SeIPTI 2019

سيمینر سرنټاؤ قحاجين تيڱي اسلام ك-6
6TH REGIONAL SEMINAR ON ISLAMIC HIGHER EDUCATION

قرو سيديغ

PROCEEDING

كأره كچمرلغن قحاجين تيڱي اسلام دالم ايرا ريؤولوسي ايندوستري 4.0
Towards Excellence in Islamic Higher Education in the Industrial Revolution 4.0 Era.

Universiti Islam Sultan Sharif Ali, Negara Brunei Darussalam
9 & 10 Rabiulawal 1441H / 6 & 7 November 2019M

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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قروسيديٲ

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PENAFIAN

Ini adalah dokumen yang tidak mengikat dan pandangan yang dinyatakan dalam Prosiding ini adalah dari pengarang. Pandangan tersebut tidak semestinya merupakan pendirian rasmi Universiti Islam Sultan Sharif Ali.

KATA ALU-ALUAN

الحمد لله رب العالمين الذي بنعمته تتم الصالحات، والصلاة والسلام على من أرسله الله تعالى رحمة للعالمين سيدنا ومولانا محمد وعلى آله وصحبه أجمعين، وبعد،

Seminar Serantau Pengajian Tinggi Islam (SelPTI) merupakan seminar tahunan yang dianjurkan oleh empat buah universiti serantau secara bergilir bermula pada tahun 2012. Seminar pertama diadakan di Universiti Sains Islam Malaysia (USIM), Malaysia iaitu sebagai peneraju awal kepada SelPTI. Pada tahun berikutnya iaitu tahun 2013 ia diadakan di Universiti Islam Sultan Sharif Ali (UNISSA), Negara Brunei Darussalam. Sementara itu Universitas Darussalam Gontor (UNIDA), Indonesia dan Universiti Fatoni, (FTU) Thailand masing-masing menjadi tuan rumah pada tahun-tahun berikutnya.

Hari ini perkembangan semasa khususnya dalam dunia teknologi telah memberi impak besar dalam pendidikan. Ini termasuklah dalam pengajian tinggi Islam. Seiring globalisasi, revolusi industri 4.0 yang menjadikan teknologi berkapasiti tinggi sebagai teras kepada berbagai sistem tidak dinafikan telah merubah dan memaksa pengajian tinggi Islam menyesuaikan diri dengannya. Oleh itu, SelPTI 2019 ini mengangkat tema “Ke Arah Kecemerlangan Pendidikan Tinggi Islam dalam Era Revolusi Industri 4.0”. Perkara ini amat signifikan untuk dibincangkan oleh para pakar dan golongan pengamal yang terlibat secara langsung dalam industri pengajian tinggi Islam, sama ada sebagai tenaga akademik, pentadbir dan pengurus, atau para siswazah.

Prosiding ini menghimpun sejumlah artikel yang membincangkan mengenai cabaran dan pandangan serta berbagai perkongsian yang berguna dalam usaha menangani gelombang revolusi industri 4.0. Ia

dikupas oleh para penyelidik dan pengkaji mengikut kesesuaian dalam berbagai bidang masing-masing yang meliputi bidang Usuluddin, Syariah, Da'wah Islamiah, Undang-Undang Islam, Bahasa Arab, Ekonomi dan Kewangan Islam, Pengurusan Islam, Produk dan Sains Halal, Pembelajaran Sepanjang Hayat, Pendidikan Islam, Media dan Komunikasi, Sains Kemanusiaan dan bidang-bidang lainnya yang relevan. Penerbitan prosiding ini diharapkan akan dapat menjadi sandaran yang mampu menabur kemanfaatan dalam meneruskan usaha menggarap kecanggihan industri terkini dan menggunakannya dalam memajukan pengajian Islam khususnya pada peringkat Pengajian Tinggi. Himpunan artikel dari berbagai institusi pengajian tinggi serantau tidak dinafikan adalah manifestasi keakraban IPT Nusantara dalam sama-sama memperjuangkan ketinggian ilmu Islam dan mengangkatnya seiring kemajuan terkini.

