Generating the Net-Based Learning Model in New Technological Era: The Islamic Need

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Abstract
Recently, A growing number of educators and researchers are interested in online learning as a way to improve student results and knowledge in higher education. Considering the efficiency of online learning in comparison to face-to-face learning and the elements that determine the success of online courses is essential for academics and educators. Hence, this study specifically aims to build a learning model based on Islamic need. This study uses the Design and development research (DDR) approach. There are two phases of the study, the first phase is the model construction phase using the Fuzzy Delphi method. While the second phase of the model evaluation phase uses the Nominal Group Technique method. The respondents involved for both phases of the study were among the skilled experts who had been selected by the researcher based on certain criteria. The findings of this study specifically suggest a simple model called net-learning model based on islamic need. Conclusions and recommendations for further study are proposed at the end of the study.
Keyword: Net-Learning, NGT, Fuzzy Delphi, Islamic Learning Model

Introduction
In today's digital age, information and communication technologies have swiftly spread over the world, and individuals may rapidly and easily get information from a variety of sources. The availability of the internet today as a tool for discovering and excavating knowledge is, of course, slowly replace the function of textbooks as a method of information dissemination and a key source of reference for our students in completing tasks or assignments set by educators. In addition, the latest technology is seen to dominate the knowledge and dissemination of information as it is easily accessible anywhere and no matter the time. The vast majority of people in a wide range of professions are taking use of this feature.

However, in recent years, the fast growth of technology, particularly in communication technology, has resulted in rather remarkable changes (Yumnah, 2021). Previously, instructors and students could only interact face to face, but distance and time have made it possible for both print and electronic media to be created over the internet (Cheng & Siow, 2018). This situation shows that the aspect of the use of technology has made strides in expanding its influence in the latest learning is not only focused on certain aspects only, but is now an urgent need.

For this reason, the government, education institution and industry have invested heavily in the creation of digital education platforms in this current atmosphere. It has become common practise for schools to use a variety of digital platforms in their education, with the goal of enhancing students' learning outcomes through the use of software and hardware. The use of computer networks and their shared educational resources to narrow the education gap between urban and rural areas has become a prevalent practise across the world. Teachers who include technology into their lessons are obligated to provide their pupils with a variety of instructional resources, methodologies, and media to aid their learning. Everyone in education has a shared duty for improving the efficiency and motivation for learning of the next generation, as well as fostering critical thinking and creative communication in this new information age. Learning outcomes are achieved when students actively participate in the learning activity (Pai & Tu, 2011). Teaching activity design and the ability to adapt technological tools or digital learning are the major concerns for modern information technology integrated education (Lin & Chen, 2017).

Islam and E-Learning

Educators face a new set of challenges and opportunities as a result of globalisation in education, including the growing urgency to raise educational standards. As a result, an educator must be well-versed in Islamic education teaching methods in order to succeed in this role. It is imperative that the nation's citizens receive an Islamic education in order to cultivate devout and loyal citizens (Mustapha et al., 2021). It is believed that Islamic education aims to develop the character of Muslims by instilling a sense of devotion and faith in its students, as well as equipping them with the knowledge, skills, and creativity necessary to succeed in this world and the next (Mansir & Karim, 2020).

We might expect both positive and bad effects in education as a result of this Fourth Industrial Revolution (also known as digitalization). Especially when it comes to Islamic education and learning, which is always expanding and transforming itself (Amirudin, 2019; Mustapha et al., 2021). There is a growing desire to include Islamic character education into e-learning practises in Islamic educational institutions because of the educational advantages of e-learning. According to Memon (2011), Islamic educators must manage Islamic education that conforms to the globalised culture by adding character education in the curriculum. Muslims are no exception when it comes to learning in a new environment. Islamic education need a paradigm shift in the educational setting in order to accommodate the present trend of more internet study. Islam may not always be compatible with the current trend of education sessions. As a consequence, a net learning model framework based on Islamic criteria will be developed as a result of this research for use by Islamic educators (Mustapha et al., 2021).

Challenges Faced by Muslims in Adapting E Learning

Education authorities around the world, including those in Muslim countries, are attempting to change their educational strategy by incorporating an innovative method, often referred

to as "study from home," to teach students how to maintain the continuity of their education from home or through online education or remote learning (As'ad, 2021). The term "online education," sometimes known as "remote learning," refers to a type of distance learning that relies on the internet to connect students and instructors and to provide course materials. Digital devices such as cellphones and personal computers may be used to provide a more flexible learning environment than a traditional classroom (Nyariki, 2020). In the future, Muslims will be seen differently than they were 10 or twenty years ago, as a result of this transformation.

