

The Importance of Integrating ICT Into Islamic Study Teaching and Learning Process

Engkizar, Indah Muliati, Rini Rahman and Alfurqan

Faculty of Social Science

Universitas Negeri Padang, Indonesia

Correspondence Address: engkizar@fip.unp.ac.id

Manuscript received 13 Jun. 2017 revised 4 Aug. 2017 accepted 26 Aug. 2017 Date of publication 28 Sep. 2017
Khalifa: Journal of Islamic Education is licensed under a Creative Commons Attribution-Share Alike 4.0 International License.



Abstract

Teachers of Islamic Study bear a great responsibility to help students have a balanced personality; physics, emotions, and intelligence consistent with the philosophy of Islamic Study and the goal of national Education. The courses of Islamic Study, aqidah, observance, akhlak, fiqih, alquran and history require various strategies, methods, and teaching media. It is considered inappropriate if teachers of Islamic Study spend most of the hours explaining all materials about shalat, haji, and the history of Islam using 'chalk and talk' strategy. Therefore, applying ICT in the classroom such as using computers and internet connection in a teaching and learning process is likely to be an alternative. Some other previous research showed that many Islamic Study teachers were seldom applying ICT during the teaching and learning process. It might be due to the lack of facilities and training, and teachers' low esteem. This article explains how integrated ICT; computers and internet connections may support the teaching and learning process in the classroom. The explanation is strengthened by some theories, experts' reviews and previous research findings related to the Islamic Study. The findings of the article are expected to provide references that may be used to integrate ICT in the teaching and learning process.

Keywords: *Integrated, ICT, teaching and learning, Islamic Study*

Abstrak

Guru Pendidikan Islam memikul tanggungjawab yang besar untuk melahirkan insan yang seimbang dari segi jasmani, emosi, rohani, dan intelektual sesuai dengan falsafah pendidikan Islam dan tujuan pendidikan nasional. Mata pelajaran pendidikan Islam seperti aqidah, ibadah, akhlak, fiqih, al-Quran dan sejarah merupakan pembelajaran yang memerlukan berbagai strategi, metode, dan Alat Bantu Mengajar (ABM) agar pembelajaran dapat lebih efektif, berkesan dan menyenangkan. Dapat dibayangkan bagaimana mungkin seorang guru pendidikan Islam menerangkan materi tentang sholat, haji, sejarah Islam hanya menggunakan metode ceramah atau 'chalk and talk'. Untuk itu penggunaan Teknologi Informasi dan Komunikasi (TIK) atau lebih dikenal dengan istilah ICT (Information and Communication Technology) khususnya penggunaan komputer dan jaringan internet dalam pembelajaran menjadi salah satu jawaban permasalahan tersebut. Namun beberapa hasil penelitian terdahulu mendapati sebagian besar guru pendidikan Islam masih berada pada presentasi yang rendah dalam menggunakan ICT untuk proses pembelajaran, perkara ini

disebabkan karena kurangnya kemahiran, sarana, pelatihan, rendahnya kemauan berinovasi dari guru tersebut. Artikel ini akan membahas bagaimana integrasi ICT khususnya komputer dan jaringan internet sebagai media pendukung bagi guru pendidikan Islam dalam pembelajaran agama Islam. Agar lebih menarik, pembahasan dalam artikel ini didukung oleh teori, pendapat pakar dan hasil penelitian terdahulu terkait integrasi ICT dalam pendidikan khususnya guru pendidikan Islam. Hasil pembahasan artikel ini diharapkan dapat menjadi acuan serta referensi bacaan bagi guru pendidikan Islam dalam mengintegrasikan ICT dalam pembelajaran

Kata Kunci: *Integrasi, ICT, Pengajaran dan Pembelajaran, Pendidikan Islam*

Introduction

In the educational context, ICT refers to technology used to manage, process, gain, arrange, save and manipulate data to present information employed for educational needs through electronic media (Sanchez et al., 2001; Gan, 2015; Mah, 2016). The term 'teaching and learning' refers to a set of activities that are arranged based on students' needs aiming at shaping students' character through a series of learning experience (Slavin, 2005; Lundstrom, 2015; Ananga, 2017).

Referring to the previous definitions, it is understood that in the educational context, ICT and teaching and learning are separated, yet they are actually a combination of learning media and learning materials. They mutually support in order to achieve certain competencies. The integration of ICT in the teaching and learning context is meant to utilize the ICT devices aiming at supporting teaching processes done by the teachers; therefore students may have more learning experiences during the lesson (Gaible & Burns, 2005; Brun, 2014; Ghavifekr, 2015, Aslan, 2016).

It cannot be denied that within the last few decades Information and Communication Technology has improved significantly. ICT affects various aspects of human lives, such as education (Slechtova, 2015; Perwabaningsih, 2013; Moritz, 2014; Slechtova, 2015). In recent years, ICT has been applied globally. Computer and internet connection provide a huge amount of latest information which is accessible, easy and affordable (Oetomo, 2012; Avram, 2014). Bennet et al., (2008); Czarniawska (2012) say that the revolutionary use of ICT has been spreadly influenced many aspects of human lives, in education, ICT is the motor of

New Educational System that brings forth the E-Education, E-School, E-Campus, E-Learning dan E-University.

Holmes (1993); Li et al., (2015) confirms that integrating ICT in the teaching and learning process is needed by teachers who are eager to learn using technology-based media. Another important element is an approach to integrate ICT as teaching media in the classroom (Williams, 2000; Fu, 2013). Gross et al., (2012); Brun (2014); Siddiquah (2017) state that the availability of ICT in the education is no longer questioned. There are huge numbers of educational applications produced by internet connection and provided by ICT such as the availability of E-Book, E-Magazine, E-Library, Virtual Class, E-Education E-Learning (Ebied, 2015). The applications are accessible both by teachers and students online. The availability of ICT is even more popular and widely used to assist teaching and learning process (Jethro et al., 2012). It is interactive and connected with various global connections so that the access coverage is unlimited (Yasak and Alias, 2015; Barry, 2017). It has been proven that the integration of ICT brings better improvement in education (Bindu, 2016 & Munyengabe et al., 2017).