DR HAJI NORARFAN BIN HAJI ZAINAL
Rektor
Universiti Islam Sultan Sharif Ali

Prakata

الحمد لله رب العالمين الذي بنعمته تتم الصالحات، والصلاة
والسلام على من أرسله الله تعالى رحمة للعالمين سيدنا ومولانا
محمد وعلى آله وصحبه أجمعين، وبعد،

السلام عليكم ورحمة الله وبركاته

Segala puji dan syukur ke hadrat Allah SWT, yang terus mencurahkan rahmat dan kurnia-Nya kepada kita semua, serta dengan izin-Nya Seminar Serantau Pendidikan Tinggi Islam ke-6 (SeIPTI 2019) dengan tema Ke Arah Kecemerlangan Pendidikan Tinggi Islam dalam Era Revolusi Industri 4.0, dapat dilaksanakan dengan jayanya. Kemunculan Industri 4.0 adalah satu perkembangan terbaru yang memberi kesan kepada ramai terutamanya pihak Institusi Pendidikan Tinggi. Dalam konteks ini, pendidikan tinggi adalah antara bidang yang cukup penting dalam menerima impak perkembangan terbaru ini.

Dalam persidangan kali ini, terdapat sebanyak 78 kertas kerja yang dibentangkan terbahagi kepada tiga bahasa termasuk Bahasa Melayu, Bahasa Inggeris dan Bahasa Arab, yang meliputi pelbagai bidang ilmu dan pengkhususannya.

Sidang Editor mengucapkan setinggi-tinggi tahniah dan jutaan penghargaan kepada para pembentang kertas kerja. Diharapkan penerbitan prosiding secara atas talian ini akan menjadi bahan rujukan dan dapat membantu para penyelidik dan ilmuan untuk mendapatkan maklumat terkini dan membantu untuk menghadapi cabaran yang dihadapi oleh pendidikan tinggi untuk mencapai kecermelangan di Era Revolusi Industri 4.0. Semoga semua kertas yang termuat kali ini adalah bermanfaat dan memberikan garis panduan untuk menghadapi Era Revolusi Industri 4.0.

Sidang Editor

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THE ROLE OF BOARDING SYSTEM UNIVERSITY EDUCATION IN INCULCATING PROBLEM SOLVING SKILL IN THE 4IR ERA

*Ihwan Mahmudi¹, Amal Fathullah Zarkasyi², Ahmad Saifulloh³, Ahmad
Danis⁴*

*ihwanm@unida.gontor.ac.id¹, amal.unida.gontor.ac.id²,
saif@unida.gontor.ac.id³, saburaiduasatu@gmail.com⁴
University of Darussalam Gontor, Ponorogo, Indonesia*

ABSTRACT.

Problem Solving is the first competency needed in the era of Industry 4.0” or the 4th Industrial Revolution (4IR) according to the World Economic Forum 2016. This study aimed: 1) to measure student’s problem solving skill in University of Darussalam (UNIDA) Gontor, and 2) to explore how University of Darussalam (UNIDA) Gontor with its boarding system education inculcate problem solving skill to its students. This study employed a qualitative approach with case study as a research design. The data were collected by questionnaire, observation, interview, and documentary method. They were analysed using interactive analysis model consisting three components; data reduction, data presentation, and conclusion or data verification which is done together with the process of collecting data interactively by cycle process. The study found that: 1) most students of University of Darussalam (UNIDA) Gontor have considerable degree of problem solving skill, and 2) the skill was inculcated through learning process in the classroom, various activities within student organization and a large number of assignments and tasks that students have to fulfil.

Keywords: Problem Solving, Boarding System, Formal Activities, Non-Formal Activities, Various Assignments

Introduction

The 21st century is characterised by the rapid change of information and technology which is known as the 4th Industrial Revolution (4IR/Industry 4.0) era. Within the era, information technology becomes the basis of human life.¹ The term of 4th Industrial Revolution was introduced by Professor Klaus Schwab, the prominent economist from Germany and the founder of World Economic Forum (WEF). In his important book “The Fourth Industrial Revolution”, he explains that Industry 4.0 has changed the human’s way of life, thoughts, and the way of work.