In Islam, the process of interaction between genders is one that is highly emphasized. Aspects of free association, unrestricted interaction is not allowed especially among women. Generally we know, the process of online learning requires students to interact online. A process of discussion and interaction between students needs to be implemented. However, there are times when the process of interaction takes place out of control such as revealing the aurah, bad conversations and so on are strictly forbidden by Islam. Another myth is that women are only permitted to learn from their female counterparts and that males are not permitted to instruct them. In Islam, there is no need that only women can educate women and only males can teach men. If Islamic regulations on "*Hijab*" are strictly followed, a man can teach female students and a woman can teach male students. This is also evident from the Hadith, in which our beloved prophet (PBUH) established provisions for teaching and instructing Muslim women, with one day set aside just for women in the prophet mosque. As a result, using a passage from the Noble Qur'an on "Hijab" as an argument against women's education is gravely incorrect (Ilyas, 2014).

Based on this case, the need for the construction of a specific model for the understanding of Muslims in the context of virtual learning is very necessary. In addition, this model can be a guide and reference for Muslim educators in implementing online learning. For the general understanding, Islam is simple and not narrow in the issue of education, but it needs to move on the basis that Islam allows. Adherence to the doctrines of sharia and Islamic rules, then education should take place in line with the changes of time.

Research Aims
This study aims to design a net-learning model based on Islamic need based on expert consensus. specifically this study has 2 main objectives:
- The purpose of this study is to see the views and recommendations of experts in developing Net-learning model based on expert consensus.
- To validate the model constructed based on the consensus and opinion of experts

Methodology
This study will essentially use the Design and Development Research method founded by (Richie & Klein, 2007). This study contains two main phases namely the model construction phase and then the model validation phase. The first phase of the researcher will use the Fuzzy Delphi Method for the construction phase while the second phase which is the validation phase of the researcher's model will use the NGT (Nominal Group Technique) method. Both of these methods are very commonly used by most researchers in the process of constructing something in their study. The researcher also looked at the consistency and appropriateness of this method in the context of the study, so the researcher used the method as the basic method of this study.

Research Sample

The study sample is divided into two parts, namely the sample to be used in phase one is 7 experts in Islamic education who are skilled in technology, while 6 experts will be involved in the model validation phase.

Sampling Method for First Phase

The development phase of the researcher used the Fuzzy Delphi Method. This study was chosen because it represents a novel way for obtaining expert consent in making a specific choice. The initial stage, the researcher will make a review of the literature and expert views in producing model constructs and items. Then the researcher will form an expert questioanaire on the item and model construct to be verified by the expert through the Fuzzy Delphi Method. A total of 7 experts were involved in this phase. experts are selected based on the criteria of qualified experts in performing FDM procedures. Purposive sampling is used in this research. This strategy is best suited when the researcher wishes to reach a consensus on a topic. Purposive sampling is the most acceptable strategy in FDM, according to (Hasson et al., 2000). Meanwhile, this investigation enlisted the help of 7 experts. These professionals were chosen based on their knowledge and skill in their respective industries. If the experts participated in this investigation are homogenous, the needed number of specialists is 5-10. According to Adler and Ziglio (1996), assuming there is a level of homogeneity, the appropriate number of experts in the Delphi technique is between 10 and 15 persons (homogeneous).

Step in Fuzzy Delphi Technique

Table 1

Step in Fuzzy Delphi technique

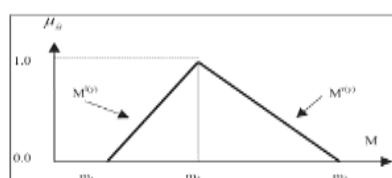| |
|---|
| 1. The selection of an experts: A total of 11 experts were employed in this investigation. A panel of experts was assembled to assess the significance of the assessment criteria on the variables to be assessed using linguistic variables. |
| 2. Linguistic determining process: Fuzzy triangle numbers are used to represent all linguistic variables in this process (triangular fuzzy numbers). Additionally, fuzzy numbers are included into linguistic variables during this step (Hsieh, Lu and Tzeng, 2004). M1, M2, and M3 are all represented by the Triangular Fuzzy Number (m1, m2, m3). m1 represents the lowest possible value, m2 represents a fair value, and m3 represents the highest possible value. In order to translate linguistic variables into fuzzy numbers, the Triangular Fuzzy Number is employed to construct the Fuzzy Scale. The Fuzzy scale has an unusual amount of levels.. Figure 1: Triangular Fuzzy number |
| 3. The Determination of Linguistic Variables and Average Responses: When the researcher receives a response from the chosen specialist, he or she must convert all Likert scales to |