Literature Review

Fagerlind (2016) education is one of the instruments used to measure a progress of a nation. Therefore, the education aspect should be given a certain attention; in the aspect of equity, facilities, qualities, and outcomes (Mosadeghrad, 2012). In some previous decades, the discrepancy in education was a public spotlight. The concerns were about the insufficient facilities, unqualified human resources and disintegrated education system (Bhasin, 2012; Ghavifekr & Rosdy, 2015).

According to Munir (2009); Solar (2013); Kamal (2015) the implementation of ICT-based education is not merely following the global trend, it is a strategic step to upgrade the accessibility and the equity of education in Indonesia. Thus, it is possible to say that utilizing ICT as a supporting facility for education accessibility is one convenient solution (Blusi, 2013; Khetarpal, 2014).

In general, ICT-based education has been implemented in Indonesia. However, the implementation is limited to a particular and certain scope.

According to Hamruni (2009) problems in education include the equity and opportunity to get the education, the improvement of education quality, relevancy and efficiency. By utilizing ICT, the government expects to overcome education dilemma.

UNESCO (2005); Borba (2012) divides the four phases of ICT. First, the emerging phase; it is to understand the importance of ICT for education, second, the applying phase; it is to put ICT as an intended object, third, the integrating phase; it is to use ICT as media to learn, and fourth, the transforming phase, it is to make ICT as the catalyst of education renewal. UNESCO points out that Indonesia is in the second phase; applying. This indicates that the use of ICT in Indonesia for education purpose is low (Villalba et al., 2017; Dzansi & Amedzo, 2014).

On the contrary, society seems to have high interest in utilizing ICT. Based on a research written by Hapsari and Wisma (2014), APJII and BPS in 2013 state that the number of internet users in 2013 increase to 71 million users which is upscaling until 13% from the previous year. This indicates that ICT users in Indonesia increase significantly (Kamaruddin et al., 2017; Hernandez, 2017).

Lakitan (2013) in order to implement ICT to Indonesia education system, the government, in its strategic plan, assigns that every year; Indonesia expands and intensifies the utilizing of ICT in the education sector both as and approach to educational equity and as media for the interactive learning process. Shortly, it is possible to say that Indonesia has already started to implement integrated ICT in its education system.

Norris (2012) & Selod (2013) History states that Muslims had utilized the ICT much earlier than another group of people. It notes that paper industry was begun in 729 M in Baghdad. Since 1040 M, the Islamic kingdom utilized paper for all its businesses (Toch, 2012; Saad, 2017). Meanwhile, the Christians used papers since 1276 M (Bakar & Fatimah, 1999).

Unfortunately, in the 17th century, Muslims were forced to give up the use of technology since the industry was taken over by Western (Abu Bakar and Siti Fatimah, 1999). Referring to the Quran and hadith, no postulates happen to forbid Muslims to use and utilize technology (Boyer et al., 2016). It is clear that Islam has

a concern on technology (Law et al., 2012; Wakke, 2013). The first revelation of Allah SWT signs people to discover all aspects of sciences and knowledge covering various features. This includes the science and knowledge of ICT.

Islam teaches its people to continue learning and innovating. History has shown that ICT in Islam is not a new issue (Usman, 2013; Noordin, 2015). According to Arifin (2003); Samori (2014); Hamdani (2016) to integrate ICT into Islamic Study, there are some requirements concerned; i) students' motivation toward the science and technology development where Islamic values taken as its sources, ii) educating students to be skillful in utilizing the products of technology in the interest of human lives, iii) building a good relationship with the authorized scientists and iv) instilling positive attitude toward the future of human lives by interpreting religious values.

Rokhmatin (2016) it is believed that the development of the ICT-based education for Islamic Study should be adjusted to the identity of Quran and hadiths. The orientation should be formed in a 3-way relationship, they are: God oriented, human relationship oriented, and human-environment oriented (Sujisha, 2014; Galli, 2015). Furthermore, the psychology aspects that need to be concerned in developing the ICT-based education for Islamic Study are, first, the students' cognitive aspect where its center is in the brain. It relates to students' intelligence. Second, it is the students' affective aspect (Albugami, 2012; Robertson, 2012). This aspect controls students' emotional intelligence. Third, the students' psychomotor aspect, which relates to their activities as Muslims. Thus, it is clear that Islam and technology support mutually.

Based on research conducted by Razak (2001), it was found that the use of ICT in Islamic education done by Islamic Study teachers was low. This might be the reason why students faced some difficulties in understanding the learning materials given. Azizan (2001) states that the use of the internet by the Islamic teachers was also low. Hatifah (2006) says, among 50 teachers involved in the research, 44% (22 teachers) state that they never had ICT training, the other 56% (28 teachers) admit that they were never trained to design ICT-based lesson. Most of the teachers used text books and boards as their teaching media.

Draman (2001) concludes that teachers' understanding about integrating ICT into the teaching and learning process was low. While Manan (1999) says that the availability of ICT such as computers was the main problem in most researched schools. Referring to some previous related research findings, it is concluded that the use of ICT in teaching and learning process of Islamic Study is not yet optimum. It is due to the lack of skilled teachers and sufficient facilities.

Method

This study uses a qualitative method with content analysis approach, all data taken from various sources are derived from classical holy books, books, theories and expert opinion of Islamic education. According to Hsieh & Shannon (2005); Anderson, (2007); Vogt (2012); Chan (2013); Alshenqeeti (2014) this research approach design can be done to discuss problems, issues or specific topics derived from the literature collected thoroughly and then take the appropriate themes with the necessary data. Once all the data the authors collected then the next step is to choose the necessary data in accordance with the issues raised in this article.

Findings and Discussion

The Urgency of ICT in the Teaching and Learning Process

In the teaching and learning process, students are quite often given abstract learning materials. Some are even way beyond their understanding. Thus, teachers frequently have problems in teaching. Visualizing is one way that teachers may use in order to make the learning materials become easier to be understood. According to Raihan & Shamim, (2013), teachers can use ICT such as computers, multimedia application, pictures, animations, and video. Therefore, the learning materials presented are more understandable.