To address the challenges of 4IR era, the World Economic Forum published “The Future of Jobs” report² elaborated the top ten skills consisting complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgement and decision making, service orientation, negotiation, and cognitive flexibility.³

Responding above-mentioned report, many scholars contends that complex problem solving seems to be one of critical skills needed in all aspects of human life. Mutadin (2002) states that problem solving skill includes the ability to search for the information, analyse situation, identify the problems in order to produce alternative actions, then consider the relation between those alternative actions and possible results. This will lead to the ability of implementing the plan by doing the correct and suitable action.⁴ Similarly, Hamalik (1994) argues that problem solving is a mental and intellectual process to find out the problems and solve them based on valid data and accurate information. Hence, the valid conclusion and action could be drawn.⁵ In addition, problem solving has close relationship with decision making when individual or group of people are demanded to make a

¹Kemristekdikti. 2018. *Pengembangan Iptek dan Pendidikan Tinggi di Era Revolusi Industri 4.0*. Retrieved from <https://www.ristekdikti.go.id/pengembangan-ip-teknologi-dan-pendidikan-tinggi-di-era-revolusi-industri-4-0/>.

² See, Global Challenge Insight Report, *The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*, (World Economic Forum, January 2016).

³Muhammad Alwi, dkk. *Diskripsi Hubungan Kepribadian, Emosi Dan Perilaku ‘Orientasi Service’ Guru Di Era Industri 4.0*. Al-Tanzim : Jurnal Manajemen Pendidikan Islam, March 2019, Vol. 03 No. 01, p. 229.

⁴ Zainun Mutadin, 2002. Pentingnya Strategi Coping dalam Pemecahan Masalah, <http://www.epsikologi.com/epsi/search.asp>.

⁵ Oemar Hamalik. 1994. *Media Pendidikan*. Bandung: Cipta Aditya Bakti, p. 151.

decision as a solution for specific problems. According to Husaini Usman,⁶ decision making has an essential role in determining motivation, leadership, communication, coordination, and the change of organisation.

University of Darussalam Gontor (UNIDA Gontor) is a unique higher education institution in Indonesia. This is because UNIDA Gontor implements full boarding system to support its education process. Within the system, Arabic and English language are used as language of instruction and main media for communication between students and lecturers. Also, scientific activities, religious programs and entrepreneurship could be done by whole students in full boarding system campus. Therefore, in this university, students participate many extracurricular activities organised by student organisation. Since students find many problems during their participation in the activities, they will develop their skill in solving the problems, ability to live together in society, and then implement what they learn in classroom.⁷ As a result, students will have competence in using various strategies to solve the problems they have during their life in campus.

In line with what happens in UNIDA Gontor, Azwar (2006) argues that one of indicator of intellectual behaviour is the ability to solve the problem. Accordingly, students need to have problem solving skill to enable them to address academic and non-academic challenges.⁸ Furthermore, the skill will assist students in entering workplace after graduation. However, problem solving skill is subject to be specified in its implementation.

According to Polya (1988),⁹ there are four steps in the implementation of problem solving. The steps are getting to know the problem, forming a solution plan, carrying out the solution plan, and looking back to the result.

⁶ Husaini Usman, *Manajemen, Teori, Praktek, dan Riset Pendidikan* (Jakarta : Bumi Aksara, 2009), hlm. 392

⁷ Kurniawati, R. & Leonardi, T. *Hubungan antara metakognisi dengan prestasi akademik pada mahasiswa fakultas psikologi universitas airlangga yang aktif berorganisasi di organisasi mahasiswa tingkat fakultas*. Jurnal Psikologi Pendidikan dan Perkembangan. 2013. Vol 2, No. 1, p. 17-18.

⁸ Saifuddin Azwar, 2006. Pengantar Psikologi Inteligensi. Edisi I. Cetakan V. Yogyakarta: Pustaka Pelajar, p. 38.