fuzzy scales. This is also known as determining the average reaction of each fuzzy number (Benitez, Martin & Roman, 2007).
4. The determination of "d" threshold value: It is crucial to determine the level of agreement among experts by setting a threshold value (Thomaidis, Nikitakos & Dounias, 2006). It is possible to calculate the distances between two fuzzy numbers by using the formulas below: $d(\tilde{m}, \tilde{n}) = \sqrt{\frac{1}{3}[(m1-n1)^2 + (m2-n2)^2 + (m3-n3)^2]}$
5. Determine the aggregate level of fuzzy assessment's alpha cut: Once an expert consensus is reached by assigning a fuzzy number to each item (Mustapha & Darusalam, 2017).The following formula is used to calculate and determine fuzzy values: (1) 4 (m1 + 2m2 + m3) Amax
6. Difuzzification: This procedure uses the formula Amax = (1) 4 (a1 + 2am + a3). The ultimate score number is in the 0 to 1 range if the researcher uses Average Fuzzy Numbers or average answers (Ridhuan et al.2014). In this method, there are three formulas to follow: i. A = 1/3 * (m1 + m2 + m3), ii. A = 1/4 * (m1 + 2m2 + m3), and iii. A = 1/6 * (m1 + 4m2 + m3). Value of a cut Assumes that (-cut) = (0 + 1) / 2=0.5, where the median is "0" and the "1." The item is rejected if the A value is less than the -cut value = 0.5, because there is no consensus among experts. According to Bojdanova (2006), the alpha cut-value should be more than 0.5.
7. Ranking: Positioning is accomplished by picking items based on defuzzication values based on expert consensus, with the element with the highest value determining the most significant location (Fortemps & Roubens, 1996)

Sampling Method for Second Phase

There is some disagreement about the best sample size to use when conducting research utilising NGT approaches. According to some researchers, NGT may be done on a single cohort or big group (Lomax & McLeman, 1984; Dobbie et al., 2004; Muqsith et al., 2017, Mustapha et al., 2022), however it can also be divided into small groups to allow for effective communication depending on the demands of the study. The following sample sizes have been employed by previous researchers for this purpose, as indicated in table 2:

Table 2
NGT sampling

Author	Sample
Van de Ven dan Delbecq (1971)	5 – 9 experts/participants
Horton (1980)	7 – 10 experts/participants
Harvey dan Holmes (2012)	6 – 12 experts/participants
Abdullah & Islam (2011)	7 – 10 experts/participants
Carney et al (1996)	Min. 6 experts/participants

However, for the NGT phase, the researcher chose to use only 6 experts as this size is sufficient in carrying out this method in addition to time constraints and the problem of collecting experts in this pandemic era is quite difficult to implement.

NGT Technique

NGT is a rigorous approach for determining a group's similar viewpoints on a certain problem. It was conceived as a "participation strategy for social planning scenarios" (Delbecq et al.,

1975), with social planning circumstances characterised as exploratory research, citizen involvement, the employment of multidisciplinary professionals, and proposal assessment (Kennedy & Clinton, 2015). Since then, the approach has been applied in a number of group situations, including empirical social scientific research. While it has been utilised to some amount in education research (O'Neil and Jackson, 1983; Lomax and McLeman, 1984). There are several formal consensus development methodologies, however NGT and Delphi are two of the most often utilised. To acquire the opinions of experts on a specific subject, NGT employs organised face-to-face meetings rather than the Delphi method (Harvey & Holmes, 2012). There are several stages of NGT, according to Delbecq and Van de Ven (1971). Before attempting to remedy an issue, the group's leader must make it clear what the problem is (Bartunek & Murninghan, 1984).