Rosenberg (2001) states that integrating ICT in the teaching and learning process gives an opportunity for the teachers to introduce contextual learning. ICT-based lesson focuses on the learning context and students' real-life activities. In other words, teachers possibly turn the abstract learning materials vividly. Mohd Saad et al., (2001) conclude that there are two typical students' learning models. First, field independent learning model where students learn easier from concrete

media such as illustration, pictures, animation. Second, field independent learning model where students prefer to learn abstract materials.

De Porter (2010) conveys that human receives information 30% from what is heard and 20% from what is seen or read. Robin et al., (2004) state that using technology in the classroom eases students to understand the learning material. Sahin (2010) explains that the use of ICT in the learning process permits teachers to explore the learning materials through the multimedia applications that are possibly designed with a computer. Teachers can use an internet connection to access huge numbers of learning sources available on many various websites. Internet always provides latest sources, while textbooks are usually renewed every after 3 years (Yahaya, 2001).

According to Badusah (2000), integrating ICT offers some conveniences. They are; i) To help students understand the learning materials easily, ii) to raise students' motivation, iii) to individualize learning for students, iv) to provide accessible sources for students, v) to create pleasure teaching and learning activities for students, vi) to improve students' creativity and imagination and vii) to help students to improve their skills in using ICT.

According to Arifin & Syafi'i (2003); Ghavifekr et al., (2016); Reyes et al., (2017) the use of ICT in the Islamic Study influences the program within five phases:

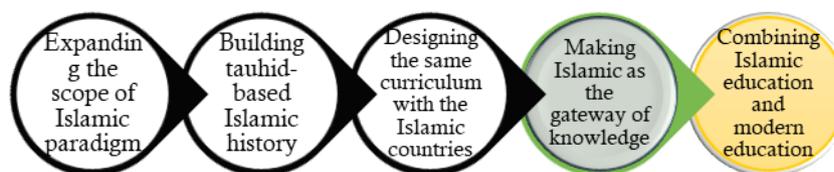


Fig 1. The Five phases of ICT influence toward Islamic Study

The unlimitedness of communication over nations is one proof that the development of ICT is way progressing. Therefore, integrating the use of ICT in education especially in teaching and learning is necessary. To emphasize, the urgency of ICT in the education is not to be questioned. The integration is a medium for teachers to deliver messages in the classroom. Methods and media used

are necessarily concerned by the teachers. The learning materials, time-allocated, situation, and condition should be suitable with the availability of ICT in the classroom (Wilson & Boateng, 2014 & Ang'ondi, 2013).

Integrating ICT in Teaching and Learning

The use of ICT explained in the article is limited to the use of computer and internet connection. This is in agreement with the research conducted by Gaible and Burns (2005); Gebremedhin & Fenta (2015); Alemu (2015) that say in general, computer and internet connection is the most common media used by teachers.

Computer

A computer is an electronic counting machine that receives digital information instantly, processes it based on the programs saved in its memory and results in output information (Rusman, 2012). Darwanto (2007) says a computer has three working features. It uses electricity as its sources, it works based on a set program, and it works within a system. Shortly, a computer is an electronic medium that receives a digital input, and by using its biner codes in its programming the application, it results in output information in form of data **visualization and electronic**

Utilizing a computer in teaching and learning process enables the students to learn individually, which cultivates their independent learning. The lesson is obtained more meaningful compared to one that done in a conventional way. Miarso (2004) says that utilizing ICT such as computer and internet connection influences students' learning outcomes in a significant way. Wahono (2007) explains that some of the computer applications used by teachers in the classroom are animation, video, text, graphs, and pictures. In line with that, Webster and Murphy (2008) support the statements that teachers mostly use are texts, graphs, animation, audio, and video.

It is possible to say that various applications such as texts, pictures, voices, videos, animations, and interactions can be applied as supporting media in the classroom. As stated by Jamaluddin & Zaidatun (2000), there are five computer media applications possibly used by teachers; texts, animation, audio, videos, and interaction. The statement is briefly described as the following graph:

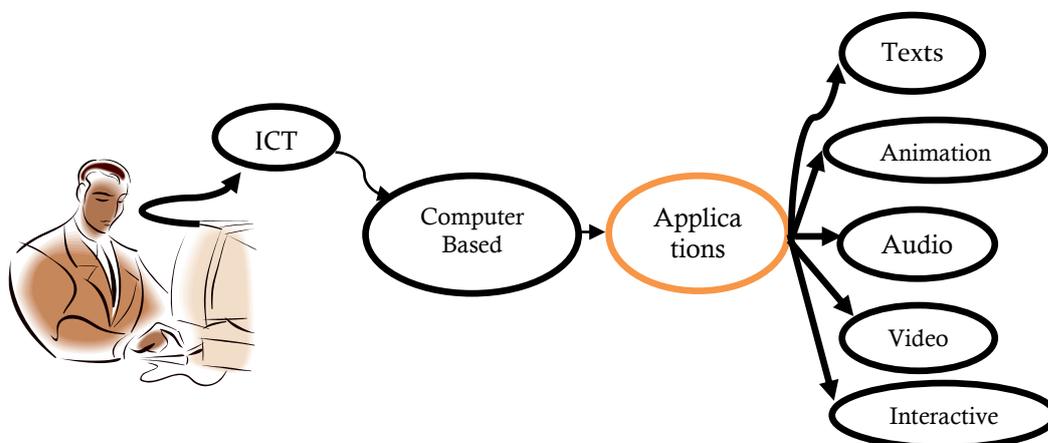


Fig 1. Computer applications for classroom teaching

In picture 1.2, there are computer applications that teachers can use during teaching and learning Islamic study. Each is briefly explained as follows:

Text

Texts have been used as a communication medium for years. A single word may have various meanings, thus, in delivering a message, words choice should be precise. Mostly, texts are used for designing titles, menus, and buttons (Vaughan, 2011). As reported by Dastbaz (2003), there are few concerns in using a text; first, types of font may be different on some platforms, second, the font type needs certain customization, third, text size, color, and effect should be adjusted, such as the anti-alias where the text merges the background.

A text is a basic application in a multimedia system. Texts have various attractive types and fonts in delivering information. Texts can also be used to highlight a message or gist of information (Jamaluddin & Zaidatun, 2000). The use of text in learning supports the learning process, thus the activities in the classroom are more meaningful (Lach, 2006).