⁹ G Polya. 1988. *How to Solve It: A New Aspect of Mathematical Method (2nd ed.)*. New Jersey: Princeton University Press

Naityn Novitasari, et. al. (2015),¹⁰ adopt indicators of problem-solving skill from Mourtos, Okamoto and Rhee (2004)¹¹ as the following explanation:

No.	Aspect	Indicator
1	Defining the problem	Mentioning facts related to the problem Determining the concept or category Determining information/data related to the problem Specifying detailed problem (time, place, party)
2	Examining the problem	Identifying source of problem Checking the causal relation of the problem Assessing the level of problem Examining solution that has been used to solve the problem
3	Designing the solution	Developing problem solving plan based of source of problem Mapping sub-problem and sub-solution Choosing the theory, principle, and approach to solve the problem
4	Implementing the plan	Listing the problems that to be solved Sorting work steps related to the solutions that have been made Determining parties that should be contacted to gain information about the implementation of solution
5	Evaluation	Checking the feasibility of the solution Assuming the solution Predicting the possible result of the solution Choosing correct media to communicate the solution that has been made

¹⁰ Nantyn Novitasari, Murni Ramli dan Maridi, Mengukur Problem Skill Siswa SMA Pada Mata Pelajaran Biologi, Jurnal Biologi Edukasi, 2015, Vol. 7, No 1, h. 3.

¹¹ N.J. Mourtos, D. Okamoto, & J. Rhee, Defining Teaching, and assesing Problem Skills. Prosiding. UICEE Annual Conference on Engineering Education. Mumbai, India, 2004.

Based on foregoing discussion about the important of problem solving skill in addressing the challenge of 4IR era, this study will investigate the level of problem solving skill of UNIDA Gontor students and understand the strategies of UNIDA Gontor in developing students' problem solving skill.

1. Research Method

Qualitative approach is used in this research by employing case study at UNIDA Gontor as a research strategy and design. To obtain the data, five methods of collecting data are used, consisting observation, interview, document, focus group discussion, and questionnaire. Participatory and non-participatory observation are used to collect the data about learning process in the class and student's activities in campus outside of class. The interview method in this research, as highlighted by Stake, has three roles: 1) to learn what people have experienced, 2) to learn how best describe things, and 3) to obtain their evaluation of something".¹² In this context, in-depth interview is employed to obtain the data about learning process in the class, student's activities, and student's assignment. Document content analysis in this study, in line with Fitzpatrick idea, consists 1) nonofficial papers; minutes, notes, plans. 2) Reveals actions, thinking, perceptions uninfluenced by the study.¹³ Focus Group Discussion (FGD) is done by forming small group comprising 6 participants focusing on specific topic,¹⁴ which is strategy of inculcating problem solving skill. Questionnaire is used to examine the level of problem solving skill of UNIDA Gontor students.

To analyse the data, descriptive qualitative analysis as proposed by Miles and Huberman is used. This consists of data collection, data reduction, data presentation, and data verification or conclusion.¹⁵ Data reduction means the process of selecting, simplifying, extracting, and transforming raw data from field notes.¹⁶ While data presentation is

¹² Stake, Robert E. Stake, *Standards-Based & Responsive Evaluation* (California: Sage Publications, 2004), h. 146.

¹³ *Ibid.*

¹⁴ Burke Johnson dan Lisa A Turner, "Teknik Pengumpulan Data dalam Penelitian Metode Campuran," di dalam *Mixed Methods in Social Behavioral Research*, ed. Abbas Tashakkori dan Charles Teddlie, terjemahan Daryatno (Yogyakarta: Pustaka Pelajar, 2010), h. 277.

¹⁵ Matthew B. Miles dan A. Michael Huberman, *Analisis Data Kualitatif*, terjemahan Tjetjep Rohendi Rohidi (Jakarta: UI Press, 1992), h. 16.

¹⁶ *Ibid.*, h. 16.

arranging information which leads to drawing conclusion and taking an action.¹⁷

To illustrate Miles and Huberman technique, these are the steps in analysing the data: 1) data collection in the form of field notes; 2) data reduction, making the category of data; 3) data presentation in the form of narrative texts, matrix, chart, graph; 4) final conclusion.¹⁸

2. Research Findings

The findings of this research are presented descriptively consisting the level of problem solving skill among students of UNIDA Gontor, and strategies of UNIDA Gontor in developing students' problem solving skill.

