanDesaPandan Kuala Lumpur. Proceeding International Conference on Information Technology & Society (of IC-ITS 2015), 238252.
11. Maziahtusima Ishak, Hazlina Abdullah, Sakinah Ahmad &Yuslina Mohamed. 2018. MendepaniCabaran Era RevolusiIndustri4.0 :HubunganAmalanPembelajaranBerterusanDenganPrestasiPeranan Guru Pendidikan Islam SebagaiAgenPerubahan Masyarakat. Prosiding Seminar Kebangsaan Majlis Dekan Pendidikan UniversitiAwam 2018. eISBN 978-967-2231-03-5
12. AbdullSukorShaari, Abd. Rahim Romle, & Mohamad YaziKerya. (2006). Beban tugas guru sekolahrendah.

Kertaskerja Seminar KebangsaanKepimpinan dan PengurusanSekolah, Klana Resort, Seremban, 12-14 Februari. Dicapaidari http://repo.uum.edu.my/80/1/beban_tugas.pdf

13. Shah Rulbani Zakaria, Mohd Isa Hamzah, & Khadijah Abdul Razak. 2017. Penggunaan ICT dalamPengajaran dan PembelajaranPensyarah Pendidikan Islam di PoliteknikZon Selatan. JurnalTintaArtikulasiMembina Ummah 3(1), 2017 29 - 41, e - ISSN: 2289 - 960X.
14. Kamarul Azmi Jasmi& Ab. Halim Tamuri (2007). Pendidikan Islam KaedahPengajaran dan Pembelajaran. Johor: UniversitiTeknologi Malaysia.
15. Khadijah Abdul Razak, TengkuNorhayatiTengku Othman, Mohd. Isa Hamzah & HafizhahZulkifli. (2014). Information and Communication Technology among Excellent Islamic Education Teachers in Selangor Malaysia. Journal International Education Studies. Vol. 7, No. 13; 2014, hlm 146-156.
16. Sharifah Nor Puteh&Kamarul Azman Abd Salam. (2011). TahapKesediaanPenggunaan ICT dalamPengajaran Dan KesannyaTerhadap Hasil Kerja dan TingkahLaku Murid Prasekolah. Jurnal Pendidikan Malaysia 36(1), Hlm 25-34.
17. Ain ZawanibintiMohdZaki. (2014). PenggunaanBahanTigaDimensi (3D) UntukMeningkatkan Kemahiran Berfikir Aras Tinggi dalamSubjek Kajian TempatanBagi Murid Tahun 5. Prosiding Seminar PenyelidikanTindakanPelajar 2014.
18. ThanabalanMuniandy&ThanabalDesen. (2015). PersepsiTerhadapPenggunaan ICT dalamPengajaran Pendidikan Jasmani dan Pendidikan Kesihatan dalamKalangan Guru PJPK di Kedah. Prosiding Seminar Penyelidikan Pendidikan Kebangsaan (SPPK) 2015. Hlm 511522.
19. Abu Yazid Abu Bakar. (2016). "Digital Classroom": An Innovative Teaching and Learning Technique for Gifted Learners Using ICT. Jurnal Creative Education. Volum 7, hlm 5561.
20. Asnuurien Najma Binti Ahmad, Munirah Binti Mustaffa, Siti Noor Binti Hussain. (2008). Penggunaan ICT dalamPengajaran dan Pembelajaran; Satu Kajian d JabatanPengajian Am, PoliteknikMerlimau, Melaka. T.pt.
21. NorlizaHussin, Mohamad Sattar Rasul, Roseamnah Abd. Rauf. (2013). PenggunaanLaman Web SebagaiTransformasiDalamPengajaran Dan Pembelajaran Pendidikan Islam. The Journal of Islamic Education. June 2013, Vol. 1 Issue 2. 58–73.
22. Ahmad Fakrudin Mohamed Yusoff, Mohd Isa Hamzah & Wan Norina Wan Hamat. (2011). Pembangunan PerisianPengajaran Dan Pembelajaran Multimedia Interaktif. Journal of Islamic and Arabic Education. Vol.3 Issue 1. 11-25.
23. RobiahSidin, & Nor Sakinah Mohamad. (2007). ICT dalampendidikan: Prospek dan cabarandalampembaharuanpedagogi. Jurnal Pendidikan Malaysia, 32, 139–152.
24. Lucas, Sandra Goss & Douglas A. Bernstein, (2005). Teaching Psychology A Step By Step Guide. London: Lawrence Erlbaum Associates.
25. Johan @ Eddy Luaran. (2013). Perkembangan, Cabaran dan AplikasiTeknologi Maklumat DalamPengajaran dan Pembelajaran di Malaysia. Fakulti Pendidikan. UniversitiTeknologi Mara, Malaysia.
26. TengkuNorhayatitengku Othman. (2015). Teknologi Maklumat dan Komunikasi (TMK) dalamPengajaran Dan Pembelajaran Guru Cemerlang Pendidikan Islam Di Negeri Selangor. TesisSarjana. UniversitiKebangsaan Malaysia.
27. Hansen, D. (2011). The Teacher and the World: A study of cosmopolitanism as education. Abingdon: Routledge.
28. Mook Soon Sang (2009). PedagogiuntukPengajaran dan Pembelajaran. Selangor Darul Ehsan: Penerbitan Multimedia Sdn. Bhd.
29. Syed Ismail Syed Mustapa& Ahmad SubkiMiskon (2010). Guru dan CabaranSemasa. Selangor Darul Ehsan: Penerbitan Multimedia Sdn. Bhd.
30. Noriati A. Rashid, Boon Pong Ying, Sharifah Fakhriah Syed ahmad, Zuraidah A. Majid (2010). Guru dan CabaranSemasa. Kuala Lumpur: Oxford FajarSdn. Bhd.
31. Ward, J. &Peppard, J. (2003). Strategic planning for Information Systems (3rd ed.).London, UK: Wiley.
32. Yusni Bin Mohamad Yusak & Zainab HaninaAbdull Samad. (2013). HalatujuKurikulum Pendidikan Islam Di Politeknik Malaysia: Satu TinjauanAwal. 2nd International Seminar on Quality and Affordable Education (ISQAE 2013)
33. Dutton, H. W. (2014). Putting Things to Work: Social and Policy Challenges for the Internet of Things. Info, 16(3): 1–21. https://doi.org/10.1108/info-09-2013-0047
34. Buhr, D. (2015). Social Innovation Policy for Industry 4.0. Tübingen, Germany: Eberhard Karls University of Tübingen.
35. Alexey V. Azanov et al., International Journal of Advanced Trends in Computer Science and Engineering, 8(5),September - October 2019, 2236 – 2239 https://doi.org/10.30534/ijatcse/2019/58852019