Animation

Animation is an application in computer multimedia. It is mostly used to present information that requires less interaction with the users; as if in a movie. Animation is also used to support a presentation such effects, slide transitions and others (Vaughan, 2011).

As reported by Vaughan (2011) there are three types of animations: first, 2D animation, it is made by using two dimensions x and y on the Cartesian axis. Second, the 2 1/2D animation, an animation that adds an illusion on the z axis by adding shadow effect on the picture, but in general, the picture is still on the two-dimensional plane. Third, the 3D animation, it is a virtual room that has three dimensions moved through three axes; x, y, and z so the objects move around and approach the viewers. Yet, in the learning context, teachers often use the animation in the first phase, since it is effortless to use and integrate it into a learning activity.

Furthermore, Rozinah (2005) says that in the learning context, teachers can use computer animation to present the learning materials and make students focus more on the lesson. The use of animation also provides a chance for students to explore their skills.

Audio

Audio is a medium to deliver voice messages. This medium only requires hearing senses and manipulates voices (Setyosari and Sihkabuden, 2005). Voice is a phenomenon produced by vibes of analog signals with the amplitude that changes continuously in accordance with the time. In the Indonesian Dictionary (1995), a voice is defined as noise produced by human's mouth, animals' noise, and utterances. Therefore, seen from its property, the message of audio can be delivered both verbally and non-verbally. Verbal messages can be words while the non-verbal ones can be sounds, vocals such as grumbles, mutters, music, and others.

Audio is used to convey information effectively, such as using the background or special impressive audio. Besides, audio attracts students' attention during a learning process (Aktaruzzaman et al., 2011; Mwanda et al., 2017). The technology eases students to elicit the information better. In addition, it evokes students' motivation to gain more knowledge. Audio offers a few conveniences for teachers. It attracts students' attention, influences their emotions and thoughts, empowers their memory, and eases the students to understand the learning materials (Pineida, 2011; Khan, 2014). Besides, it accommodates teachers to present a learning concept which is difficult to be explained through words only. As stated by Kanifatul

(2013), learning materials are more understandable if the learning atmosphere is pleasant.

Video

Another possibly used multimedia application is video. The video is a visual audio-based learning media that stimulates hearing and visual sense. As stated by Daryanto (2010) the video application is useful for learning activities since it occupies students to get new meaningful learning experiences. As reported by Suwarna (2014), using video in the classroom supported learning processes and had a positive influence on the students' learning outcomes which upscaled up to 79%. In line with that, Mayer (2001) found that outcomes obtained by the experimental group were higher than those of the control group. The experiment class obtained 80.00 while the control class obtained 70.86. A research done by Shephard (2003) showed that a class utilized with educational video as its learning media influenced students' learning motivation up to 44.1%.

Based on some previous related studies, it is pointed out that the use of video as a learning medium significantly influences students' learning outcomes. Besides, using video evokes students' motivation and interests to study more. As reported by Turyati et al. (2016:259) there is a significant difference in the learning process, atmosphere, and students' learning outcomes in the class between the experiment and the control group in the use of educational video.

Interactive

According to Rusman (2005) & Nandi (2016), computer-based interactive learning media can be used in various ways; drill, tutorial, simulation, and games. The availability of various interactive learning media provides certain rooms for teachers to choose appropriate learning media. Teachers are allowed to collaborate conventional media and other ICT applications in many forms of interactive media.

As reported by Sanjaya (2016), the learning outcomes of a study group that uses multimedia interactive upscaled up to 19% while the conventional study group was 8%. Interactive learning media is a technology used by teachers to optimize learning activities in the classroom. Eliza (2013) says that interactive learning media give positive influences to students; they are attractive, help students to

understand the learning materials better, and raise students' learning motivation. Even, interactive learning media is also considered as an effective approach for adult learners (Im & Park, 2014).

Internet

An Internet is a computer network consists of million computer software connected through certain protocol meant for information exchange (Fauzi, 2008). Puwadi (1999) states that internet is a computer network embodies a number world wide computer network size; from a PC that entails local networks up to the main network that controls the internet. All computers connected through an internet connection can exchange information mutually by utilizing its TCP/IP (Transmission Control Protocol/Internet Protocol) (Kusuma, 2011).

Internet connection can be applied to any computers using LAN/WAN. As stated by Adi (2008) LAN which stands for Local Area Network is a network that is made by connecting some near by computers in one room or one building connected to the gateway. In addition to that, WAN (Wide Area Network) is a network where a computer can be connected to other computers using telephone line. The data are sent and received from or by a computer to another computer through the line. The connector is known as modem or Modulator-Demodulator.

Internet-based learning provides some facilities that can be used by teachers and lecturers, they are World Wide Web (WWW), FTP (File Transfer Protocol), E-Learning, E-Mail, Mailing List, News Group Hardjito (2002). It is admitted that, in Indonesia, internet-based learning is often considered new, in fact, compared to some neighboring countries such as Malaysia and Singapore, Indonesia is quite left behind. In fact, Kusuma (2011) says that using the internet as a learning medium is a necessity, as a way to respond to technology and information development which implies the new paradigm in education.

In general, integrating internet-based learning can be carried out in two ways; first, the web-based learning that utilizes e-mail or milist. Second, integrated learning that utilizes e-learning portal containing different learning objects occupied with multimedia and connected to an academic information system, evaluation, communication, discussion and other education tools.

Research on integrating ICT into teaching and learning process has been conducted by many researchers, for example, Husna and Wahyuni (2008) found that in general, the Education Technology Department of UN Malang has implemented e-learning model, yet it has some aspects to be improved still, such as the human resources and the facilities. Moreover, Arianto and Fajri (2015) conclude that there are some obstacles in the implementation of e-learning in Indonesia; the lack of skilled learners, and the limitation of infrastructures.

Becker (2004) points out four primacies of internet-based learning. First, it provides more rooms for teachers-students interaction; second, it accommodates teachers and students to interact anywhere and anytime; third, it covers students in a wider range; and fourth, it eases the perfections and information storage. Shortly, internet-based learning offers more excellences than those conventional learning model used mostly by teachers.