The approach facilitates in the identification of issues, the investigation of solutions, and the determination of priorities. It is particularly effective in "stranger groups," where it is critical to balance status and verbal power among group members. Typically, NGT consists of 4 steps:

i. Brainstorming Participants work alone and silently to write down their replies to a stimulus question.
ii. Round Robin session: When requested, each participant offers a single thought, which is then written down on a giant flip-chart. It is not permissible to discuss the concepts. Completed sheets are taped on the wall so that everyone may view them. The group facilitator summons the members until all ideas have been recorded or the group deems that they have developed a sufficient quantity of ideas.
iii. Discussion of the list of ideas: The participants debate each concept on the list to ensure that everyone knows what it means.
iv. Voting: Participants pick the most essential concepts, rank-order their choices (optional), vote on the flipchart, and analyse the voting pattern.

It's said that the data generated by this method is more organized than that generated by focus groups (Claxton et al., 1980). As a result of sorting, mapping, and voting on the various creative concepts that were developed, a visual representation was created, consisting of sticky notes adhered on positioning maps and corresponding to votes for each concept. Another advantage of this strategy is that the more introverted members of the group, as well as the more confident members, have an equal opportunity to participate to the development of ideas in a focus group exercise. It is also good at discovering topics that are most important to respondents, rather than merely asking questions about pre-conceived areas, which a more organized survey method to research may often require (Boddy, 2012)

Expert Criteria
According to Booker & Namara (2004), experts are competent individuals who have acquired their expertise through formal education, hands-on experience, and research. Specialists are generally identified based on their qualifications, training, experience, participation in professional organisations, and acknowledgment from their colleagues (Nikolopoulus, 2004; Perera et al., 2012; Mustapha & Darusalam, 2017). According to (Cantrill et al., 1996), an expert is anybody who possesses competence or understanding in a certain area or subject matter. Fuzzy Delphi investigations must take into account the element of expert selection as a crucial component.

Findings
First Phase: Model Development
Online -based learning is widely used nowadays. Various methods and approaches are used by lecturers, teachers and others in implementing their teaching. Existing approaches may be more focused on conventional patterns and models, yet very few are specifically designed in the context of the characteristic teaching that Islam requires. Therefore, the findings of this study fill this gap in the formation of an Islamic -based model. Here the researcher lists the results of the construction of a net-learning model based on the opinion of experts and then confirmed by experts to form a model. Below are the basic contents of the model:

Table 3
The Model Elements

Construct	Model elements	Goal
Self Directed learning	• Students determine the direction of learning based on the needs that are allowed and do not violate the limits of sharia • Educators need to monitor the content of learning so as not to go beyond the limits allowed by Islam • Students collaborate with other students based on the limits and boundaries allowed in islam • Educators evaluate student work and control the content so that it does not go beyond the permitted limits • Students reflect on the content created and make improvements	• Active learning • Critical thinking
Collaborative learning / Usrah	• Students engage with other students online and create discussions and provide insights • Students use their knowledge and opinions to impart understanding to other friends • Students need to exchange ideas with each other in solving problems • Each individual student should be responsible for the solutions and ideas proposed together	• Idea sharing • Active learning • Brainstorming
Social behaviour control	• Control the behavior while interacting • Maintain religious manners when interacting online • Refrain from speaking bad words • Do not use excessive body signals and make bad signals	• Active learning • Social cognitive learning

	• Have a polite relationship with others with religion limitation • Prudence and civility in social interactions	
Cognitive ability	• Functional literacy • Visual literacy • Computer literacy • Prior content knowledge about online learning • High curiosity • Sensitive to current ICT developments	• Cognitive learning

Based on the constructs and elements built based on the literature and expert opinion (see table 3), the researcher made an analysis using the Fuzzy Delphi method for the first phase (construction phase). The results of Fuzzy Delphi analysis are as follows:

Table 4
Result for Model Construct

Results	Construct1	Construct2	Construct3	Construct4
Expert1	0.0165	0.02474	0.047890	0.03299
Expert2	0.04124	0.03299	0.047890	0.02474
Expert3	0.20124	0.03299	0.057890	0.03299
Expert4	0.0165	0.02474	0.047890	0.02474
Expert5	0.0165	0.03299	0.211900	0.02474
Expert6	0.0165	0.02474	0.087890	0.03299
Expert7	0.0165	0.02474	0.047890	0.02474
Statistics	**Item1**	**Item2**	**Item3**	**Item4**
Value of the "d" item	0.02357	0.02828	0	0.02828
Average Value of the "d'construct				0.02003
Item < 0.2	7	7	7	7
% of item < 0.2	100%	100%	100%	100%
Average of % consensus				100
Defuzzification	0.97143	0.94286	0.98100	0.94286
Ranking	2	3	1	3
Status	Accept	Accept	Accept	Accept