A. The Measurement of the Level of Problem Solving Skill

The measurement is carried out on 100 students within Faculty of Education, UNIDA Gontor. This is done by examining 5 aspects of problem solving skill: defining the problem, checking the problem, planning the solution, implementing the planned solution, and evaluating the result. The five aspects are broken down into 10 statements used to assess the level of problem solving skill. There are 4 options of frequency scale to respond the statement: always, often, occasionally, and never. The highest score is 40 while the lowest score is 10. Based on this score range, the level of problem solving skill is classified into three levels: lower level (10-20), moderate level (21-30), higher level (31-40).

The results of measurement shows that there is no one of students who has the lower level of problem solving skill. Meanwhile, the students who obtain moderate and higher level of problem solving skill are 43 and 57 students respectively. The result can be illustrated by following chart:

¹⁷*Ibid.*, h. 17.

¹⁸ *Ibid.*, h. 20.

Overall, the score for problem solving skill of UNIDA Gontor students are as follows:

Statistics

Problem_Solving		
f	Valid	100
	Missing	0
	Mean	30.9500
	Median	31.0000
	Mode	31.00
	Kurtosis	-.376
	Std. Error of Kurtosis	.478
	Minimum	21.00
	Maximum	40.00
	Sum	3095.00

The table shows that the average result of problem solving skill of UNIDA Gontor students is 30.95. This means that the average score of problem solving skill is high. It also shows most students successfully obtain 31 in their score of problem solving skill, while the lowest and highest score is 21 and 40 respectively. Here is the histogram to illustrate this finding:

The problem solving skill in this research is also measured based on its aspects as illustrated by the following graph.

The graph illustrates that the highest aspect of problem solving skill is evaluation reaching 21.08%, followed by defining the problem at 20.76%. However, planning the solution is the lowest aspect in problem solving skill which only reaches 17.99%.

B. Strategies of UNIDA Gontor in Developing Students' Problem Solving Skill

In developing this skill, UNIDA Gontor implement three main strategies: through formal activities, non-formal activities, and through various assignments.

1) Formal Activities

The formal activities within this university are instruction process in the classroom consisting Arabic studies, Islamic studies, teacher training, English language, natural sciences, social sciences, citizenship, etc. During this instruction process, direct method with English and Arabic language is used to motivate students to be actively involved in the process and to develop their bilingual skills. To maximise the quality of the process, UNIDA Gontor develop some supporting programs as follow:

- a) Teaching of Arabic and English language. Direct method is used in teaching this foreign language. The uniqueness of this method is in its technique in delivering vocabularies. In this context, lecturer does not mention the meaning of new vocabulary in Indonesian language, rather, he put it in complete sentence which encourage students to think of the meaning. After understanding the meaning, students are required to make sentences using the new vocabulary.
- b) The learning method in UNIDA Gontor is student centred focusing on students' active involvement. In this model of learning, students are required to assign many assignments and present them in front of their peers with Arabic and English language.
- c) Whole students of UNIDA Gontor, regardless their departments and faculties, have to take special courses unique to UNIDA Gontor. Those courses are Tahfidz (memorising al-Qur'an), Islamisation of Knowledge, and Arabic language. In Tahfidz course, it is compulsory for students to memorise 1 juzz within one year. Hence, the students will have memorised 4 Juzz after graduation. In the course of Islamisation of Knowledge, students learn the concept of Islamic worldview. Consequently, students of any departments in UNIDA Gontor are required to study their core knowledge based on Islamic worldview. For example, students of Agro-Industrial

Technology learn agriculture under the light of Islamic perspective, study various types of plants or fruits that are the favourite of the Prophet with various benefits. The last but not least, students of any departments in UNIDA Gontor should take Arabic language course. This will be value-added values of UNIDA Gontor graduates.