Although the implementation of the model may vary, yet the variations are based on one principle, it is to accommodate teachers and students to interact and communicate more so that the learning process may occur anytime and anywhere. However, it is necessary to occupy the implementation process with adequate and sufficient facilities including teachers who continuously innovate (Raman & Yamat, 2014; Ford & Botha, 2010).

Using the internet as a basis for teaching Islamic Study is an inevitability. Internet is not only a supporting learning system but also a learning source for teachers and students to look for better learning materials. Nowadays, there are huge numbers of Islamic learning materials published online; books, journals, articles, catalogs even Islam Wikipedia. They are accessible, affordable, or even free of charge (Aslan & Zhu, 2017; Miima et al., 2013).

Quite often, Islamic teachers or lectures are considered as technology illiterate. It is due to the fact that only a few of them are able to integrate technology into their teaching and learning process and use latest learning materials. Therefore, it is necessary for the teachers and lecturers of Islamic study to be more open towards technology development, to be innovative in using media or any learning sources (Cakici, 2016; Hidayati, 2016; Sangrà & González-Sanmamed, 2010).

Conclusion

The development of ICT covers almost every aspect of human lives. Education, for instance, is influenced widely; its concepts, theories, and applications. There have been huge numbers of ways to integrate ICT into education, especially to the process of teaching and learning in the classroom such as E-education, E-learning, E-Journal, E-Book, and E-Library. They offer unlimited time and space for teachers and students to communicate and study. Integrating ICT to Islamic Study is an inevitability. Islam teaches its Ummat to keep moving forward in all aspects of human lives and using ICT is one way to actualize it.

References

- Abas, Z.W. (1993). Penggunaan teknologi maklumat komputer dalam pendidikan Islam: Keperluan dan masalah. *Kertas Kerja Seminar Pendidikan Islam Era 2020 Tasawur dan strategi*. Bangi: Maktab Perguruan Islam.
- Aktaruzzaman, M., Shamim, M., & Clement, C. K. (2011). Trends and issues to integrate ICT in teaching learning for the future world of education. *International Journal of Engineering & Technology*, 11(3), 114-119.
- Al Hamdani, D. (2016). The character education in Islamic education viewpoint. *Jurnal Pendidikan Islam UIN Sunan Gunung Djati*, 1(1), 98-109.
- Albugami, S., & Ahmed, V. (2015). Success factors for ICT implementation in Saudi secondary schools: From the perspective of ICT directors, head teachers, teachers and students. *International Journal of education and development using ICT*, 11(1).
- Alemu, B. M. (2015). Integrating ICT into Teaching-learning Practices: Promise, Challenges and Future Directions of Higher Educational Institutes. *Universal journal of educational research*, 3(3), 170-189.
- Alshenqeeti, H. (2014). Interviewing as a data collection method: A critical review. *English linguistics research*, 3(1), 39-45.
- Ananga, P., & Biney, I. K. (2017). Comparing face-to-face and online teaching and learning in higher education. *MIER Journal of Educational Studies Trends and Practices*, 165-179.
- Ang'ondi, E. K. (2013, July). Teachers Attitudes and perceptions on the use of ICT in teaching and learning as observed by ICT champions. In *Proc. 10th IFIP World Conference on Computers in Education, Torun*.
- Arianto, D. A. N., & Fajrie, M. (2012). Penerapan e-Learning Dalam Pembelajaran Di Program Pasca Sarjana IAIN Walisongo Semarang. In *Seruni-Seminar Riset Unggulan Nasional Informatika dan Komputer*, 1(1).
- Arifin, M., & Syafi'i, A. (2003). *Kapita selekta pendidikan Islam*. Jakarta: Bumi Aksara.
- Aslan, A., & Zhu, C. (2016). Influencing Factors and Integration of ICT into Teaching Practices of Pre-Service and Starting Teachers. *International Journal of Research in Education and Science*, 2(2), 359-370.

- Aslan, A., & Zhu, C. (2017). Investigating variables predicting Turkish pre-service teachers' integration of ICT into teaching practices. *British Journal of Educational Technology*, 48(2), 552-570.
- Assar, S., El Amrani, R., & Watson, R. T. (2010). ICT and education: A critical role in human and social development. *Information Technology for Development*, 16(3), 151-158.
- Avram, M. G. (2014). Advantages and challenges of adopting cloud computing from an enterprise perspective. *Procedia Technology*, 12, 529-534.
- Barry, M., & Doherty, G. (2017). What we talk about when we talk about interactivity: Empowerment in public discourse. *New Media & Society*, 19(7), 1052-1071.
- Becker, S. A. (2004). E-government visual accessibility for older adult users. *Social science computer review*, 22(1), 11-23.
- Bhasin, B. (2012). Integration of information and communication technology in enhancing teaching and learning. *Contemporary educational technology*, 3(2), 130-140.
- Bindu, C. N. (2016). Impact of ICT on teaching and learning: A literature review. *International Journal of Management and Commerce Innovations*, 4(1), 24-31.
- Blusi, M., Asplund, K., & Jong, M. (2013). Older family carers in rural areas: experiences from using caregiver support services based on Information and Communication Technology (ICT). *European journal of ageing*, 10(3), 191-199.
- Boyer, P. D., Ganesh, S., Qin, Z., Holt, B. D., Buehler, M. J., Islam, M. F., & Dahl, K. N. (2016). Delivering single-walled carbon nanotubes to the nucleus using engineered nuclear protein domains. *ACS applied materials & interfaces*, 8(5), 3524-3534.
- Brun, M., & Hinostroza, J. E. (2014). Learning to become a teacher in the 21st century: ICT integration in initial teacher education in Chile. *Journal of Educational Technology & Society*, 17(3), 222-238.
- Cakici, D. (2016). The use of ICT in teaching English as a foreign language. *Participatory educational research*, 4(2), 73-77.
- Chan, Z. C., Fung, Y. L., & Chien, W. T. (2013). Bracketing in phenomenology: Only undertaken in the data collection and analysis process. *The qualitative report*, 18(30), 1-9.
- Czarniawska, B. (2012). Organization theory meets anthropology: A story of an encounter. *Journal of Business Anthropology*, 1(1), 118-140.
- Daryanto. (2010). *Media Pembelajaran*. Yogyakarta: Gava Media.
- DePorter, B., Reardon, M., & Singer-Nourie, S. (2010). *Quantum teaching: mempraktikkan quantum learning di ruang-ruang kelas*. Kaifa.
- Dzansi, D. Y., & Amedzo, K. (2014). Integrating ICT into rural South African schools: Possible solutions for challenges. *International Journal of Educational Sciences*, 6(2), 341-348.
- Ebied, M. M. A., & Rahman, S. A. A. (2015). The Effect of Interactive E-Book on Students' Achievement at Najran University in Computer in Education Course. *Journal of Education and Practice*, 6(19), 71-82.