** Average of d Item : < 0.2
** Average Agreement : > 75%
**Alpha-cut : > 0.5

The darkened threshold value surpasses the threshold value 0.2 (> 0.2) according to data analysis (see table 4). There are an experts viewpoints that are not in line or even and cannot reach consensus on some issues. A threshold value (d) 0.2, which is 0.123, is shown by the average value of all model components for an item to have a solid expert agreement, the average threshold (d) must be smaller than 0.20. (Cheng & Lin, 2002; Chang et al., 2011). Expert agreement on this topic has reached an overall proportion of 85% agreement, which implies that it above the threshold of 75% agreement. More over half of the Alpha-Cut

defuzzication results surpass Alpha-cut = 0.50. Sun et al (2010) recommend that the alpha cut value exceed 0.5 and that it should be dropped if it falls below this amount. Research shows that the OLL guideline and build have been well-received amongst experts. According to the consensus of experts, the elements presented in table 6 are ranked in order of importance.

Second Phase: Model Validation
After completing the first phase of the study, which is the model formation phase, the researcher proceeded to the second phase, which is the model validation phase using the Nominal Group technique. This phase involves 6 experts who will validate the model built by the researcher. Upon completion of the first phase, the researcher has produced a protitype model. Next the researcher will make a validation to the model constructed using the NGT method. 6 experts were gathered in one brief seminar session. The researcher explains to the expert the model generated through the Fuzzy Delphi method. The researcher screened to the model experts and made a detailed description to the experts involved. Then the researcher gives between 15-20 minutes for the researcher to discuss and then make a vote based on their agreement on the model built. The findings of NGT analysis are as follows:

Table 5
NGT Analysis Result

Model construct	Voting value						Total voting	% of agreement	Rank	Agreement
Self Directed learning	4	5	5	5	4	4	27	90	2	Suitable
Collaborative learning / Usrah	4	3	5	4	5	3	24	80	4	Suitable
Social behaviour control	5	5	4	5	5	4	28	94	1	Suitable
Cognitive ability	3	5	4	5	5	4	26	87	3	Suitable

** Percentage of agreement (> 70%)

Table 5 displays the overall voting scores for the model based on experts evaluation and agreements. According to the findings of this study, all concentrations of the model constructs are at the recommended levels. As a result of these investigations, the proportion now needs to be greater than 70%. (Deslandes et al., 2010; Dobbie et al., 2004; Mustapha et al., 2022). Researchers can draw the conclusion that the model's major components are acceptable and can be utilised by all participants in the study. The modified NGT strategy allows researchers to collect data more rapidly than the Delphi method, which necessitates numerous rounds of expert judgement.
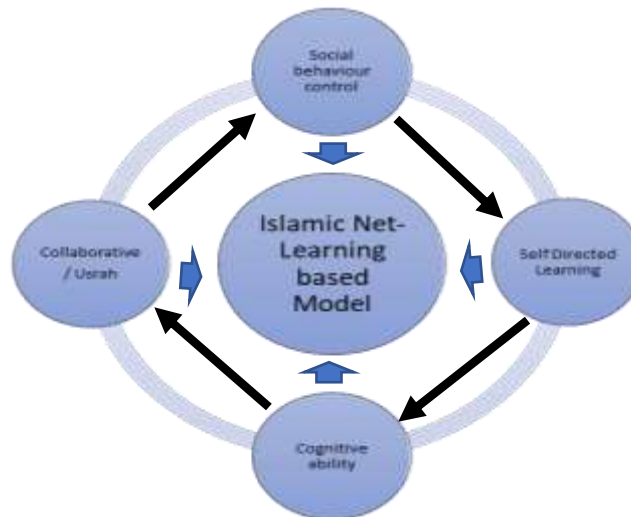
Figure 1: Islamic Net-Learning Model

Discussion

Based on the results of analysis and assistance of several experts, a basic model in teaching centered on net leraning was successfully produced. This model is a basic model that can be further refined to be more perfect. The need for a basic model as a reference in Islamic education is necessary and also to be a guide in implementing teaching sessions. Based on this model, the aspect that is the main basis is the aspect of self behavior control. In internet-centered learning the aspects of freedom in association and interaction become more flexible. students can interact with other friends easily without limits, and sometimes they interact outside the norms of socializing. Islam forbids excessive association and there must be permissible limits. aspects such as conversation that are considered dirty and outrageous should not be allowed. Not using indecent body movements, controlling the limits of association and communicating in a way that does not exceed the limits should not be allowed. Yet the course of the teaching session is still feasible. According to Islam, character and manners are equally important. For example, one must behave and act in a manner that is respectful to one's Creator, his own soul, those he interacts with, the rest of humanity, and the rest of creation. There are several unique methods to interact with one other in Islam. Two or more individuals interact with one another in a social system, and in their activities, people take into consideration how the others in the system are expected to act. In certain cases, the social system acts together to achieve common goals (Olayiwola, 1993). Therefore this aspect of behavior control is very important in the methods allowed in Islam.