- d) The writing of final project (thesis) using Arabic or English language. This is where students are required to be able to complete their research assignments by choosing one of the two international languages.
- e) The study on Islamic classical texts. This program is aimed at broadening students' knowledge and wisdom in their thought. Within the program, various problems are given to students to be solved using Islamic classical texts as main reference. After completing them, each student have to present the result in front of his peer.
- f) National and international seminar/conference that present many national and international scholars and experts.

2) Non-Formal Activities

The formal activities in UNIDA Gontor comprises only 20% of students' life. This means that most students are educated by non-formal activities outside the classroom. Nevertheless, there is distinct relationship and harmony between formal and non-formal program since the form, quantity, and quality of non-formal activities are designed based on the level of formal education. In addition, the non-formal activities at UNIDA Gontor could be managed well because the use of full boarding system as the powerhouse. Hence, problem solving skill could be developed effectively as following explanation:

- a) Students live together in dormitory which enable them to learn how to socialise, understand the characteristic and personality of other students, celebrate diversity, and practice tolerance.
- b) Outside the dormitory, students become member of various organisations and activities comprising spiritual program,¹⁹ intellectual activities,²⁰ and sport.²¹ This will give various experience to students and diversify their friends. To illustrate,

¹⁹ Developing Islamic insight through Tahfidz Qur'an, weekly sermon, Jum'at prayer sermon, competition of tilawah Qur'an, and training on performing haji

²⁰ Enhancing scientific knowledge through various discussions, scientific seminar, wall magazine, bulletin, book review, and so forth.

²¹ Self development through sports activities (football, basketball, volleyball, etc) within competition among campuses, faculties, departments, and for the community.

students who live in one dormitory might have many friends with different sport clubs such as football, basketball, volleyball, etc. Hence, they will develop their problem solving skill especially in regard with the problem emerged from different characteristic of the friends.

- c) Outside the campus, students have the responsibility in teaching al-Qurán to students of primary school around the campus. This is a part of community service program which will develop students' soft skill.

In addition to previous points, UNIDA Gontor pay close attention in developing students' talent through various programs such as art and handycraft courses, sport activities, various competitions, music, etc.

3) Various Assignments

UNIDA Gontor is a private university, established in 1963. Its unique system and centre of excellence attract many students and scholars not only from Indonesia, but also from foreign countries. One of uniqueness of UNIDA Gontor is its education system which is based on Panca Jiwa (Five spirits of Gontor core values consisting sincerity, simplicity, self-reliance, Islamic brotherhood, and freedom). Another uniqueness is the methods used to develop students' potentials comprehensively. One of them is giving assignment of various tasks to students.

Giving assignments is part of self-development and empowerment among UNIDA Gontor students. Therefore, the more the students involved in various assignments, the more they will have problem solving skill. This formula has been understood by whole students and they compete each other to become more dynamic and excellent students. Giving assignments is medium of self-training through many organisations from smaller scale such as scout group, sport club to larger scale such as dormitory and student organisation. For example, kitchen cooperation section, as part of student organisation, is suitable place for students to learn about financial management, accountancy, and time management. Within this organisation, the students in charge have to prepare meal for whole students on time, three times a day. This task has to be done in a proper manner and delivered with a good quality. It means that when students in charge doing this kind of assignments, they have developed their soft skills including problem solving skill. This is because they must find many problems when they do the tasks, and they have to solve those problems. It is important to be

highlighted here that all of those things are done by students sincerely without any material rewards.

In UNIDA Gontor, there are many similar media like kitchen cooperation section as mentioned earlier. Those media are student canteen, food court, photo copying unit, laundry, student organisation, and so forth.

Conclusion

Based on foregoing discussion on research findings, we can draw that 57% of UNIDA Gontor students have higher level of problem solving skill, 43% of them have moderate level, and no one has lower level of the skill. In regard with the aspects of the skill, it turns out that evaluation is the highest aspect of problem solving skill among students reaching the level of 21.08%, followed by the aspect of defining the problem (20.76%). However, the aspect of planning the solution is the lowest one which only has 17.99%.

In developing students' problem solving skill, UNIDA Gontor combine between formal activities, non-formal activities, and giving various assignments to students.

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