- Eliza, F. (2013). Pengembangan bahan ajar berbasis multimedia interaktif mata kuliah gambar listrik yang menggunakan autocad pada program studi pendidikan teknik elektro FT UNP. *Jurnal Teknologi Informasi Pendidikan, Col, 6*, 63-89.
- Fägerlind, I., & Saha, L. J. (2016). *Education and national development: A comparative perspective*. Elsevier.
- Fauzi, A. (2008). *Pengantar Teknologi Informasi*, Yogyakarta: Graha Ilmu.
- Ford, M., & Botha, A. (2010, May). A pragmatic framework for integrating ICT into education in South Africa. In *2010 IST-Africa* (pp. 1-10). IEEE.
- Fu, J. (2013). Complexity of ICT in education: A critical literature review and its implications. *International Journal of education and Development using ICT, 9*(1), 112-125.
- Gaible, E., & Burns, M. (2005). Using Technology to Train Teachers: Appropriate Uses of ICT for Teacher Professional Development in Developing Countries. *Online Submission*.
- Galli, G., Noel, J. P., Canzoneri, E., Blanke, O., & Serino, A. (2015). The wheelchair as a full-body tool extending the peripersonal space. *Frontiers in psychology, 6*, 639.
- Gan, B., Menkhoff, T., & Smith, R. (2015). Enhancing students' learning process through interactive digital media: new opportunities for collaborative learning. *Computers in Human Behavior, 51*, 652-663.
- Gebremedhin, M. A., & Fenta, A. A. (2015). Assessing Teachers' Perception on Integrating ICT in Teaching-Learning Process: The Case of Adwa College. *Journal of Education and Practice, 6*(4), 114-124.
- Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International journal of research in education and science, 1*(2), 175-191.
- Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International journal of research in education and science, 1*(2), 175-191.
- Ghavifekr, S., Kunjappan, T., Ramasamy, L., & Anthony, A. (2016). Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions. *Malaysian Online Journal of Educational Technology, 4*(2), 38-57.
- Gros, B., Garcia, I., & Escofet, A. (2012). Beyond the net generation debate: A comparison between digital learners in face-to-face and virtual universities. *The International Review of Research in Open and Distributed Learning, 13*(4), 190-210.
- Hamka, H. (2015). Penggunaan internet sebagai media pembelajaran pada mahasiswa iain palu. *HUNAF: Jurnal Studia Islamika, 12*(1), 95-119.
- Hamruni. (2009). Mengembangkan Teknologi Pendidikan Islam, *Jurnal Kependidikan Islam, 4*(1), 127-144.
- Hapsari, L.P, Bahasa, W. (2014). Pengaruh Penggunaan Internet dalam Pembelajaran Jarak Jauh (E-Learning) terhadap Efektivitas Pengajaran Bahasa Indonesia kepada Penutur Asing “Studi Kasus pada Pengajar Bahasa Indonesia Wisma Bahasa Yogyakarta 2013”, *Prosiding ASILE Conference*, 1-62.

- Hardjito. (2002). Internet untuk Pembelajaran, *Jurnal Teknodik*, 6(10), 1-23.
- Hawkrige, D. (1990). Computer in Third World School: The Example of China. *British Journal Education Technology*, 21(1), 23-34.
- Hernandez, R. M. (2017). Impact of ICT on Education: Challenges and Perspectives. *Journal of Educational Psychology-Propositos y Representaciones*, 5(1), 337-347.
- Hidayati, T. (2016). Integrating ICT in English language teaching and learning in Indonesia. *JEELS (Journal of English Education and Linguistics Studies)*, 3(1), 38-61.
- Holmes, W. (1999). The transforming power of information technology. *Community college journal*, 70(2), 10-15.
- Husna, A., & Wahyuni, S. (2008). Kesiapan Jurusan Teknologi Pendidikan dalam Implementasi E-Learning. *Jurnal Penelitian Kependidikan, Tahun*, 18, 1-20.
- Im, C., & Park, M. (2014). Development and evaluation of a computerized multimedia approach to educate older adults about safe medication. *Asian Nursing Research*, 8(3), 193-200.
- Jamaluddin, H. & Zaidatun, T. (2000). *Multimedia Dalam Pendidikan*. Bentong: PTS Publications.
- Jasmy, M., & Rahman, A. Ismail, A.M. (2007). *Teknologi Maklumat dan Komunikasi Serta Aplikasi Multimedia dalam Pendidikan di Malaysia dan Indonesia*. Bangi: Universiti Kebangsaan Malaysia.
- Jethro, O. O., Grace, A. M., & Thomas, A. K. (2012). E-learning and its effects on teaching and learning in a global age. *International Journal of Academic Research in Business and Social Sciences*, 2(1), 203.
- Kamal, M. M., Bigdeli, A. Z., Themistocleous, M., & Morabito, V. (2015). Investigating factors influencing local government decision makers while adopting integration technologies (IntTech). *Information & Management*, 52(2), 135-150.
- Kamaruddin, K., Abdullah, C. A. C., & Idris, M. N. (2017). Integrating ICT in teaching and learning: A preliminary study on Malaysian private preschool. *International Journal of Academic Research in Business and Social Sciences*, 7(11), 1236-1248.
- Khan, S. (2014). A model for integrating ICT into teacher training programs in Bangladesh based on TPCCK. *International Journal of Education and Development using ICT*, 10(3).
- Khanifatul. (2013). *Pembelajaran Inovatif: Strategi Mengelola Kelas Secara Efektif dan Menyenangkan*. Yogyakarta: Ar-Ruzz Media.
- Khetarpal, A. (2014). Information and communication technology (ICT) and disability. *Review of market integration*, 6(1), 96-113.
- Kusuma, A. (2001). E-learning Dalam Pembelajaran. *Jurnal Lentera Pendidikan*, 12(1), 35-51.
- Lakitan, B. (2013). Connecting all the dots: Identifying the “actor level” challenges in establishing effective innovation system in Indonesia. *Technology in society*, 35(1), 41-54.
- Law, J., Bijker, W. E., Hughes, T. P., & Pinch, T. (2012). Technology and heterogeneous engineering: The case of Portuguese expansion. *The social*