The second aspect of this model is self directed learning. As we know that, the self directed learning refer to students to take control of their own learning experience (diagnosis learning needs, identify learning goals, select learning strategies, and evaluate learning performances and outcomes) (Loeng, 2020). In other words, "Learning in which decision learners have about what to learn, how it is learnt, and the way they judge if one has learned anything well enough are all in the hands of learners" (Brookfield, 2013, p. 90). Garrison (1997) noted that SDL is the primary idea in the study of adult learners, despite substantial criticism and uncertainty around it. Islam does not forbid to interact freely or conduct teaching sessions using SDL. This is also a good way to highlight the interests, skills and abilities of students in forming their own community. and this very good thing in the process of introducing the potential of the self is very great among the students. However, the aspect that needs to be taken into account is the limitations that involve the process of interaction between students, for

example, students determine the direction of learning provided it does not violate the limits of shariah allowed in Islam. Instructors also need to monitor the content of the lesson so as not to deviate from the path of religion and interaction between students is still within the scope allowed in Islam.

In the learning system, cognitive ability is very important because the ability of an individual can be seen based on his ability to reason and understand the content of learning. This model suggests the aspect of cognitive ability because the process of reasoning and absorption of knowledge learned can be obtained by manipulating the human mind. Islam emphasizes the aspect of intelligence of the mind and the mind so that learning can be implemented well. In line with the phases and requirements of each character of cognitive learning patterns, pupils' learning will be successful (Brayadi et al., 2022). In the new era, cognitive abilities are closely related to the technologies being adapted nowadays. Students need to have exploratory skills, and be sensitive to current needs by using technology. Aspects such as computer literacy, content knowledge, sensitive to current technological developments and other skills. This is able to cultivate cognitive skills that are more exploratory and dynamic in the learning system. Yet the freedom in exploring technology remains within the scope of the limitations allowed in religion.

Another factor that needs to be emphasized in Islamic education in line with current needs is collaborative learning. collaborative learning is highly emphasized in the world of education today, with a view to the need for students to be active and collaborative in their learning. Students need to connect with other peers in forming new ideas and understanding and solving a learned phenomenon. Increasing student participation in a task's comprehension is what collaborative learning aims to accomplish. Each student receives instructional methods that involve them in classroom activities rather than simply listening to lectures; b. classroom assessment includes various activities such as designing tests and performance measurements to vote; c. effectively designed to monitor and influence students' development; d. classroom assessment is used when making decisions (Tanjung, 2018). Islam does not prevent collaborative learning, in fact it is mentioned as a concept in the Quran. It was named *Taawun*. Ta'wun, or helping, is a laudable practise because of the attitude of aiding each human being taught to live with one other to help each other and experience the sorrow of others. This is an attitude that should be carried by all human beings since we are not just individuals but also social beings who require the aid of others. Participating in the good and not helping in the wrong that harms others is what Allah has prescribed as good deeds. So that civilised societies are founded on mutual aid and collaboration (Zahra & Fasa, 2018). But it should also be seen, the aspect of limitations in interacting must be within the scope allowed by Islam. unrestricted free association, aurat, insensitivity and others should be taken into account because all misconduct and extreme acts are still not allowed in Islam.

Conclusion and Further Direction

In conclusion, islam does not hinder development and technology, nor in the aspect of education. Islam sees education as having to be in line with the current world but within the limits allowed in religious doctrine. The current environment of studying Islamic education must be in line with technology, so there are things that need to be evaluated and built in order to be a guide for teachers in implementing learning. current skills and learning methods need to be combined with Islamic methods. then the researcher sees this as a challenge in forming a simple model that can be a guide in implementing learning. However, this study is a model construction only. Future researchers can use this model or improve the model to be

the subject of study in the future. Future researchers can also build a specific module based on this simple model.

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