- construction of technological systems: new directions in the sociology and history of technology*, 105-127.
- Li, L., Worch, E., Zhou, Y., & Aguiton, R. (2015). How and why digital generation teachers use technology in the classroom: An explanatory sequential mixed methods study. *International Journal for the Scholarship of Teaching and Learning*, 9(2), n2.
- Lundstrom, K., Diekema, A. R., Leary, H., Haderlie, S., & Holliday, W. (2015). Teaching and learning information synthesis: An intervention and rubric based assessment. *Communications in Information Literacy*, 9(1), 4.
- Mah, D. K. (2016). Learning analytics and digital badges: Potential impact on student retention in higher education. *Technology, Knowledge and Learning*, 21(3), 285-305.
- Mayer, R.E. (2001). *Multimedia learning*. Cambridge: Cambridge University Press.
- Miarso, Y. (2004). *Menyemai benih teknologi pendidikan*. Kencana.
- Miima, F., Ondigi, S., & Mavisi, R. (2013). Teachers' perception about integration of ICT in teaching and learning of Kiswahili language in secondary schools in Kenya. *International journal of arts and commerce*, 2(3), 27-32.
- Moritz, M. A., Batllori, E., Bradstock, R. A., Gill, A. M., Handmer, J., Hessburg, P. F., ... & Syphard, A. D. (2014). Learning to coexist with wildfire. *Nature*, 515(7525), 58-66.
- Mosadeghrad, A. M. (2012). A conceptual framework for quality of care. *Materia socio-medica*, 24(4), 251.
- Munir. (2009). Kontribusi Teknologi Informasi Dan Komunikasi (TIK) Dalam Pendidikan di Era Globalisasi Pendidikan Indonesia, *Jurnal Pendidikan Teknologi Informasi Dan Komunikasi (PTIK)*, 2(2), 1-4.
- Munyengabe, S., Yiyi, Z., Haiyan, H., & Hitimana, S. (2017). Primary teachers' perceptions on ICT integration for enhancing teaching and learning through the implementation of one laptop per child program in primary schools of Rwanda. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(11), 7193-7204.
- Mwanda, G., Mwanda, S., Midigo, R., & Maundu, J. (2017). Integrating ICT into Teaching and Learning Biology: A Case for Rachuonyo South Sub-County, Kenya. *International Journal of Education, Culture and Society*, 2(6), 165-171.
- Nandi, S. (2006). Penggunaan Multimedia Interaktif dalam Pembelajaran Geografi di Persekolahan. *Jurnal GEA*, 6(1).
- Noordin, M. F., Pammusu, I., Sulong, S., & Rahim, N. N. (2015). Islamic Perspective Exploratory Review: Creative Multimedia Technology as An Innovative Tool for Da'wah Dissemination. *International Journal of Creative Future and Heritage (TENIAT)*, 3(2), 99-112.
- Noordin, T.A. & Aini, N. (2002). *Pendidikan dan Pembangunan Manusia: Pendekatan Bersepadu*. Bangi: As-Syabab Media Malaysia.
- Norris, P., & Inglehart, R. F. (2012). Muslim integration into Western cultures: Between origins and destinations. *Political Studies*, 60(2), 228-251.
- Nugroho, A. (2008). *Konsep Pengembangan System Basis Data, Informatika*. Bandung: Grafika.

- Oetomo, B.S.D. (2002). *Education: Konsep, Teknologi dan Aplikasi Internet Pendidikan*. Yogyakarta: Penerbit Andi.
- Perbawaningsih, Y. (2013). Plus, Minus of ICT Usage in Higher Education Students, *Journal Social and Behavioral Sciences*, vol. 103, no. 110, 717– 724.
- Pineida, F. O. (2011). Competencies for the 21st century: Integrating ICT to life, school and economical development. *Procedia-Social and Behavioral Sciences*, 28, 54-57.
- Pisapa, J. & Williams, D.M. (2000). *Integrating Technology into Teaching and Learning*. Singapore: Prentice Hall.
- Purwadi, D. (1995). *Belajar Sendiri Mengenal Internet Jaringan Informasi Dunia*. Jakarta: Alex Media Komputindo.
- Rahim, A. & Saad, M. (2001). Teknologi maklumat dan komunikasi: Keperluan pertimbangan semula program pendidikan tinggi. *Kertas Kerja Dibentang di Seminar Dinamika Perubahan Pengurusan Menuju Era Kepada 20 & 21 September 2001*: Penerbit Universiti Sains Malaysia (USM).
- Raihan, M. A., & Shamim, M. R. H. (2013). A Study to Explore the Practice of ICTs in TVET in Bangladesh and South Korea. *International Journal of Engineering Science and Innovative Technology (IJESIT)*, 2(4), 351-360.
- Raman, K., & Yamat, H. (2014). Barrier's teachers face in integrating ICT during English lessons: A case study. *Malaysian Online journal of educational technology*, 2(3), 11-19.
- Razak, A. (2001). Online delivery systems: Setting baseline for professional development of educators. *Malaysian Journal of Educational Technology*, 1(2), 47-52.
- Reyes Jr, V. C., Reading, C., Doyle, H., & Gregory, S. (2017). Integrating ICT into teacher education programs from a TPACK perspective: Exploring perceptions of university lecturers. *Computers & Education*, 115, 1-19.
- Robertson, M., & Al-Zahrani, A. (2012). Self-efficacy and ICT integration into initial teacher education in Saudi Arabia: Matching policy with practice. *Australasian Journal of Educational Technology*, 28(7).
- Rohaya, H. (2003). Tahap Pengetahuan dan Kemahiran Komputer Dari Perspektif Guru Pendidikan Islam di Daerah Kuala Terengganu. *Tesis sarjana yang tidak diterbitkan*. Bangi: Universiti Kebangsaan Malaysia.
- Rokhmatin, A. T., & Suci, D. N. (2016). Analysis Of Educational Valuesin Islamic Historical Literacy. *Abjadia*, 1(1), 1-15.
- Rosenberg, J.M., (2001). *E-learning: Strategies for Delevering Knowledge in the Digital Age*. U.S.A: McGraw-Hill.
- Rusman. (2005). *Model-model Multimedia Interaktif Berbasis Komputer*, Bandung: P3MP UPI.
- Rusman. (2012). *Pembelajaran Berbasis Teknologi Informasi dan Komunikasi*, Jakarta: Rajawali Press.
- Saad, B., Zaid, H., Shanak, S., & Kadan, S. (2017). Anti-diabetes and anti-obesity medicinal plants and phytochemicals. *Anti-Diabetes Anti-Obes. Med. Plants Phytochem*, 59-93.
- Şahin, M. (2010). Blended learning in vocational education: An experimental study. *International Journal of Vocational and Technical Education*, 2(6), 95-101.

- Said, D. (2001). Pengajaran dan Pembelajaran Bahasa Arab Berbantuan Komputer: *Persepsi Guru-guru Bahasa Arab di Daerah Hulu Langat, tesis sarjana yang tidak diterbitkan*. Bangi: Universiti Kebangsaan Malaysia.
- Samori, Z., Ishak, A. H., & Kassan, N. H. (2014). Understanding the development of halal food standard: Suggestion for future research. *International Journal of Social Science and Humanity*, 4(6), 482.
- Sánchez, J., Salinas, A., Contreras, D., & Meyer, E. (2011). Does the new digital generation of learners exist? A qualitative study. *British journal of educational technology*, 42(4), 543-556.
- Sangrà, A., & González-Sanmamed, M. (2010). The role of information and communication technologies in improving teaching and learning processes in primary and secondary schools. *Australasian Journal of Educational Technology*, 26(8).
- Sanjaya, R. (2016). Multimedia Interaktif Pelatihan Service Excellent Menggunakan Pendekatan Story Based Learning. *Jurnal Informatika*, 3(1).
- Selod, S., & Embrick, D. G. (2013). Racialization and Muslims: Situating the Muslim experience in race scholarship. *Sociology Compass*, 7(8), 644-655.
- Shephard, K. (2003). Questioning, promoting and evaluating the use of streaming video to support student learning. *British Journal of Educational Technology*, 34(3), 295-308.
- Siddiquah, A., & Salim, Z. (2017). The ICT facilities, skills, usage, and the problems faced by the students of higher education. *EURASIA Journal of Mathematics, Science and Technology Education*, 13(8), 4987-4994.
- Slavin, R. E. (2005). *Cooperative Learning: Theory, Research and Practice*. London: Allyn and Bacon.
- Slechtova, P. (2015). Attitudes of undergraduate students to the use of ICT in education. *Procedia-Social and Behavioral Sciences*, 171, 1128-1134.
- Solar, M., Sabattin, J., & Parada, V. (2013). A maturity model for assessing the use of ICT in school education. *Journal of Educational Technology & Society*, 16(1), 206-218.
- Subroto, D. S. (1995). *Televisi Sebagai Media Pendidikan*. Yogyakarta: Pustaka Pelajar.
- Sujisha, T. G., & Manikandan, K. (2014). Influence of school climate on school engagement among higher secondary school students. *International Journal of Social Science & Interdisciplinary Research*, 3(6), 2277-3630.
- Suwarna, I.P. & Primavera, I. C.R. (2014). *Prosiding Seminar Nasional Pendidikan IPA*, FITK UIN Syarif Hidayatullah, Jakarta.
- Toch, M. (2012). *The economic history of European Jews: late antiquity and early Middle Ages*. Brill.
- Turyati, M.M. & Winarno. (2016). Pengaruh Penggunaan Media Video Edukasi Terhadap Hasil Belajar PKN Siswa Kelas VII SMP Negeri 2 Gondangrejo. *Jurnal PKn Progresif*, 11(1), 257-267.
- UNESCO Institute for Information Technologies in Education (IITE). (2005). *ICT application in technical and vocational education and training: specialized training course*. Moscow: UNESCO Institute for Information Technologies in Education (IITE) AUTHOR.

- Usman, A. Y. (2013). Using information and communication technology (ICT) to enhance the teaching and learning of Arabic and Islamic studies in Nigeria. *Journal of Teaching and Education*, 2(3), 353.
- Villalba, A., González-Rivera, M. D., & Díaz-Pulido, B. (2017). Obstacles Perceived by Physical Education Teachers to Integrating ICT. *Turkish Online Journal of Educational Technology-TOJET*, 16(1), 83-92.
- Vogt, W. P., Gardner, D. C., & Haeffele, L. M. (2012). *When to use what research design*. Guilford Press.
- Webster, L. & Murphy, D. (2008). *Enhancing Learning through Technology: Challenges and Responses*. Research on Emerging Technologies and Pedagogies, 1-16. Singapore: World Scientific.
- Wekke, I. S., & Hamid, S. (2013). Technology on language teaching and learning: a research on Indonesian pesantren. *Procedia-Social and Behavioral Sciences*, 83, 585-589.
- Wilson, K. B., & Boateng, K. A. (2014). Integrating ICTs into the teaching process: Issues in pedagogical practices in teacher education. *International Journal of Computing*, 3(4), 96-103.
- Yasak, Z., & Alias, M. (2015). ICT integrations in TVET: Is it up to expectations?. *Procedia-Social and Behavioral Sciences*, 204, 88-97.
- Zainuddin, A. H. (1997). Computer Usage Among School Administrators In Seberang Perai Selatan District. *Tesis sarjana yang tidak diterbitkan*, Universiti Utara Malaysia.